



FEBLPW66K-03

PW66K Flash Writer System User's Manual

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Oki Electric Industry Co., Ltd.



PW66K Flash memory writer system

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1. Overview

1.1. PW66K Flash Memory Writer System

The PW66K flash memory writer system writes user created programs and data to the internal flash memory in the M66QXXX family of microcontrollers that are employed in a user's system.

1.2. Terminology Definitions

System names and other terms used in this manual are defined as follows.

PW66K System: The PW66K flash memory writer system

FWM66K : The FWM66K flash writer monitor

PW-10 or flash writer : The PW-10 flash memory writer

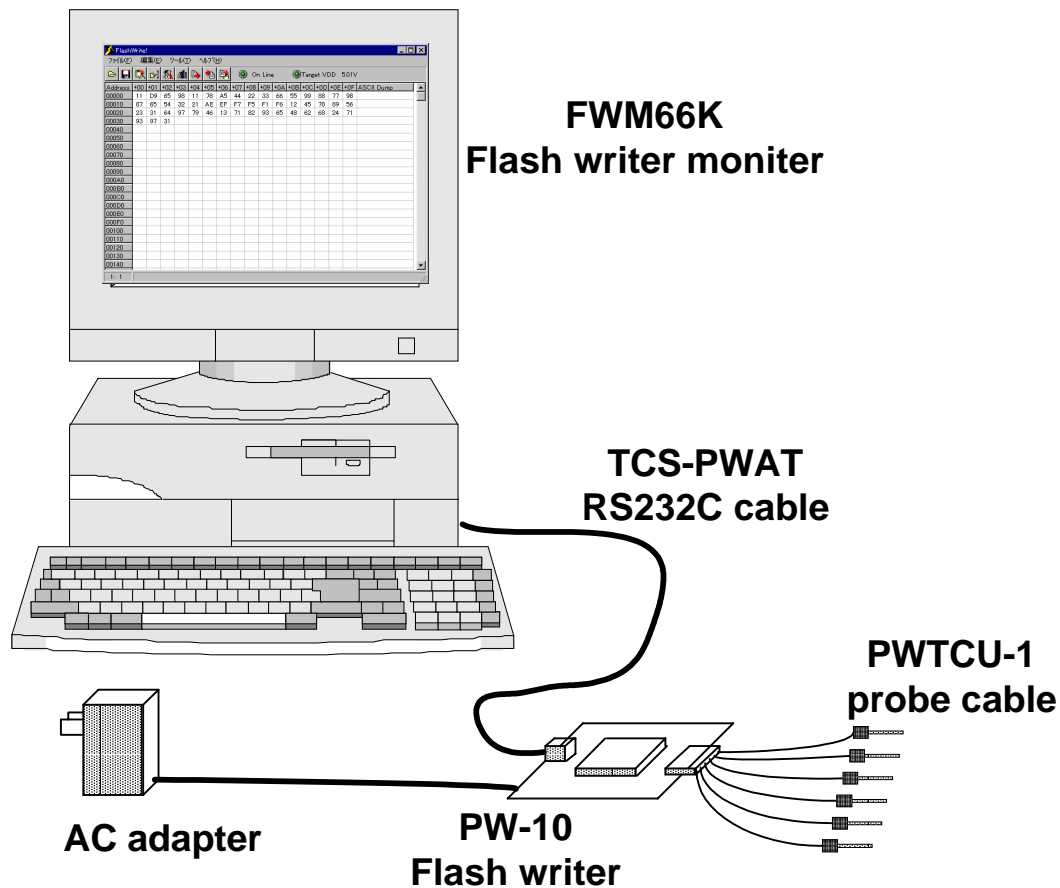
1.3. System Configuration

The PW66K system consists of the FWM66K flash writer monitor, a monitor program that runs on a PC, and the PW-10 flash memory writer.

The component list below includes accessories shipped with the PW66K system,

System name	System configuration
PW66K	FD (FWM66K, etc.), TCS-PWAT RS232C cable, PW-10, PWTCU-1 probe cable, manual, TCP-PW power cable
PW66K-AC	FD (FWM66K, etc.), TCS-PWAT RS232C cable, PW-10, PWTCU-1 probe cable, manual, AC adapter

PW66K Flash memory writer system



The PW66K system configuration is shown in the above diagram.

1.4. FWM66K Operating Environment

The required operating environment to run the FWM66K is listed below.

- Windows95 or later, or WindowsNT4.0 or later operating system
- Mouse use supported
- Existing RS232C port

1.5. Connection to the User System

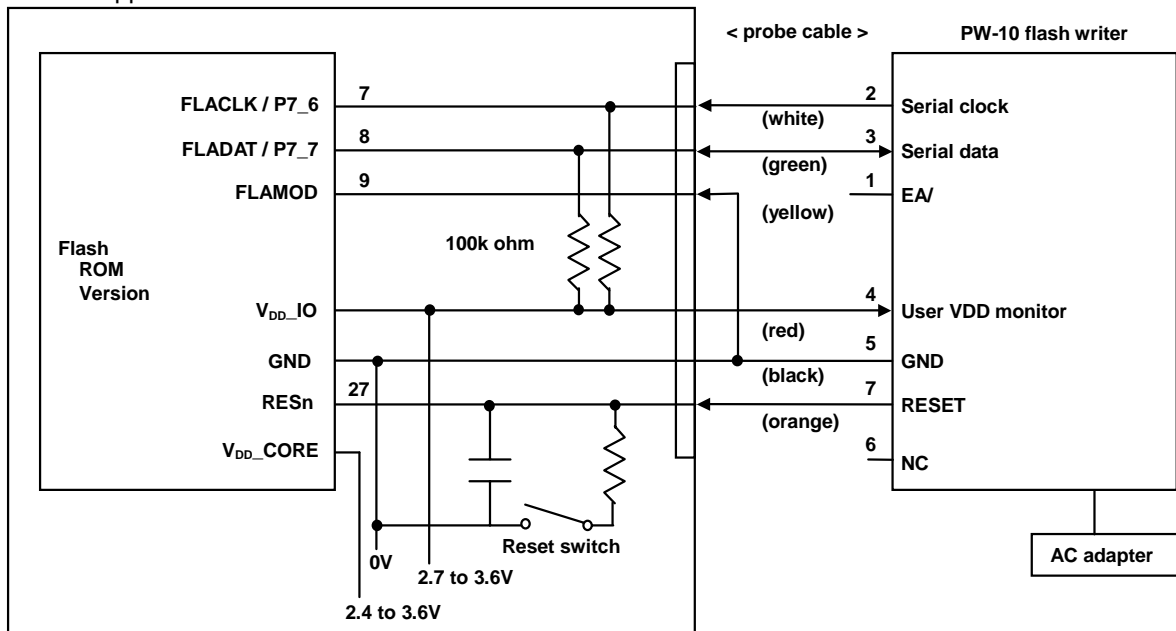
The circuitry at the user system's interface is shown below for the case where the user system and PW-10 are to be connected by the probe cable.

Example circuits are shown for the M66Q525, M66Q573, and M66Q577.

For specific circuits for microcontrollers other than the M66Q525, M66Q573, and M66Q577, refer to individual microcontroller user manuals.

(1) Using ML66Q525-NTB

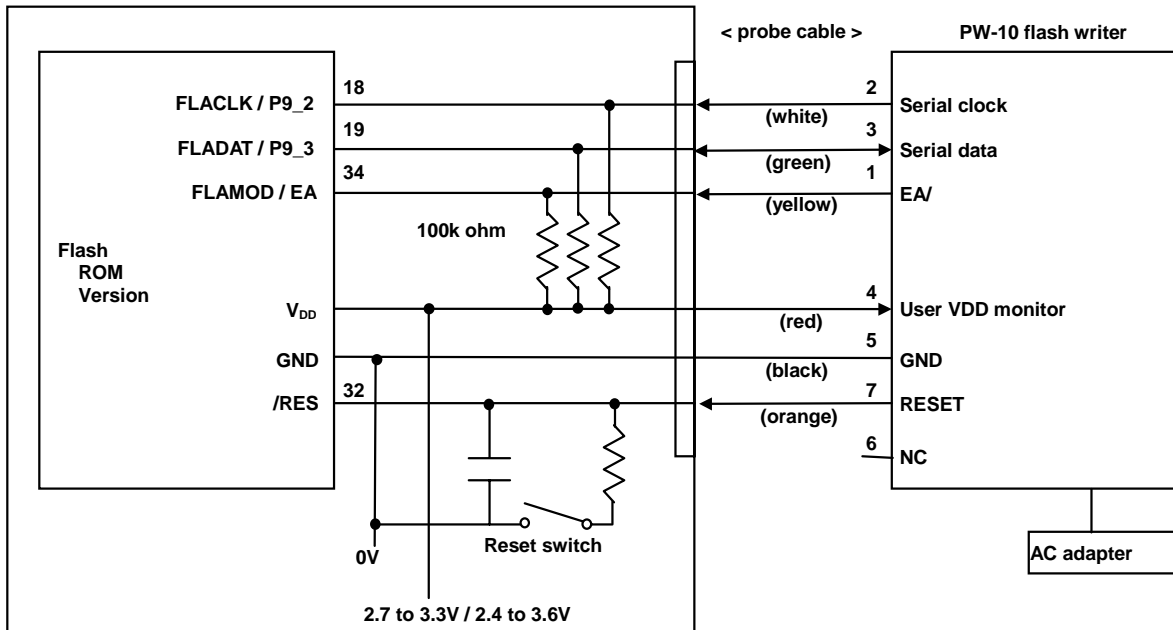
User application circuit



NOTE: Need to supply power for user application circuit.

(2) Using MSM66Q573LY-NTB or MSM66Q573L-NTB (3V version)

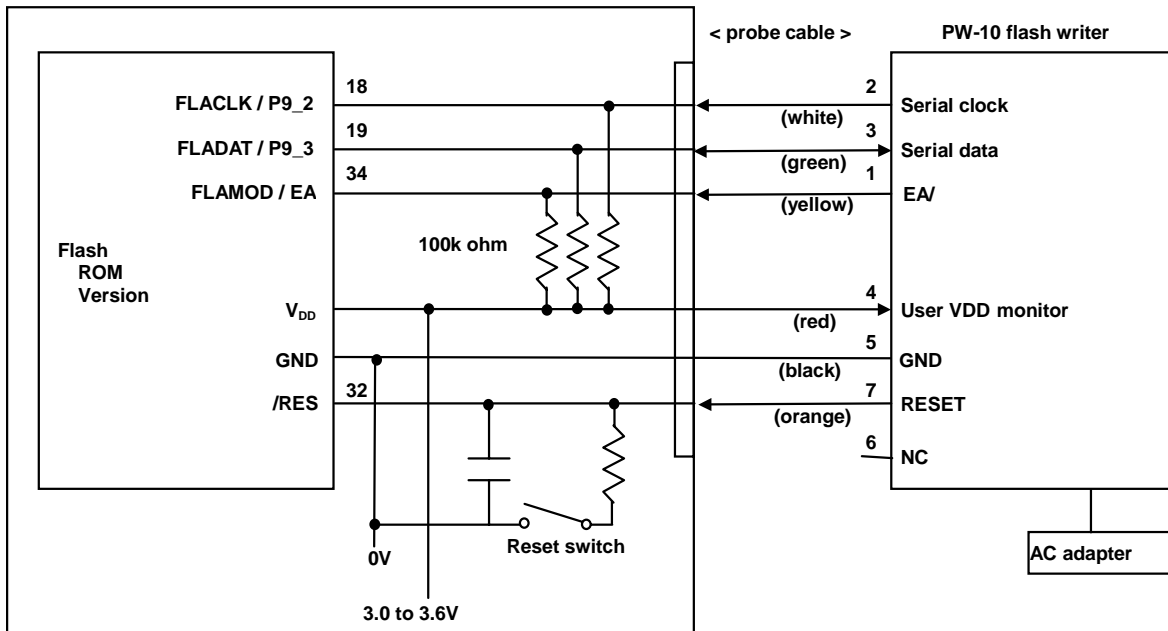
User application circuit



NOTE: Need to supply power for user application circuit.

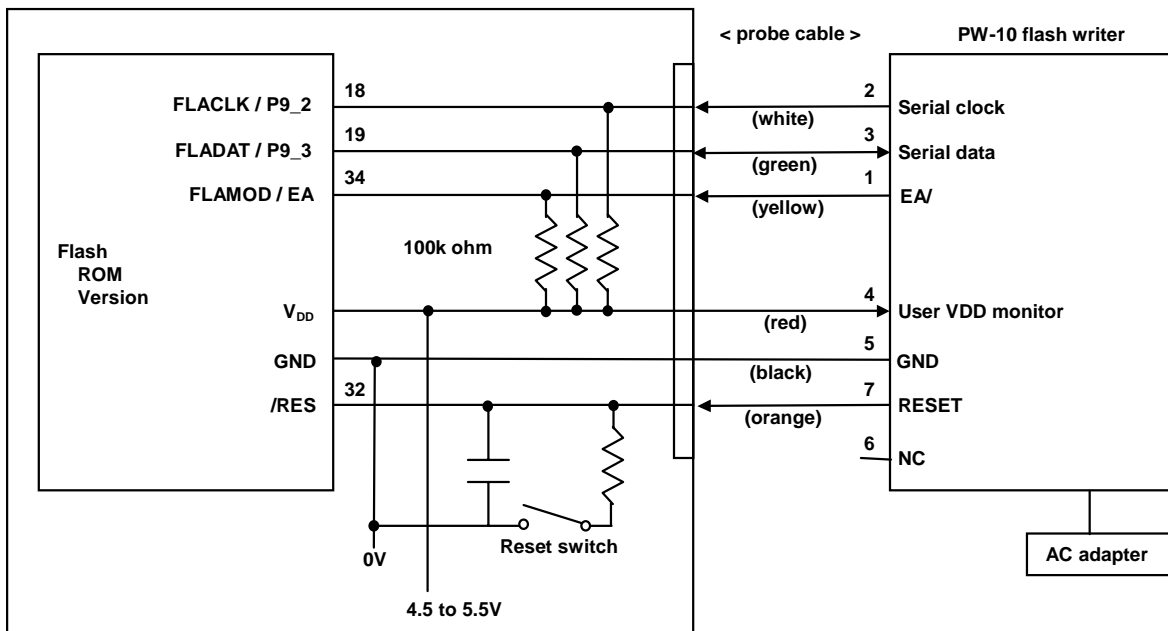
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(3) Using MSM66Q577LY-NTB (3V version)
User application circuit



NOTE: Need to supply power for user application circuit.

(4) Using MSM66Q573Y-NTB, MSM66Q573-NTB, or MSM66Q577-NTB (5V version)
User application circuit



NOTE: Need to supply power for user application circuit.

If the RES/ pin of the M66QXXX in the user system can be fixed to a LOW level, it is not necessary to connect the PW-10's reset output pin (pin 7 of the probe cable) to the user system.

If writes are to be performed while the M66QXXX is in the STOP mode, do not connect the PW-10's reset output pin to the user system.

Note: ML66Q525 can't program in the STOP mode.

1.6. Contents of this Manual

This manual describes the configuration and operating method of the PW66K system.

1. Overview

Describes the complete system and the method of connecting to the user system.

2. FWM66K Flash Writer Monitor

Describes the FWM66K's screen configuration and operation of each menu.

3. PW-10 Flash Memory Writer

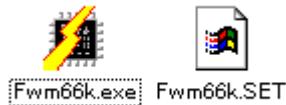
Describes the method of setting the communication speed of the RS232C interface by jumper pins on the PW-10, and describes specifications of each connector.

2. FWM66K Flash Writer Monitor

2.1. Startup and Pre-startup Preparations

2.1.1. Contents of the Accompanying Floppy Disk

The floppy disk shipped with the system contains the following files.



FWM66K.EXE : Flash writer monitor program


FWM66K.SET : Write object device definition file

2.1.2. FWM66K Installation

Copy FWM66K.EXE and FWM66K.SET from the accompanying floppy disk to the same directory in the PC.

2.1.3. Startup


Start the PW66K system with the following procedure.

- (1) Connect the PC, PW-10, power supply (such as AC adapter) and probe cable in accordance with the figure of section 1.3, "System Configuration."
There is no power switch on the PW-10. When an AC adapter or other power supply is connected, power is supplied to the PW-10.
- (2) From explorer, double click or otherwise execute the FWM66K.EXE file.
- (3) Set RS232C communication parameters with the communication environment setup box. If the communication environment setup box is not displayed when the FWM66K is started, select "Tools" from the menu bar and then select communication environment setup. The PW-10 also sets the transfer rate, an RS232C communication parameter, with jumper pins. Therefore, set these jumper pins before supplying power to the PW-10.
- (4) Click the connect button . Startup is complete if the message "Connected to the writer" is displayed.

For details regarding connection to the user system by the probe cable, refer to section 1.5, “Connection to the User System.”

2.1.4. Terminate Operation

The following procedure terminates PW66K system operation.

- (1) Click the disconnect button  to cutoff the connection between the PC and the PW-10.
- (2) Remove the AC adapter from the PW-10 connector or otherwise disconnect the power supply to the PW-10.
- (3) Terminate FWM66K.EXE.

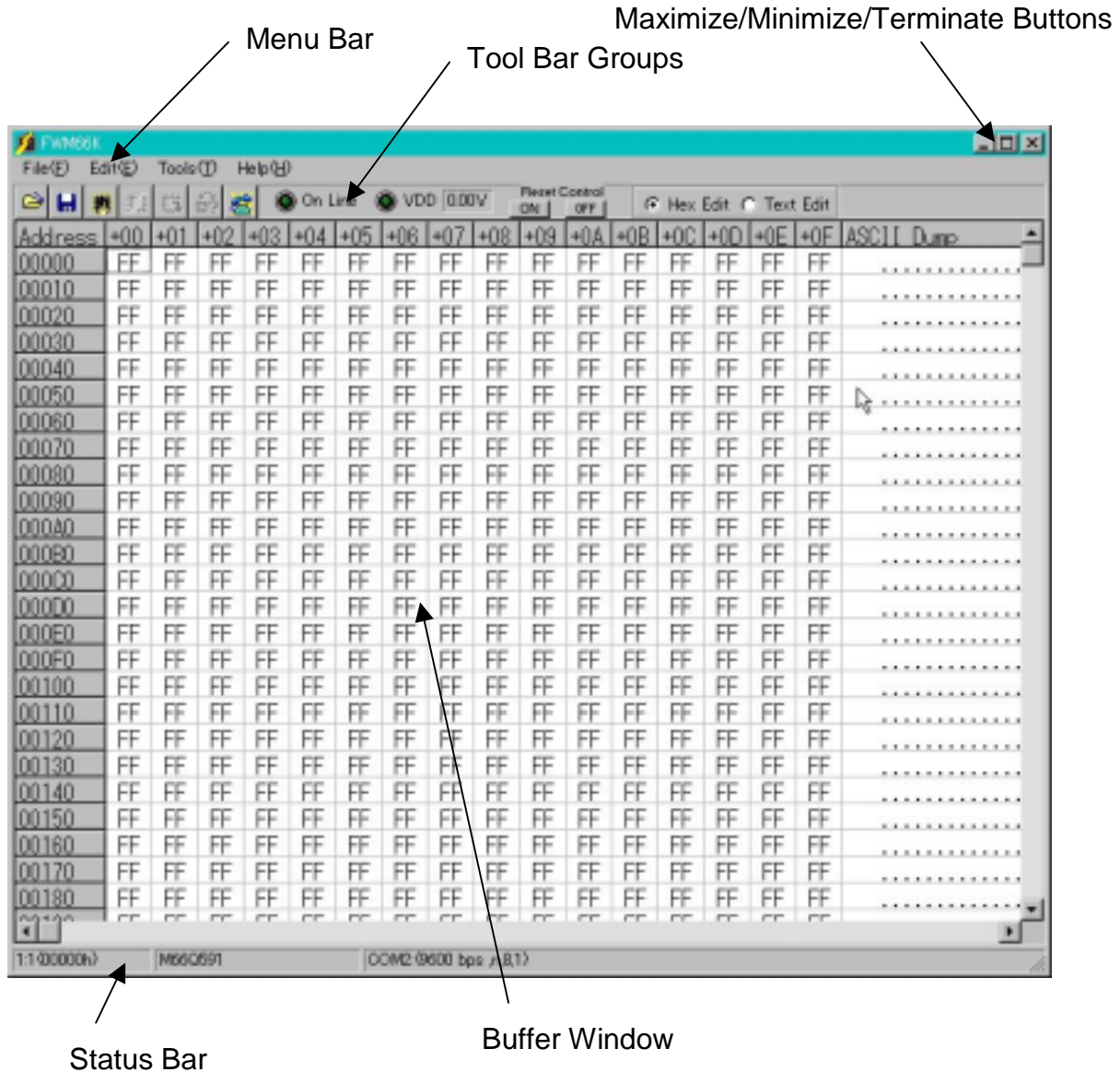
2.1.5. File Configuration

When the FWM66K is terminated, an environment setup file “FWM66K.INI” is created in the same folder as FWM66K.EXE. Therefore, the folder in which FWM66K.EXE was installed will contain the following 3 files.




2.2. Description of FWM66K Operation

Startup screen



2.2.1. Maximize , Minimize , Terminate Buttons

Located in the top right corner of the startup screen.
Clicking the middle button (maximize)  with the mouse causes this application to expand to the screen maximum. Click the middle button to restore the screen size.

2.2.2. Tool Bar Groups



A) Types of Buttons

There is a total of 7 buttons. The icon of the rightmost button changes when the flash writer and RS232C interface are disconnected or connected.



Open File

Same operation as selecting “File” from the menu bar and then “Open file.”



Save File

Same operation as selecting “File” from the menu bar and then “Save file.”



Select Device

Same operation as selecting “Tools” from the menu bar and then “Select device.”



Write to Flash Memory

Same operation as selecting “Tools” from the menu bar and then “Write to flash memory.”



Read from Flash Memory

Same operation as selecting “Tools” from the menu bar and then “Read from flash memory.”



Compare to Flash Memory

Same operation as selecting “Tools” from the menu bar and then “Compare with flash memory.”



Disconnect (The icon indicates a connected state.)

Same operation as selecting “Tools” from the menu bar and then “Disconnect.”



Connect (The icon indicates a disconnected state.)

Same operation as selecting “Tools” from the menu bar and then “Connect.”

B) Writer Connection Status Display , VDD Status Display



Disconnected when the On Line display is dark. Connected when the display is green.

The VDD display appears when the On Line display is green.

Red : Either power is not being supplied to the user system or the supply is not at the prescribed voltage.

Green : The prescribed voltage is being applied to VDD.

This display has an easy to read voltmeter that indicates the voltage of the user system.

C) Microcontroller Reset Signal Control Button, Reset Status Display



The Microcontroller reset signal control buttons control whether pin 7 of the probe cable carries the reset signal.

To not output the reset signal, select “OFF” button. The Reset Out display is dark.

To output the reset signal, select “ON” button. The Reset Out display is red.

D) Hexadecimal Editor and Text Editor Switch Radio Button



Switches the mode when editing the buffer window.

- Hex Edit mode

Data can be input as numerals from 0 to 9 and the A, B, C, D, E and F keys. When a key is pressed twice, the address is incremented by 1. (At the last address, the cursor will not move.)

In the case where the data has a value such as 01,0a, after pressing the 1 and a keys, press the delimiter key to move to the next cursor position. Set the delimiter by selecting “Tools” and then “Options.”

Keys and their meanings are listed below.

Tab key	Moves cursor to the right (Does not return from the right edge.)
Enter key	Moves cursor to the right (After moving, data is selected. Moves from the right edge to the left side of the next line.)
Direction key	Cursor movement
Home key	Move to address +00
Page Up/Page Down	Buffer window up/down scroll (The scroll amount depends upon the window size.)
Keys other than 0 to 9 and A to F, not including the delimiter and special keys	Data is selected

- Text Edit mode

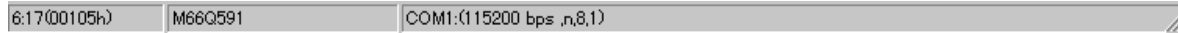
Keys directly pressed from the keyboard are processed as 1-byte data. The input data can be observed by referencing the ASCII Dump window. If pressed, the address is incremented by 1. (At the last address, the cursor will not move.) There is no delimiter.

Keys and their meanings are listed below.

Tab key	Moves cursor to the right (Does not return from the right edge.)
Enter key	No effect
Direction key	Cursor movement
Home key	Move to address +00
Page Up/Page Down	Buffer window up/down scroll (The scroll amount depends upon the window size.)
/+-.,:;!#\$%&'()=~/\^@[[]}_?><	Processed as data.

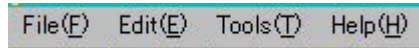
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2.2.3. Status Bar

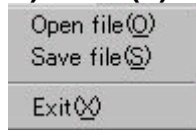


Left	Cursor position status	Indicates the current cursor position. Hexadecimal addresses are displayed in the format of "row : column".
Middle	Display of CPU selected by current device selection	This display will change if the device is changed by selecting "Tools" and then "Select device."
Right	Communication state between writer and PC	Indicates the communication speed set by selecting "Tools" and then "Set communication environment." The n,8,1 setting implies no parity, 8-bit data length, and 1 stop bit. This setting is fixed.

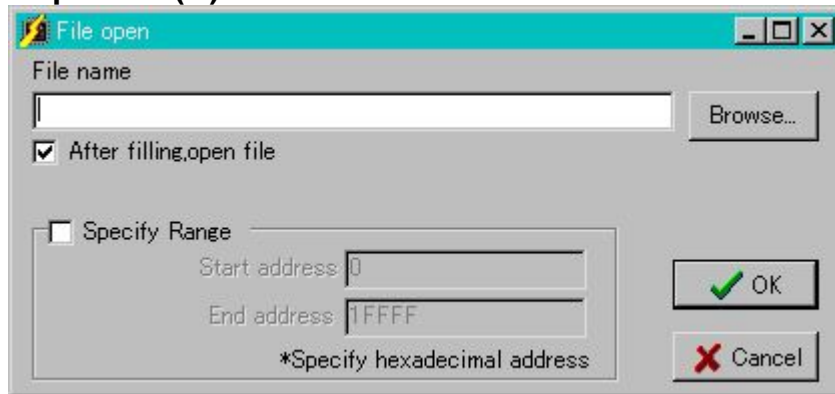
2.2.4. Menu Bar



A) File (F)



- Open file (O)



Input the name of the file to be read, or click the browse button and select the desired file.

Data prepared in the Intel HEX format or Motorola S format is read into the buffer.

After filling, open file. : After filling the buffer with the fill data selected by Tools (T) and then Options (O), the file contents are read.

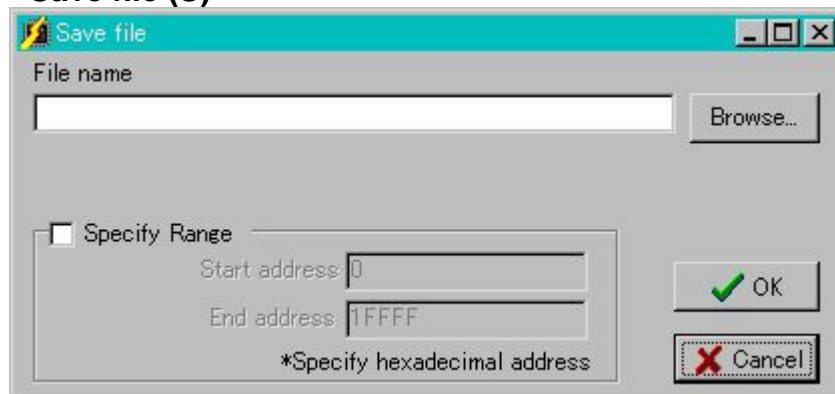
Write to Flash Memory : After reading the file, immediately write to the flash memory. However, in this case, the device is determined by selecting Tools (T) and then Select device (D). Also, communication must have been started by selecting Tools (T) and then “connect.”

Specify Range : The section from the file start address until the end address is read into a buffer at the same address. The range of 0,1,2,3,4,5,6,7,8,9,a,b,c,d,e,f (half-size upper case characters may also be used) is specified in hexadecimal format.

If the range is not specified, the entire defined address space of the device is used.

When a file is read, data from the file is displayed in the buffer window.

- Save file (S)



Either input the file name to be saved, or click the browse button to select the desired file.

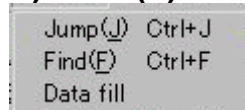
Save data from the buffer to the file with the specified file name. The data format can be selected as Intel HEX (extension *.HEX) or Motorola S (extension *.S).

Specify range : Specifies the desired buffer area to be saved in the file.

- Terminate

Terminate this application. The application will end even if ALT+F4 is pressed or the right button is clicked. When terminated, the following verification message will be displayed.

B) Edit (E)



- Jump (J)



Cursors jumps to the address specified in the buffer window and the contents of the address specified by the buffer window are displayed. The jump address is specified in hexadecimal alphabetic characters.

- Find (F)



Input the character string of the data to be searched for, and then perform the search (find). The search begins from the cursor in the current buffer window. If the corresponding character string is found, the cursor moves to the beginning of that character string. Consecutive searches are also possible.

Specify searches for multiple data strings as follows.

Example: Search for consecutive 01, 33 and 5B hexadecimal data
Search character string:01 33 5B

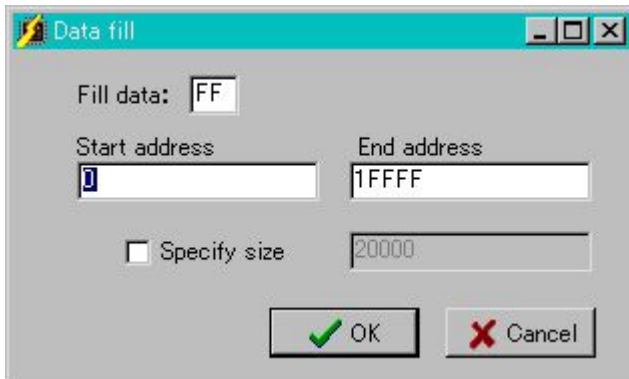
After the search (find) is completed, click “cancel.”

Direction : Specifies direction of the search from the cursor position.
Addresses decrease in the upward direction and increase in the downward direction.

Find text : If searching with a text character string, check this box

Example: Search for the character string “version”
Search character string: version

- Data Fill



Fill buffer with specified data.

Specify size : If desired to fill from the start address with a number of fill data bytes, check this box.

C) Tools (T)



- Connect

Enables the connection to the flash writer. Turn power on the flash writer, and then click on “connect”, to enable communication with the writer. If the connection is successful,



“Screen” will be displayed. If the communication settings do not match, the cable is not connected, power is not supplied to the flash writer, etc.,



“Screen” will be displayed.

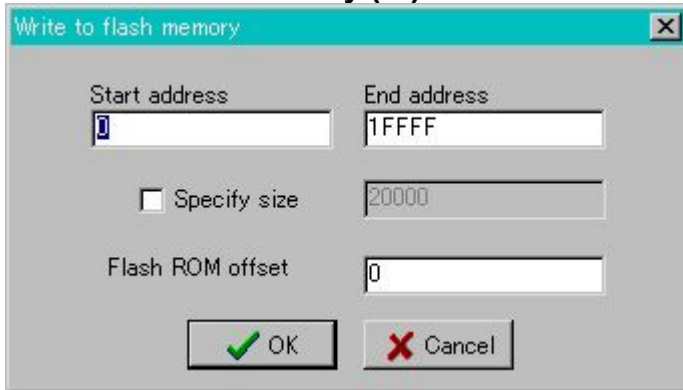
- Disconnect

Used to terminate communication with the flash writer. If disconnected,



"Screen" will be displayed.

- Write to flash memory (W)



Use when writing data from the buffer to flash memory.

This operation is not possible while the flash writer is disconnected.

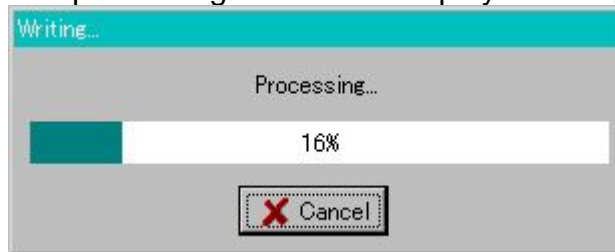
You must input a start address and an end address in 1024-byte units in the writing method of TYPE-1.

You must input a start address and an end address in 128-byte units in the writing method of TYPE-2.

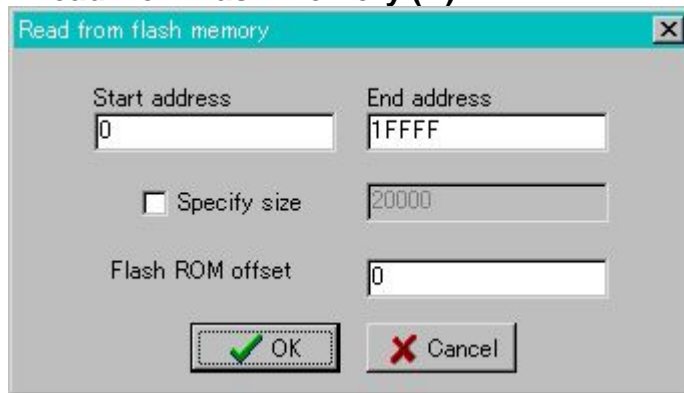
You can be confirmed the writing method with "select device" BOX.

Specify size: If desired to transfer a number of bytes (in 1024-byte units in the writing method of TYPE-1 and in 128-byte units in the writing method of TYPE-2) from the start address to the target, check this box and set the byte size.

The processing indicator is displayed during write operations.



- Read from flash memory (R)



Use when reading data from the flash memory to the buffer.

This operation is not possible while the flash writer is disconnected.

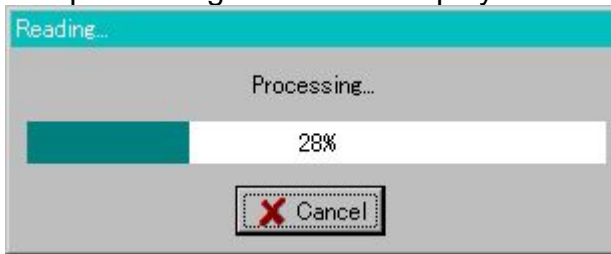
You must input a start address and an end address in 1024-byte units in the writing method of TYPE-1.

You must input a start address and an end address in 128-byte units in the writing method of TYPE-2.

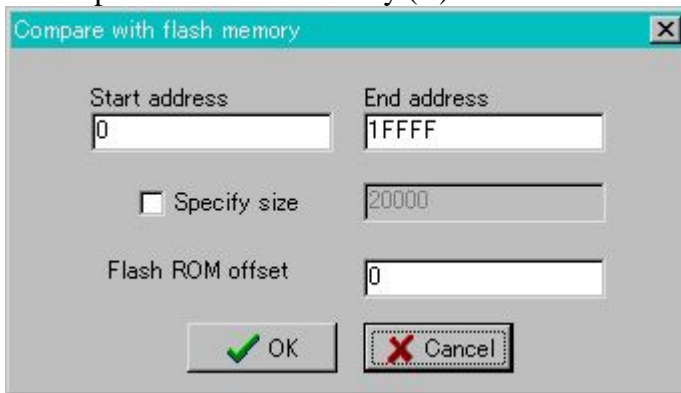
You can be confirmed the writing method with "select device" BOX.

Specify size: If desired to transfer a number of bytes (in 1024-byte units in the writing method of TYPE-1 and in 128-byte units in the writing method of TYPE-2) from the start address to the target, check this box and set the byte size.

The processing indicator is displayed during read operations.

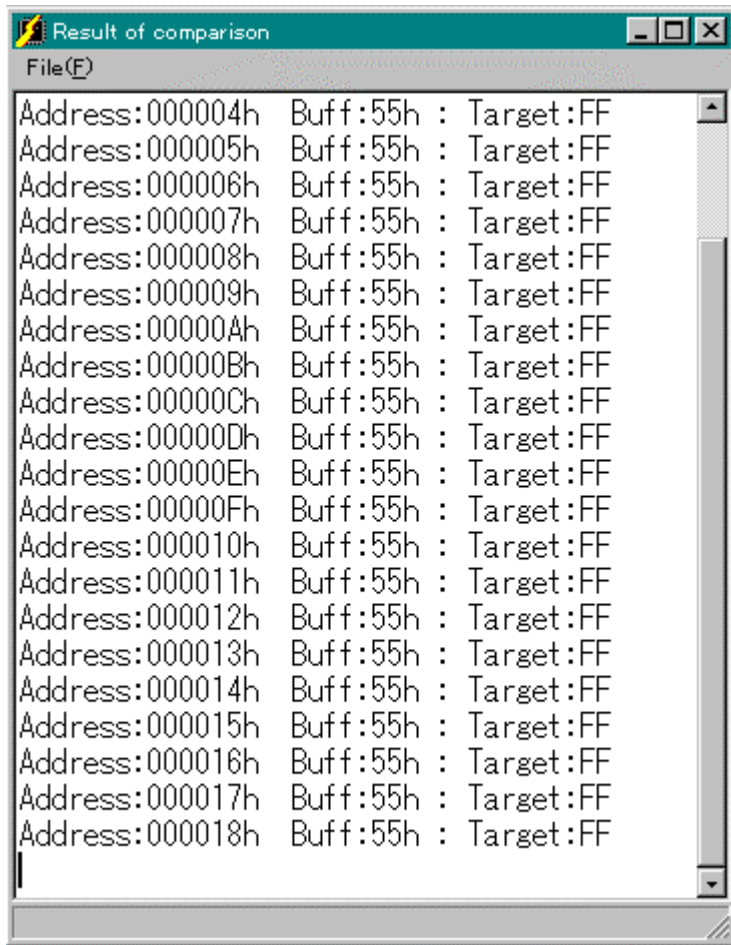


- Compare with flash memory (C)

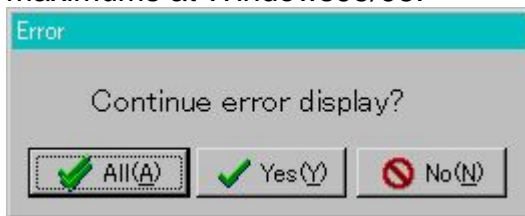


Compares the buffer and flash memory data. During the comparison, if data does not match, that address and data are displayed in a separate dialog.

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The number of mismatch data which can be indicated on Box is about 700 maximums at Windows95/98.



Click "yes" to continue investigating, click "no" to terminate this process, and click "All" to continue investigating of all contents. After processing, the comparison results dialog is displayed.

If there are no errors



If there are errors (example: 3 errors)



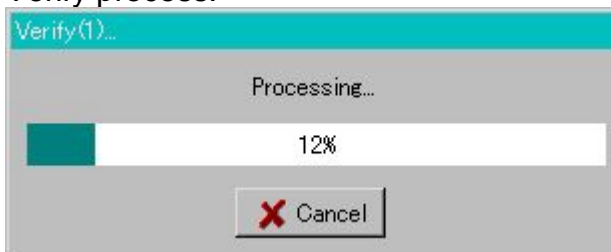
Specify size: If desired to compare a number of bytes from the respective start addresses of the buffer and target, check this box.

- Edit the security bit



Sets and cancels the security bit used to prohibit write and read access of the flash memory.

Clicking the security bit's "setup" radio button and then clicking "OK" starts the Verify process.



Later,

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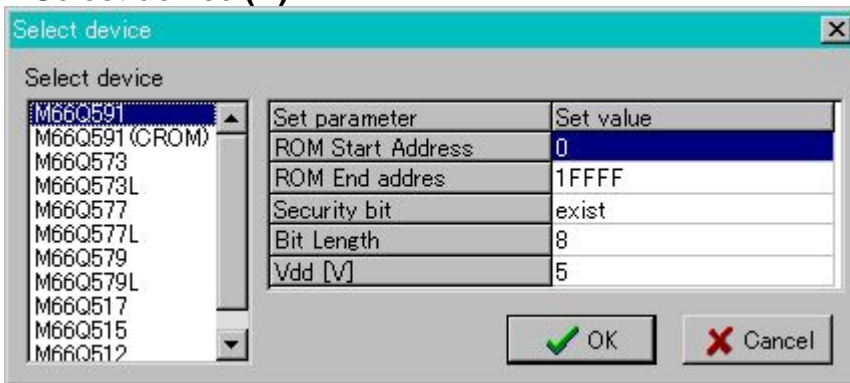


“Screen” is displayed.

After setting the security bit, if the flash memory contents of the M66QXXX are read, all the data will be read as “00.”

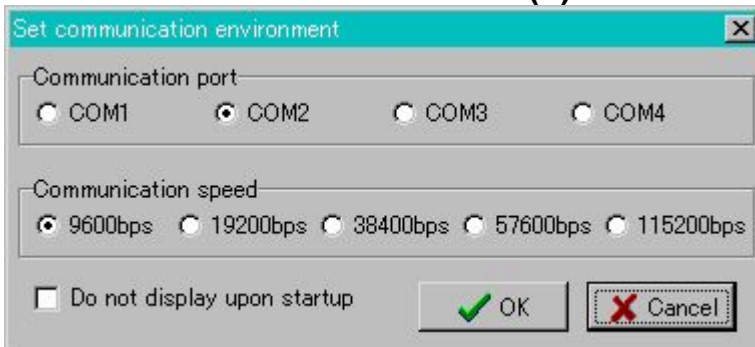
To cancel the security bit, click the security bit’s “cancel” radio button and then click “OK.” The same dialog is displayed when the security bit is released and when it is set. If the security bit is released, the flash memory contents of the M66QXXX will all become “FF.”

- Select device (D)



Selects the device that will be written to by the flash writer. The currently selected device is displayed in the status bar.

- Set communication environment (S)

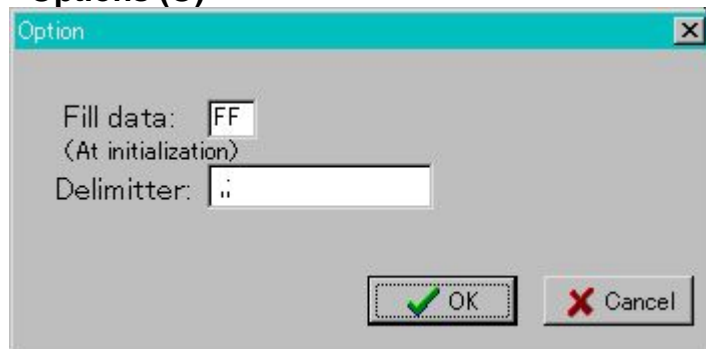


Sets the port for the RS232C interface between the PC and flash writer, and sets the communication speed.

The communication speed of the flash writer is set by a jumper pin on the flash writer. For details regarding the setting method, refer to section 3.2, "Setting the Communication Speed with Jumper Pin (J1)."

Do not display upon startup: This dialog is displayed at the beginning of each FWM66K startup. Check to disable the display of the dialog. The setting is valid at the next FWM66K startup.

- Options (O)



Fill data: Sets data to fill buffer when "File" and then "Open file" are selected. However, the fill data for a fill operation specified by selecting "Edit (E)" and then "Data fill" is set by its own dialog.

Delimiter: When the Hex Edit mode is selected, if consecutive specified data is input to the buffer window, the delimiter will be recognized as the delimiter character. Write the symbol set as the delimiter into this text box. The initial value of the delimiter is " , , " ; ", a space. Upon deleting the character string box and redefining the delimiter, if using a space as the delimiter, first input a space.

Example: Input 12 4 b 33 fb c a5 to the buffer window.

The key operation is 1 2 4, (delimiter) b, (delimiter) 3 3 f b c, (delimiter) a 5.

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D) Help



- System Information



COM port number	Displays the number of the COM port that is currently set.
Communication speed	Displays the communication speed of the COM port that is currently set.
Device parameters version	Displays the version of the Fwm66k.SET file.
Firmware version	Displays the version of the flash writer's control software. Only valid when connected to the flash writer.

- FWM66K Version Information



Displays the version of the current FWM66K.EXE file and copyright information.

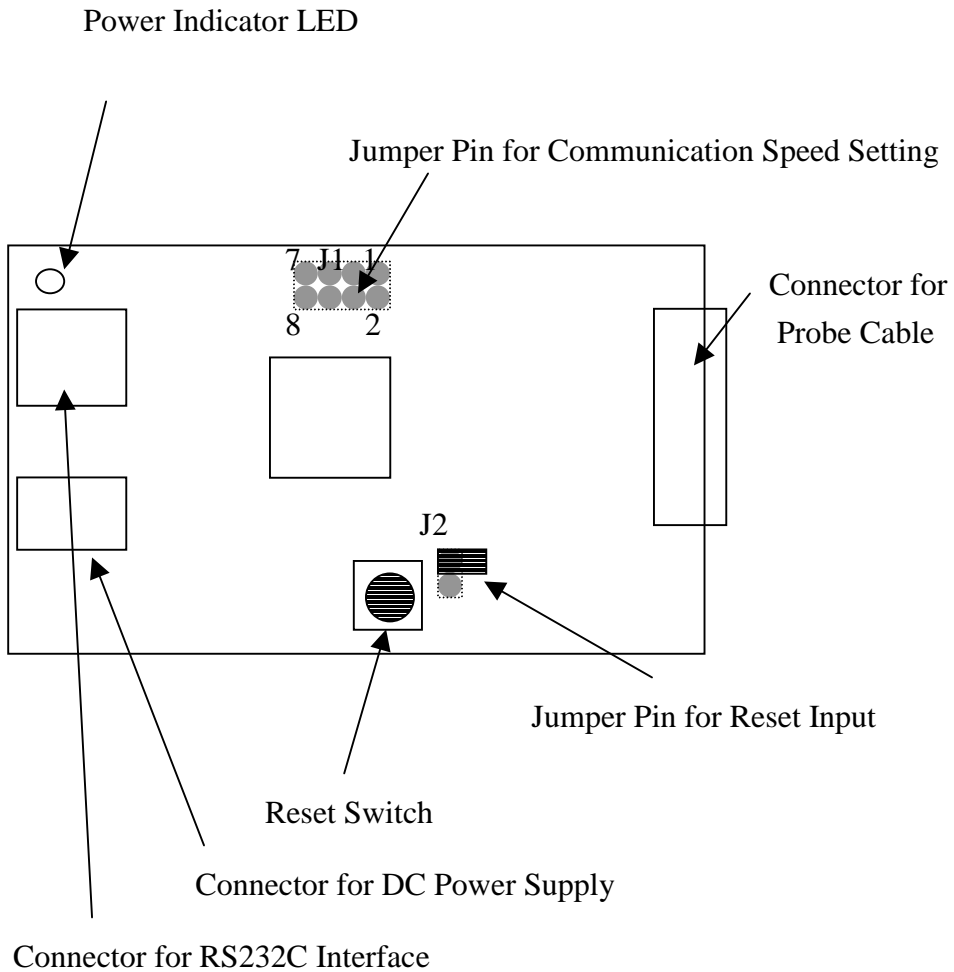
2.3. Error Messages

	Error message	Correspondence
1	The address range is incorrect.	Use up to 5 digits of hexadecimal values 0 to F for the address.
2	Communication error has occurred. Reset the writer.	An error has occurred due to a communication or other error. Either press the writer's reset button or restart the power supply. If many errors occurred, try slowing the communication speed.
3	Write to flash memory has failed.	Check the status of the target CPU. Also, check the harness connection.
4	Read from flash memory has failed.	Check the status of the target CPU. Also, check the harness connection.
5	Verify error has occurred.	Check the status of the target CPU. Also, check the harness connection.
6	Security bit cannot be set.	Check the status of the target CPU. Also, check the harness connection.
7	The file save has failed.	Check whether the file is read-only.
8	The file read has failed.	Check whether the file is damaged.
9	File already exists. Do you want to overwrite?	To save the file with the same name, select "yes."
10	History could not be saved.	Check whether FWM66K.ini is read-only.
11	Not connected to the flash writer.	Check the writer status and connection.
12	There is no response from the writer.	Check the writer status and connection.
13	The device cannot be set. Recheck the device setting.	Check whether the target device is the same as the device currently set.
14	Device parameter file is not found.	Check whether Fwm66k.SET exists in the same folder.

3. PW-10 Flash Memory Writer

3.1. PW-10 Block Diagram

Connectors and switches are mounted on the PW-10 as follows.



3.2. Setting the Communication Speed with Jumper Pin (J1)

This jumper pin is used to set the transfer rate of the RS232C interface.

To make the jumper pin setting valid, press the reset switch (S1) or restart the power supply by removing and then inserting the AC adapter jack.

If a jumper pin is required for settings of 57,600 bps or lower, use the jumper pin connected to J2.

J1 Settings

All open	115,200bps
1-2 short	57,600bps
3-4 short	38,400bps
5-6 short	19,200bps
7-8 short	9,600bps
If the setting uses 2 or more short pins	Proper operation cannot be guaranteed

Notes:

- 1) Lower the communication speed when the communication error occurs.
- 2) The following communication parameters are fixed values.

Bit length	8 bits
Start bit	1 bit
Stop bit	1 bit
Parity bit	None
Flow control	None

3.3. Reset Switch

Pressing this switch activates the PW-10 reset. Normally, this switch is not used.

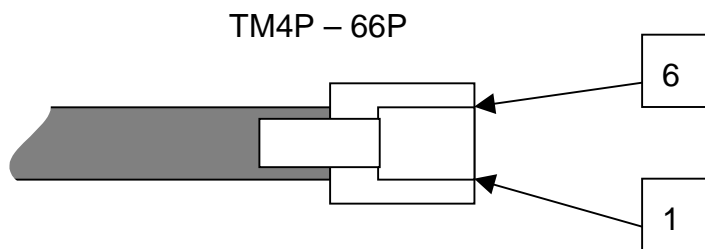
If the J1 jumper pin setting (for setting the communication speed) is changed while power is being supplied to the PW-10, press this switch to reset the PW-10 and make the setting valid.

3.4. Power Indicator LED (LED1)

If power is supplied to the PW-10, the power indicator LED is illuminated in red.
If power is not supplied, the LED is off.

3.5. Connector for RS232C Interface

The RS232C interface that communicates with the PC is equipped with a 6-pin modular female connector. The configuration and signal names of the modular jack unit (TM4P-66P) of the RS232C cable (Model No.: TCS-PWAT), and specifications of the RS232C cable connection are listed below.



Modular Jack Signal Specifications

Pin no.	Signal name	Direction	Note
1	NC		Unused
2	PC_RXD	Transmit	RS232C
3	RTS	Receive	RS232C
4	PC_TXD	Receive	RS232C
5	CTS	Receive	RS232C
6	GND	Ground	GND

RS232C Cable Specifications (Model No.: TCS-PWAT)

Housing	PC-side	Connection	Writer-side
	DSUB 9-pin female	5-core shielded	Hirose TM4P-66P
Pin connection	1, 4, 6	Connected	1
	2	Connected	2
	7	Connected	3
	3	Connected	4
	8	Connected	5
	5	Connected	6
	9	Unconnected	

3.6. Connector for DC Power Supply

This connector is for the DC power supply.

Either connect the accompanying AC adapter, or connect a power supply prepared at the user's side.

If preparing a power supply at the user's side, prepare a supply having the following specifications.

Power supply voltage: 9 to 12V and can supply 300mA or greater

Configuration: positive (+) middle pin; middle pin diameter: 2mm

3.7. Connector (CN2) for Probe Cable

Connector used to connect the user system and this system.

The pin assignment of the probe cable (Model No.: PWTCU-1) is listed below.

Pin No.	Signal name	Direction	Cable color
1	Vpp	10 to 12V output	Yellow
2	Write clock	Output	White
3	Serial data I/O	I/O	Green
4	Target power supply input	Input	Red
5	Ground		Black
6	(Unused)		
7	Reset output	Output	Orange

3.8. Setting Jumper Pin (J2) for Reset Input

Normally, leave this pin open.

This pin is used when modifying the PW-10 control program.

3.9. Recommended Operating Conditions

Parameter	Condition	Rated value
Operating temperature		5 to 40 °C
Humidity		30 to 80 %
DC supply voltage		9 to 12 V
AC supply voltage	When accompanying AC adapter is used	100 to 240 V