FUJITSU

FUJITSU FLASH USB Programmer

Specifications

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USB Programmer
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Ver	date	page	contents
1.00	2008/08/21	---	New
1.01	2008/09/03	---	full-fledged revision
1.02	2008/12/26	---	Abotut hex file setting
1.03	2009/03/02	---	Software bug fix only
1.04	2009/04/03	---	Software change only
1.05	2009/08/28	1	Figure 1-1 “Operable in stand alone mode” were deleted.
		9	Figure 2-2 and its explanation was deleted.
1.06	2010/07/07	1	Table 1-1 was corrected.
		6	Available address information was added.

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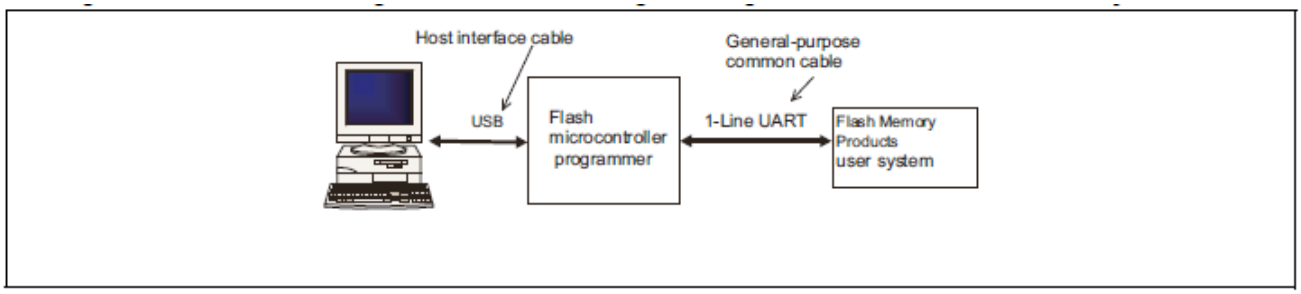
1. Basic Configuration of Serial Programming Connection for Flash Memory Products

Figure 1-1 shows the basic configuration of serial programming connection for flash memory products.

Figure 1-1 Basic Configuration of Serial Programming Connection for Flash Memory Products



(flash microcontroller programmer = BGM adapter)

Table 1-1 Pins Used for Serial Onboard Programming

Pin	Function	Description
VCC	Power supply voltage supply pin	The write voltage is supplied from the user system.
VSS	GND pin	It is shared with the GND of the BGM adapter.
C	Capacitor connection	Connect it to a bypass capacitor and then to the ground.
RSTX	Reset	The RSTX pin is pulled up to VCC by the BGM adapter during the normal operation. The BGM adapter supplies 10 V directly to the RSTX pin during the flash erase/program operation.
DBG	1-line UART setting serial write mode	The DBG pin provides 1-line UART communication with the BGM adapter.Serial write mode is set if voltage is supplied to the DBG pin and the VCC pin at specific timings.

- Oscillation Clock Frequency

  The UART clock is provided by the internal CR clock. The UART baud rate needs to be set to 31250 bps or 62500 bps depending on the flash memory operation to be executed.

2. Example of Serial Programming Connection

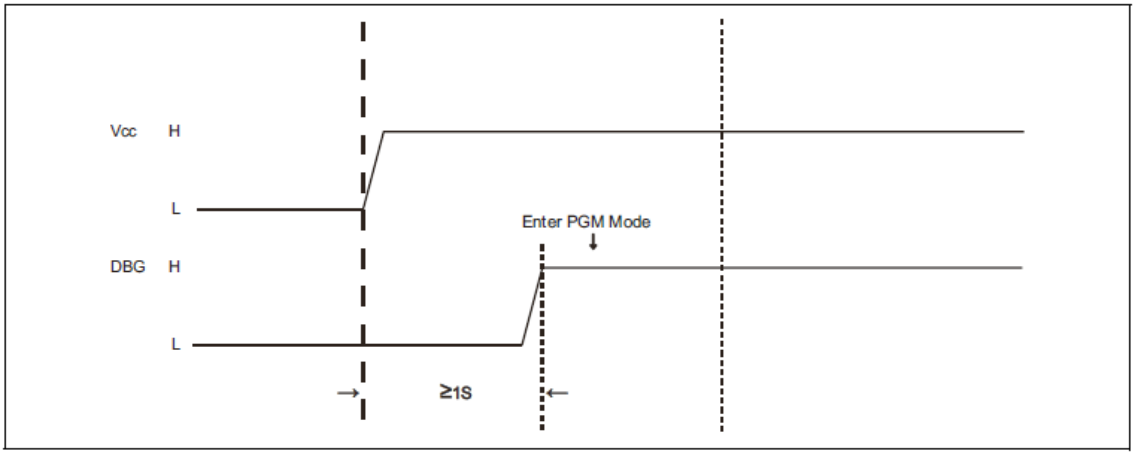
The microcontroller enters the PGM mode at the following timing.

- MCU Entering PGM mode

  The microcontroller enters the PGM mode at the following timing.

  The BGM adapter controls the DBG pin according to VCC input.

Figure 2-1 Timing Diagram



3. PROGRAMMER FUNCTIONS

This programmer automatically performs erasing, programming, reading, blank checking and a set of commands for flash memory at one time.

- Main dialog box

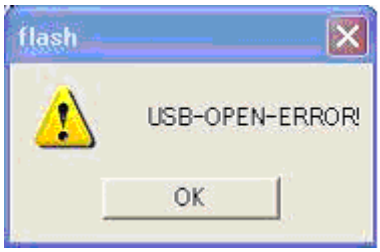
  Programmer software is started to open the dialog box as shown below.



- Overview of operating procedure

  First, complete setting of the user system (microcontroller board) that data is programmed.

[If the following error dialogs are displayed]



[Other messages]

ERROR LOAD_ADPT_ENV

LOAD_ADPT_ENV TIME OUT!!

ERROR CHG_ADPT_MODE

CHG_ADPT_MODE TIME OUT!!

TRIM_CR TIME OUT!!

ERROR TRIM_CR

ERROR START_EML

START_EML TIME OUT!!

ERROR SET_CLK

SET_CLK TIME OUT!!

ERROR INIT_EML

INIT_EML TIME OUT!!

[Explanation of an error dialog]

BGM adaptor is not connected correctly.
Or power supply is not carried out, it is displayed on a target board.

[Check]

Please check connection.

3-1. Erasing and Programming

This section explains how to specify ***Hex File*** and the processing and operation performed when the ***[Erase]***, ***[Blank Check]***, ***[Program]***, ***[Read & Compare]***, ***[Copy]*** and ***[Full Operation (E+B+P+R)]*** buttons are clicked.



(a) ***Hex File***: Select the file to be programmed to flash memory

Specify the Motorola-S format file to be programmed to flash memory in the microcontroller. Drag and drop the file directly from Explorer or click the ***[Open]*** button to open the file select window.

Hex File must be specified to execute ***[Program]***, ***[Read & Compare]*** and ***[Full Operation (E+B+P+R)]***. Since it is decoded at the head of these processings each time, even if the specified Motorola S format file changes specification of a file just before processing, it is OK.

The security function of the chip is effectively set when writing it when the security function is effectively set in the specified Motorola S format file (Full Operation or Program). At this time, the following commands do not operate correctly.

- Read & Compare
- Copy
- Program

(b) ***Erase***: Erase all flash memory areas

All flash memory must be in the erase state (0xff) when programming a new program to it. By pushing this button, a chip erase command is published to FLASH and elimination is performed.

In addition, a blank check does not perform this command.

(c) ***Blank Check***: Check that all flash memory areas are blank

This button is clicked to check that all flash memory is in the erase state (0xff).

(d) ***Program***: Program data to flash memory

This button is clicked to program the Motorola-S format file specified in ***Hex File*** to flash memory in the microcontroller.

(e) ***Read & Compare***: Compare ***Hex File*** with data in flash memory in microcontroller

This button is clicked to compare data in the Motorola-S format file specified in ***Hex File*** with data in flash memory in the microcontroller.

(f) ***Copy***: Save data in flash memory in microcontroller to file

This button is clicked to read data from flash memory integrated into the microcontroller and save it as an Motorola-S format file.

A preservation place folder is specified, and if a file name is inputted and ***[Save]*** button is pushed, processing will begin.

(g) ***Full Operation (E+B+P+R)***: Automatic programming

Operation to ***[Erase]*** to ***[Read & Compare]*** is performed by package.

In the case of a blank chip, processing is performed in order of ***[Blankcheck]***, ***[Program]***.and ***[Read & Compare]*** When it is not a blank chip, processing is performed in order of ***[Blankcheck]***, ***[Erase]***, ***[Blankcheck]***, ***[Program]***.and ***[Read & Compare]***.

3-2. Motorola-S format decoder specification

Before programming, Motorola-S format Decoder of programmer changes Motorola S format data into binary data, according to the following specification.

(a) The decoder does not error when overlap of addresses occurs.

The decoder does not error about overlap of address. If user writes a data on an address which was already written another data before, former data is overwritten by new data.

(b) Available address

If user writes a data beyond an address range of FLASH memory, programming results in an error.

But if an address range of whole FLASH memory does not continue, decoder does not give an error and programming procedure goes on. For example, user can program a FLASH memory which starts an address H'1000 and ends an address H'FFFF and does not have memory function between H'2000-H'7FFF even if user tries to program on such eclipse address range.

(c) About the error detected by the decoder.

The error detected by the decoder is the following (1)-(4). When these errors are detected, processing is interrupted by the decoder. Then the line number and the cause of the error are displayed in the dialog window.

(1) file error

The start of the line is not "S".

(2) S-format error

The start of the line is not "S0","S1","S2","S3","S5","S7","S8" and "S9".

(3) decode error

- There are character except "0123456789ABCDEF".("S" is excluded. See (1) and (2).) And, the small letter "abcdef" cannot be used.
- The LENGTH data is different from the length of an actual data row.
- The SUM data is different.

(4) address error

There is data besides the FLASH area. (See b.Available address)

(d) Other detail

The decoder skips a line. even if the line is contained only new-line code NL and programming goes on.

A line beginning with "S0","S5","S7","S8" and "S9" is ignored and decoder skips such lines in S format file without error.

4. Recommended requirements

PC:PC with 500 megahertz or higher processor clock speed recommended.

Intel Pentium/Celeron family, or AMD K6/Athlon/Duron family, or compatible processor recommended.

OS:Microsoft Windows 2000 with Service Pack 4,Windows XP Professional with Service Pack 3

Memory:192 megabytes (MB) of RAM or higher recommended

5. OTHERS

(A) Troubleshooting

CASE1: If the response from this program is lost

Please re-start a target.

Please once remove BGM adapter from PC.

Please re-start program.

CASE2: It cannot write in to FLASH.

If data is written in FLASH, it cannot write in normally.

Please perform writing after Erase Command.

Please also refer to the error message list.

CASE3: NG occurs by Read & Compare

The writing to FLASH may not be performed normally.

Please Download Command and Erase Command.

Please also refer to the error message list.

(B) about error messages

Many error messages are displayed owing to the setting mistake of hardware and software.
the case where an error is outputted in addition even if it checks these in detail, please tell the person in charge of software acquisition origin a detailed condition.

No. 011 Communication error
Cause: The unusual command response was received.
Action: Please reperform by improving connection and a setup of hardware.

No. 018 Erase error
Cause: The response at the time of erase processing is unusual. There is the possibility that a chip is poor.
Action: Please improve a setup of hardware or exchange chips.

No. 101 Please set "hex file"
Cause: Hex file not set
Action: Set hex file in the dialog box.

6. CAUTIONS

The PC programming software has the possibility of receiving the influence by the communications cable, the outside environment, and the PC.

Therefore, please evaluate it enough when you use the software.

Please use programming systems of programmer venders when you write two or more devices at the same time.

Please don't use the USB HUB between PC and MCU.

The specifications of the product are subject to change without notice.