

Control Module Instruction Manual

**Control Module
For
Flash Microcomputer Programmer
NET IMPRESS**

FH807

**Target Microcomputer: H8/3048F
(HD64F3048)**

DTS INSIGHT CORPORATION

FH807 (H8/3048F)
Instruction Manual
No. M2380VC-01

Revision History

Edition	Date of issue	Description
First Edition	November 13, 2003	Initial publication

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Printed in Japan

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1 Overview

The FH807 is the control module for the NET IMPRESS, the advanced on-board flash microcomputer programmer.

The control module FH807 supports programming the flash ROM of Renesas H8/3048F and other equivalent flash microcomputers that have the same programming algorithm and protocol as Renesas H8/3048F.

The control module FH807 consists of the Compact Flash Card containing the programmer control software.

The free area of the Compact Flash Card can be used as the DOS file area to temporarily store your object file created on the host computer.

The control module FH807 is available in four types for your choice: /P64, /D64, /D256 and /D512. Choose an appropriate type according to capacity of the Compact Flash Card. /P64 supports up to 64Mbyte of the Compact Flash Card, while /D64 supports up to 64Mbyte of the Compact Flash Card, /D256 for up to 256Mbyte and /D512 for up to 512Mbyte.

With the D type, you can switch between the control module folders.

The probe cable are available in four types as the standard; AZ410, AZ411, AZ412 and AZ413. For probe cables of other types, contact your local distributor or us.

NOTES:

With the control module FH807, you can program the target microcomputer and other equivalent flash microcomputers that have the same programming algorithm and protocol as the target microcomputer. When you use this control module for microcomputers other than the target microcomputer and its equivalent microcomputers, you need to modify some of parameters in the control module using the optional remote controller (AZ490). For modifying parameters, see Chapter 5 of this manual.

The control module FH807 is designed to support programming microcomputers of a wide range and you can program a microcomputer of different programming voltage (V_{pp}) by changing parameters. Be sure to have good understanding on signal connection by carefully reading the Section 4 "Connecting to the Target System and Connector" before you use the control module.

Check once again with the below listed checkpoints if your microcomputer is supported by the control module FH807, or if your microcomputer has the same algorithm and protocol as those of the target microcomputer.

- (1) Is a programming method of your microcomputer same as the one of the target microcomputer?
- (2) Are the programming voltage (V_{pp}) and write control algorithm of your microcomputer the same as those of the target microcomputer?
- (3) Is the communication protocol for programming control of your microcomputer the same as the one of the target microcomputer?
- (4) For a microcomputer that uses the RAM loading type write control program, does it have an appropriate write control program? Also, are the specifications of the write control program same as those of the target microcomputer?

Contact your local distributor or us for any questions or unclear points.

CAUTION:

Using the control module that does not support the programming method of your microcomputer would lead to serious damage to your microcomputer and target system.

2 Specifications

2.1 Target Microcomputer and Specifications

For any items that are not specifically described here, the standard specifications of the NET IMPRESS are applied.

Control Module	FH807
Target Microcomputer	H8/3048F
User Flash Memory Capacity	128Kbyte
User Flash Memory Address	#000000 to #01FFFF
Programming Voltage (Vpp)	12.0V \pm 0.6V *1
Default	12.0V
Vccp (Minimum voltage during programming)	4.5V
Object File Format	Intel HEX Motorola S Binary
Default	Motorola S
Target Interface	UART (Asynchronous communication) Interface 2400/4800/9600/19200/31250/38400/62500/76800/10400bps <input type="checkbox"/> MSB first <input checked="" type="checkbox"/> LSB first CSI (Synchronous communication) Interface 62.5Kbps/125Kbps/250Kbps/500Kbps/850Kbps/1.25Mbps <input type="checkbox"/> MSB first <input checked="" type="checkbox"/> LSB first
Data Transfer Format between Flash Microcomputer Programmer and Target System	Binary
Memory status when erased	#FF
MCU Clock during programming	1MHz to 16MHz

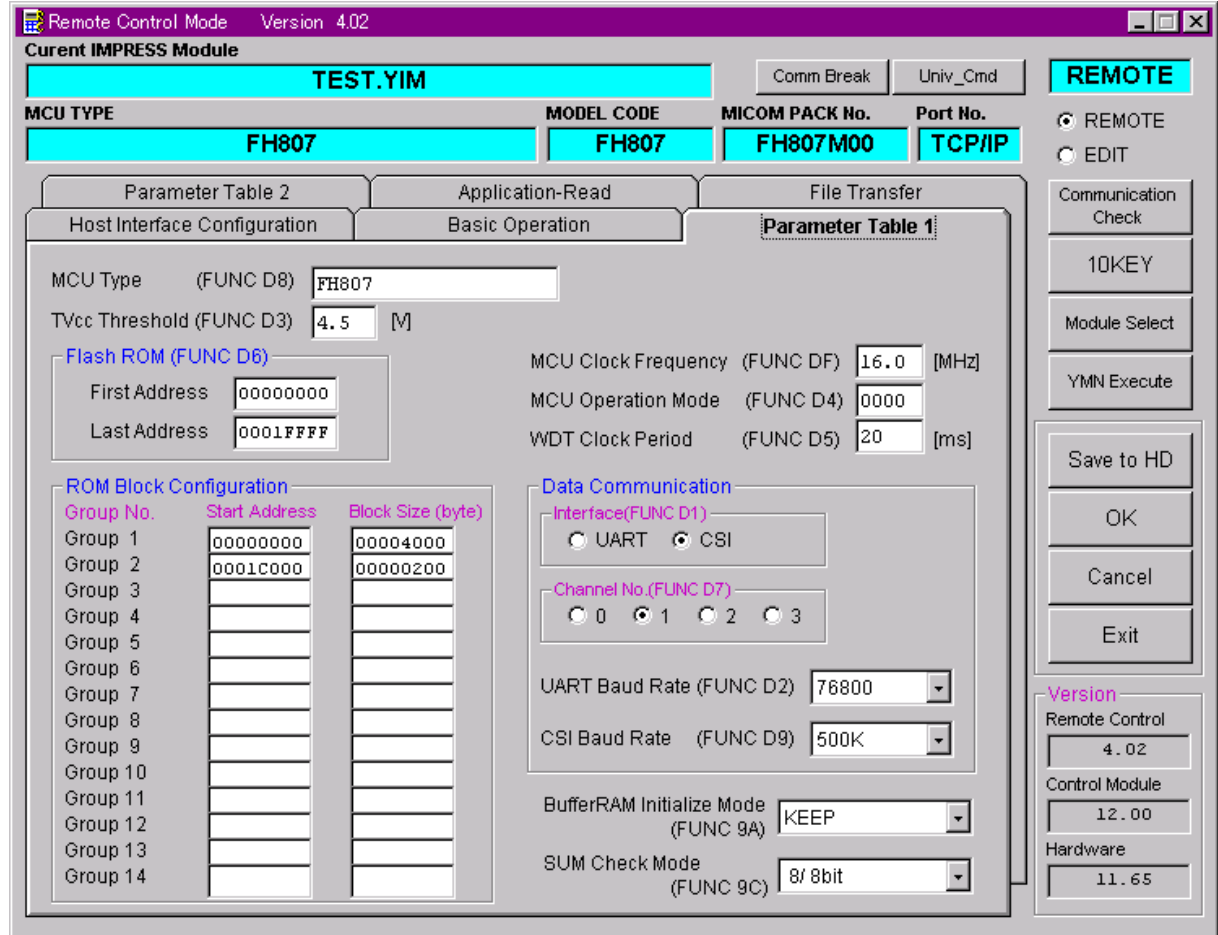
*1 When the Device Functions are not executed, the Vpp output (from the NET IMPRESS) is in the high-impedance state.

2.2 Setting Up Specific Parameters

Make the initial settings by using the AZ490, the remote controller running on Windows. For how to use the AZ490, see the AZ490 Instruction Manual.

2.2.1 Parameter Table1 Tab

Set up the parameters for your target microcomputer with the Parameter Table1 tab



(1) TVcc threshold [FUNC D 3]

Set up a value about 10% lower than the minimum operation voltage of the target microcomputer. The NET IMPRESS senses the operation voltage (TVcc) of the target microcomputer and executes the Device Function when the TVcc gets higher than the specified value.

For setting up TVcc threshold at the side of the NET IMPRESS, see the NET IMPRESS Instruction Manual, Section 5. 4. 5 “TVcc Threshold Setting”.

(2) Flash ROM (First Address, Last Address) [FUNC D6]

Set up the flash memory area (First Address, Last Address) embedded in the microcomputer.

You cannot set up flash ROM for the NET IMPRESS and this is only for display.

For details, see the NET IMPRESS Instruction Manual, Section 5. 4. 8 “Flash Memory Area Display”.

(3) ROM Block Configuration

Set up the block configuration of flash memory.

Block Data Table:

The block data table consists of information of three kinds: Group No., Start Address and Block Size.

Group No: You can specify up to 14 groups (Group1 to Group 14). A block group consists of memory blocks that have the same one block size on linear address. Group number is determined by the address order starting from lower address.

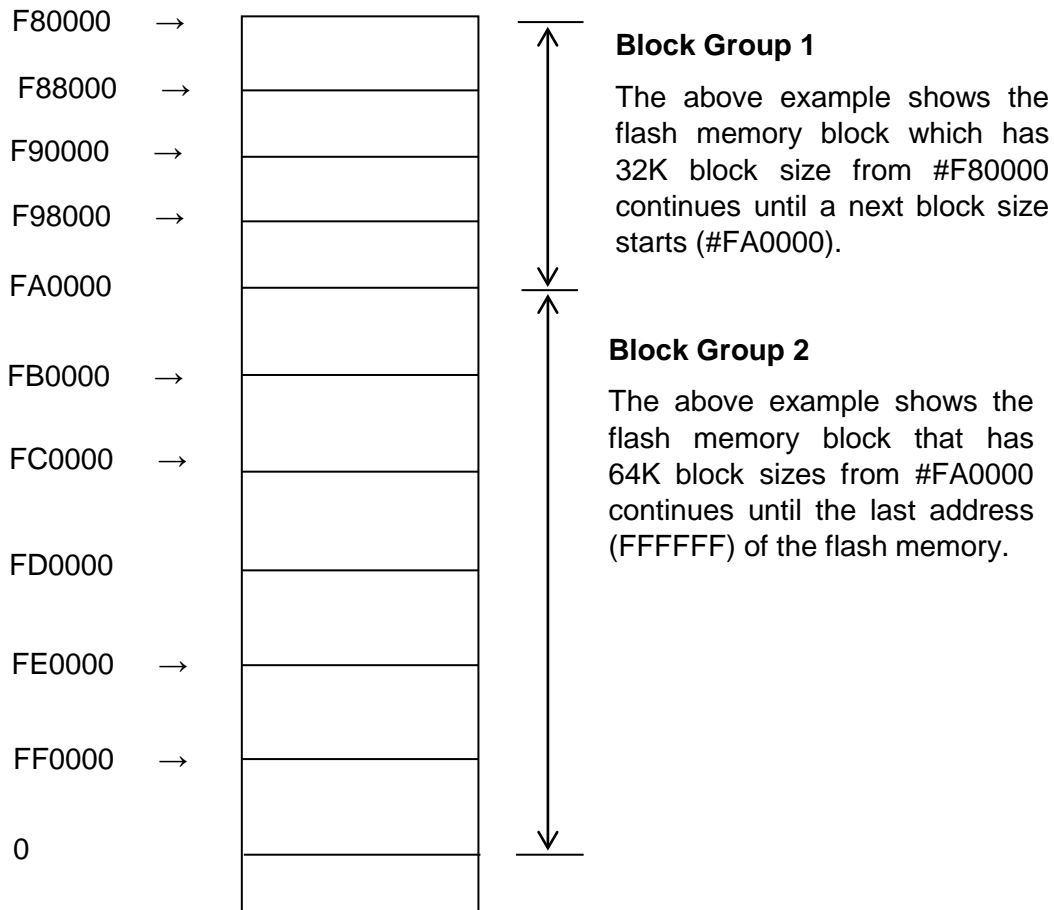
Start Address: A starting address of a block group.
The flash memory of the size specified in the Block Size sequentially continues, forming one block group.

Block Size: The NET IMPRESS understands that the flash memory blocks of a size specified in the Block Size are placed sequentially until a next block group address.

Example:

Group No.	Start Address	Block Size
1	#00F80000	#00008000
2	#00FA0000	#00010000
3	#00000000	#00000000

Block Start Address



(4) MCU Clock Frequency [FUNC D F]

Set up a clock frequency for the target microcomputer in the range of 1.0MHz to 99.9MHz. Set up a value in a unit of 0.1MHz, which should be a maximum value smaller than the frequency you are using. For example, if you are using the frequency 10.15MHz, set up 10.1MHz.

For setting up operation frequency with the NET IMPRESS, see the NET IMPRESS Instruction Manual, Section 5.4.13 "Setting MCU Operation Frequency".

(5) MCU Operation Mode [FUNC D 4]

Set up an operation mode specific to the MPU.

For the FH807, this setting is not required.

(6) WDT Clock Period [FUNC D 5]

The NET IMPRESS has the function to output periodic clock pulse during programming. To use this function, you need to set up the WDT Clock Period.

The periodic clock pulse is output from the WDT signal (No. 18 pin) that is listed in the target probe signal list of Section 4.1 "Signal List".

For setting up the WDT signal with the NET IMPRESS, see the NET IMPRESS Instruction Manual, Section 5.4.7 "Setting Watch Dog Timer".

(7) Data Communication

This is the field to make communication settings between the NET IMPRESS and the target microcomputer. For the FH807, make the settings as follows.

- **Communication Channel [FUNC D 1]**

Select either UART (asynchronous communication) or SCI (synchronous communication). For setting up a communication method with the NET IMPRESS, see the NET IMPRESS Instruction Manual, Section 5. 4. 2. "Communication Channel Setting".

- **Channel No. [FUNC D 7]**

Select "1". For setting up communication channels with the NET IMPRESS, see the NET IMPRESS Instruction Manual, Section 5. 4. 9. "Communication Channel Number Setting".

- **UART Baud Rate [FUNC D 2]**

This is not to be used.

For setting up the UART baud rate with the NET IMPRESS, see the NET IMPRESS Instruction Manual, Section 5. 4. 3. "UART Baud Rate Setting".

- **CSI Baud Rate [FUNC D 9]**

Set up 1.25Mbps as a communication speed for the CSI communication.

For setting up the CSI Baud Rate with the NET IMPRESS, see the NET IMPRESS Instruction Manual, Section 5. 4. 4. "CSI Baud Rate Setting".

(8) Additional Program, Block Alignment

These are not user-specified items and it is not necessary to change them.

(9) MCU Type [FUNC D 8]

The setting here will be displayed in the MCU TYPE field located at the top left of the Remote Control Mode window and the NET IMPRESS main unit.

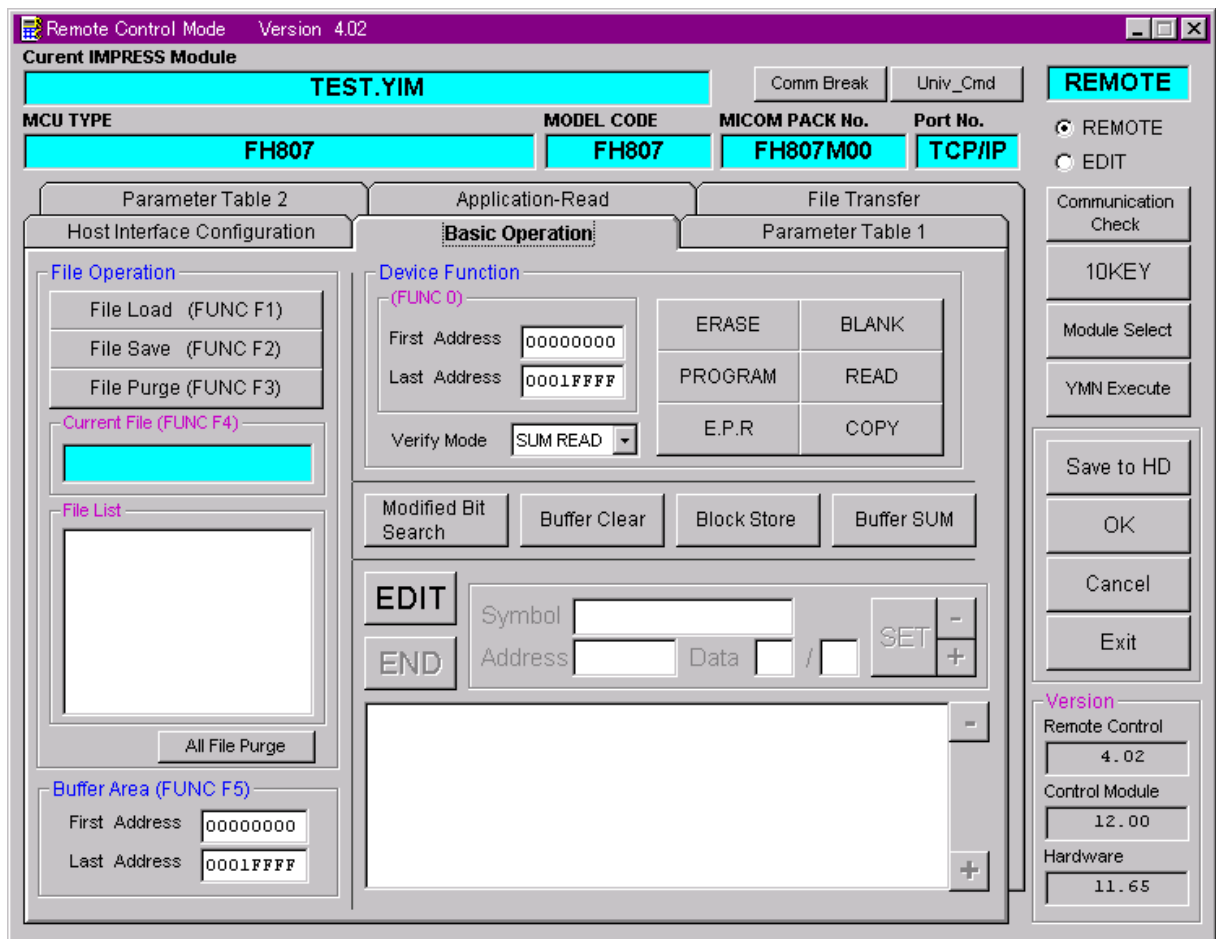
You can type enter any characters up to 16 characters such as microcomputer's model name or device name you are using.

(10) OK

By clicking this "OK" button, you can send the settings on the Parameter Table 1 tab into the control module. Be sure to click the OK button before moving to other tabs so that you can make the changes of (1) – (9) valid. If you do not click the OK button, the changes will not be sent to the control module.

2.2.2 Basic Operation Tab

With the Basic Operation tab, you have the three features to work with as described below.



(1) Device Function [FUNC 0]

Set up a target area to execute the Device Functions such as reading, programming, etc.

Normally, set up the same area as those you set up for the Flash ROM as described in the Section 2.2.1 (2).

The Device Function Address [FUNC 0] is automatically aligned with the block boundary address of the flash memory by its specified address as shown in Figure 2-1. The Device Functions will be executed to thus automatically aligned area.

(2) Buffer Area [FUNC F 5]

Set up an area to save and load the data on the buffer memory of the NET IMPRESS (when you have a binary file). Normally, set the same areas as those for the Flash ROM as described in the Section 2.2.1 (2).

Figure 2-2 shows how the Device Function [FUNC 0], Buffer Area [FUNC F 5] and Flash ROM Area [FUNC D 6] relate with each other.

(3) OK

Click this “OK” button to send the settings on the Basic Operation tab into the control module. When you made changes to the above (1) and (2) settings, be sure to click the OK button before moving to other tabs. If you do not click the OK button, the changes will not be reflected.

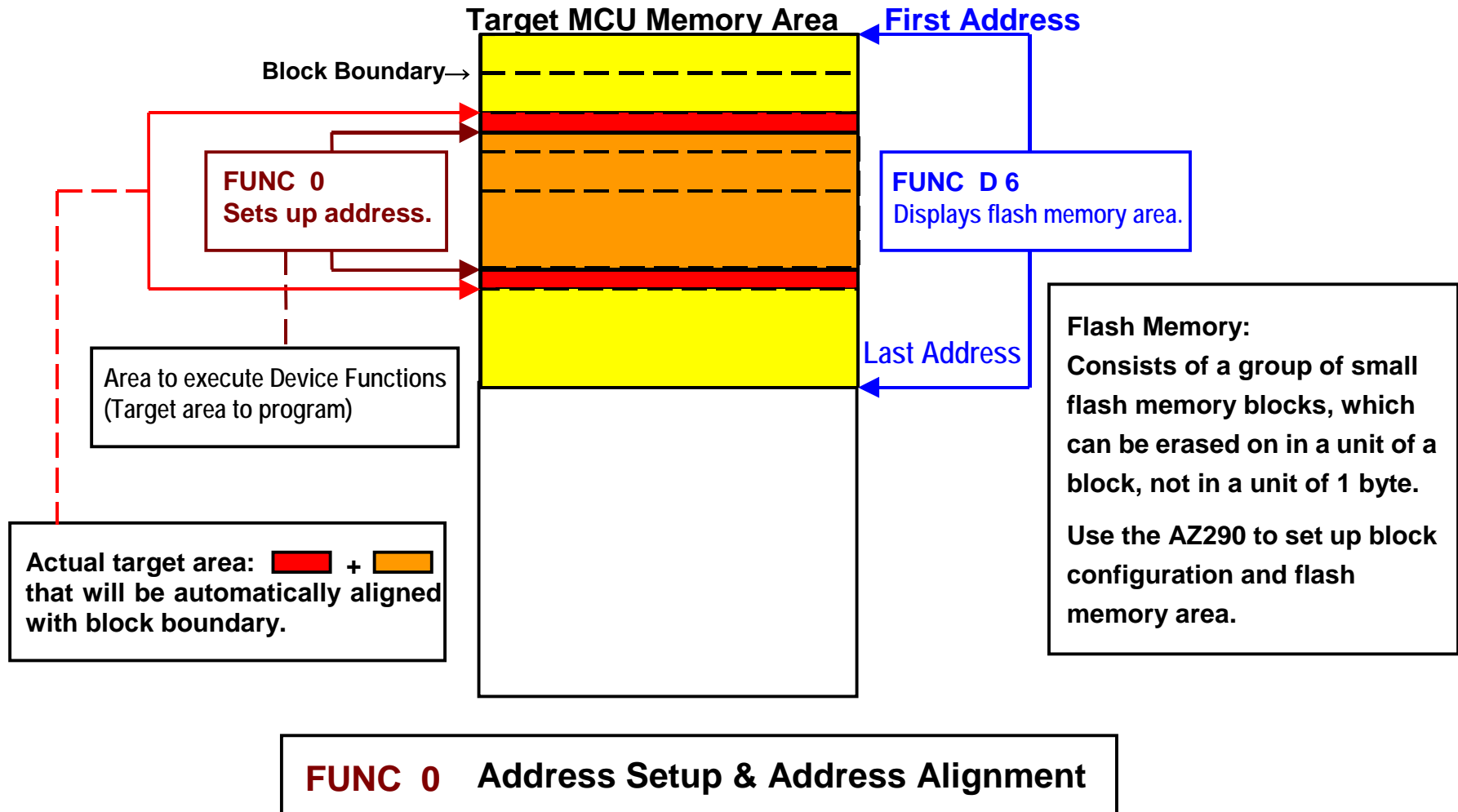


Figure 2-1

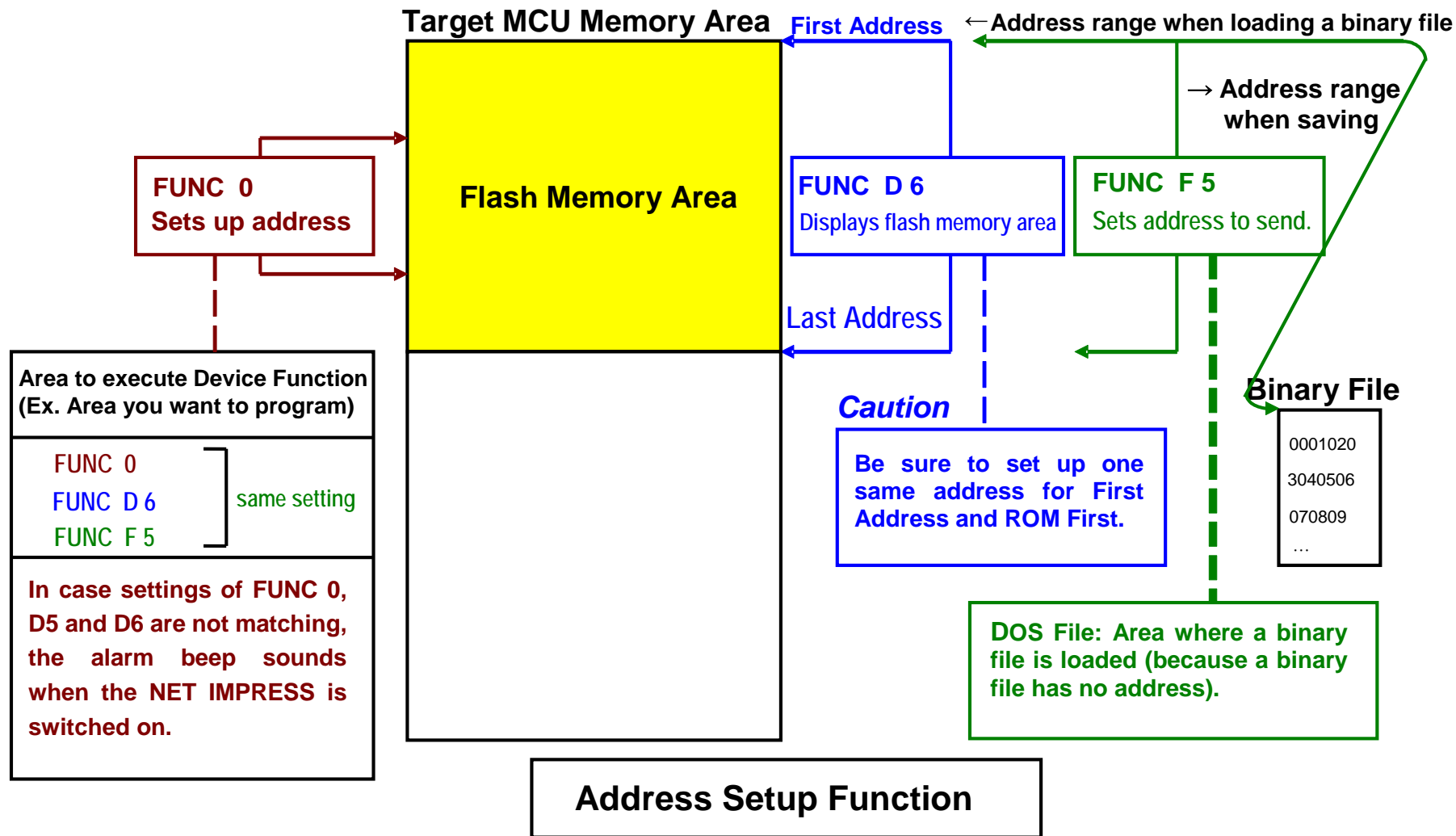


Figure 2- 2

2.2.3 Parameter Table 2 Tab

The Parameter Table 2 tab contains the parameters specific to the microcomputer. Therefore, be sure not to change any value in this window. In case you need to change the settings, be sure to contact our support center in advance.

Remote Control Mode Version 4.02

Current IMPRESS Module

TEST.YIM

MCU TYPE: FH807 MODEL CODE: FH807 MICOM PACK No.: FH807M00 Port No.: TCP/IP

Host Interface Configuration Basic Operation Parameter Table 1

Parameter Table 2 Application-Read File Transfer

Specific Parameter for this Control Module (FUNC 8X)

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0C0:	00	00	04	00	00	00	00	00	13	88	01	00	F3	BF	3B	00
0D0:	00	00	00	00	00	00	00	00	00	00	00	00	02	20	00	02
0E0:	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0F0:	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
140:	00	64	F5	3F	5B	00	00	00	00	00	00	00	00	00	00	00

- WARNING -

These parameter should not be changed.
Contact to YDC in details.

Version

Remote Control: 4.02

Control Module: 12.00

Hardware: 11.65

2.3 Device Functions and Their Operation

The table below lists the operations to the flash memory that are executed when the NET IMPRESS starts the Device Functions.

Device Function		Erase	Blank Check	Program	Read	E.P.R	Copy
Target Memory Area	A partial areas of flash memory by [FUNC 0] command (with Block Alignment)	Not executed	Not executed	Executed	Executed	Executed	Not executed
	Entire area of flash memory by [FUNC D6] command	Not executed	Not executed	Executed	Executed	Executed	Executed
Operation to Flash Memory		<input type="checkbox"/> Erase <input type="checkbox"/> Blank	<input type="checkbox"/> Blank	<input checked="" type="checkbox"/> Erase *3 <input type="checkbox"/> Blank <input checked="" type="checkbox"/> Program <input checked="" type="checkbox"/> Read *1	<input checked="" type="checkbox"/> Read *2	<input checked="" type="checkbox"/> Erase *3 <input type="checkbox"/> Blank <input checked="" type="checkbox"/> Program <input checked="" type="checkbox"/> Read *1	<input checked="" type="checkbox"/> Copy *2

*1: For the Read Verify operation that is executed at a time of the Device Functions E.P.R and Program, the Read Verify set up with the Read Verify mode (FUNC 99) is executed. To set up the Read mode with the NET IMPRESS, see the NET IMPRESS Instruction Manual, Section 5. 4. 19. "Read Mode Switchover".

(1) SUM READ VERIFY : The NET IMPRESS reads a sum value of an area where the device function Program is executed, and compares it with a SUM value of programmed data that is previously transferred when the device function Program is executed. (A sum value of an area where the device function Program is executed is calculated by adding 8-bit and 16-bit, while ignoring overflow.)

(2) FULL READ VERIFY : The NET IMPRESS resends data of an area where the device function Program is executed and compares with programmed data when executing the device function Program.

*2: The device functions Read and Copy are executed using the Application Read function.

*3: The Erase operation to flash memory erases the whole areas whatever target memory area is specified.

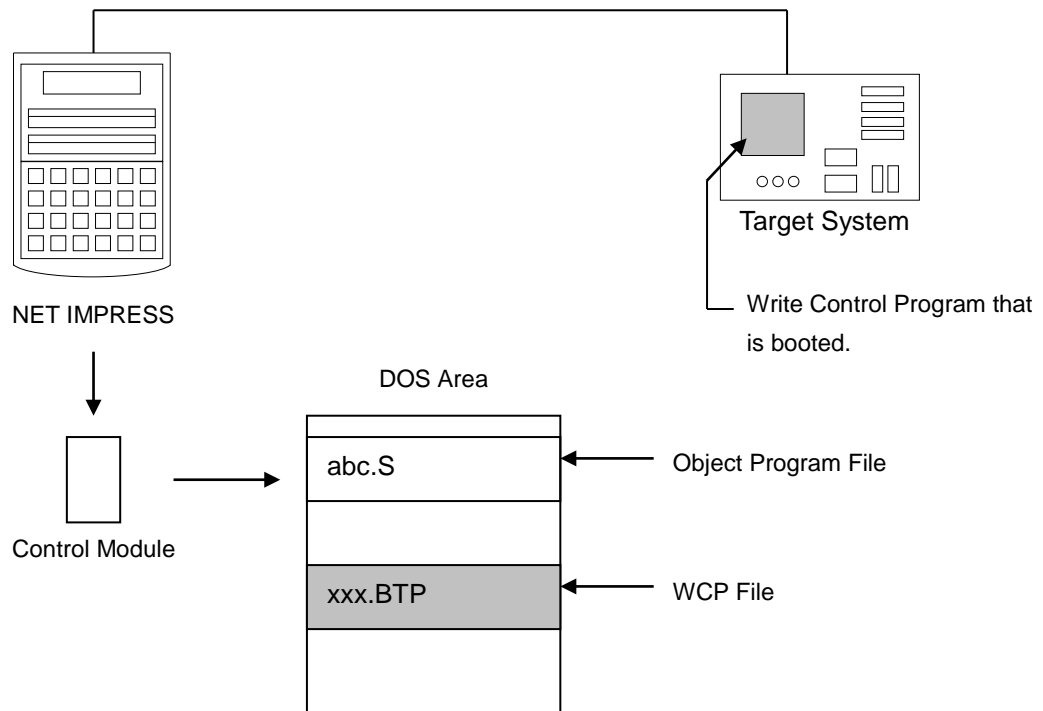
3 Copying Write Control Program into Microcomputer

3.1 Overview

With the control module FH807, the write control program (WCP) is sent to the target microcomputer to run on it before execution of the Device Functions. The microcomputer executes the programming sequence under this write control program.

Copy the write control program into the DOS area of the control module and save it under a file name with extension “.BTP” in advance.

Only one file with extension “.BTP” can be placed in the DOS area of the control module. You cannot place multiple files with extension “.BTP” or use the control module without placing a file with extension “.BTP”.



3.2 Copying the Write Control Program File

From the Utility Assy provided with the control module, select an appropriate write control program that has conditions matching with the target microcomputer.

To save the file with “.BTP” extension in the DOS area of the control module, follow the steps below.

- (1) Set this control module in a personal computer that has a PCMCIA card slot. Make sure that the PC card driver has been properly installed in advance. For how to install the PC card driver, see our Web site at the following URL:

http://www.ydc.co.jp/micom/index_E.htm

See the Q & A page on the flash microcomputer programmer.

- (2) Copy the write control program (xxx. BTP) from the Utility Assy into the DOS area of the FH807 control module.

4 Connecting to the Target System and Connector

4.1 Signal List

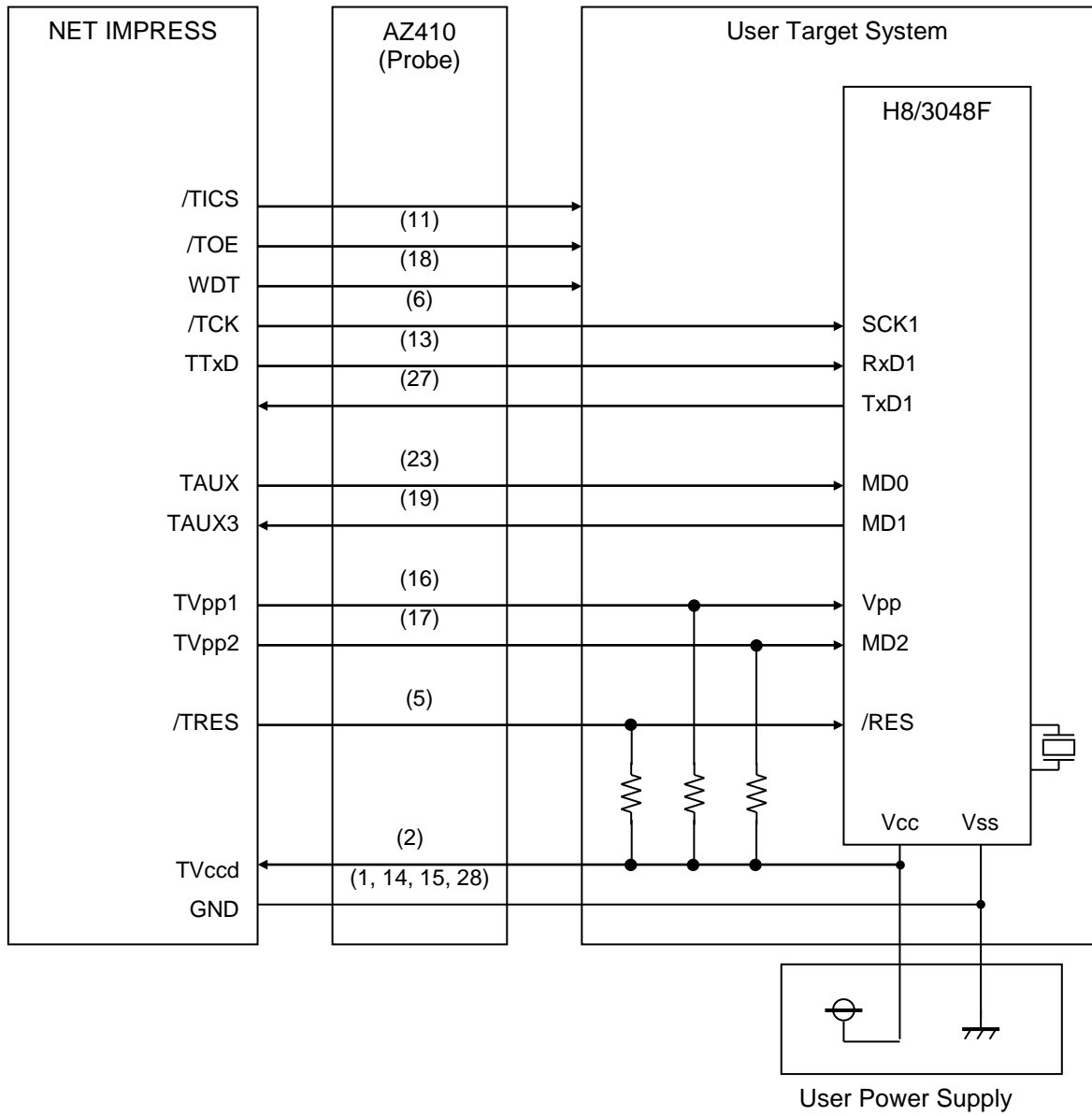
The table below lists signal example at the side of the target probe connector when using the control module FH807.

CPU Signal	NET IMPRESS Standard Signal				CPU Signal
GND	GND	15	1	GND	GND
Vpp	TVpp1	16	2	TVccd	User Vcc
MD2	TVpp2	17	3	Vcc	
	WDT	18	4	TRES	
MD1	TAUX3 TVpp1c	19	5	/TRES	/RESET
Reserved	TAUX4 TVpp2c	20	6	TCK	SCK1
	Reserved	21	7	Reserved	
	Reserved	22	8	Reserved	
MD0	TAUX	23	9	TAUX2 (TRW)	Reserved
BUSY	TBUSY	24	10	/TICS	
	TI0	25	11	TAUX5 (/TOE)	
	TVccs	26	12	TMODE	Reserved
TxD1	TRxD	27	13	TTxD	RxD1
GND	GND	28	14	GND	GND

Tabl4-1: Target Probe Signal List (FH807)

- Be sure to connect the signals marked with “○” to the target system.
- The signals in dotted parentheses ○ are also controlled for output. Connect them only when necessary.
- Though the signals listed as “reserved” are not to be used, they are being controlled. Therefore, be sure not to connect them to a circuit of the target system.

4.2 Model Connection to Target System



(1) For the signals defined as shared terminals, multiplexing circuit of these signals must be provided to the user system.

/TICS signal is asserted only when the NET IMPRESS is performing the Device Functions.

/TICS signal multiplexes the signals connected to these shared terminals.

Multiplexing circuits are not required for a target system where these signals for write control are defined as the control signals for the flash microcomputer.

Inserting the multiplexing circuit into the user system can produce the same conditions with a state where the NET IMPRESS is not connected (i.e., the connector is unplugged) while /TICS signal is being negated (when the Device Functions are not executed).

(2) WDT Signal:

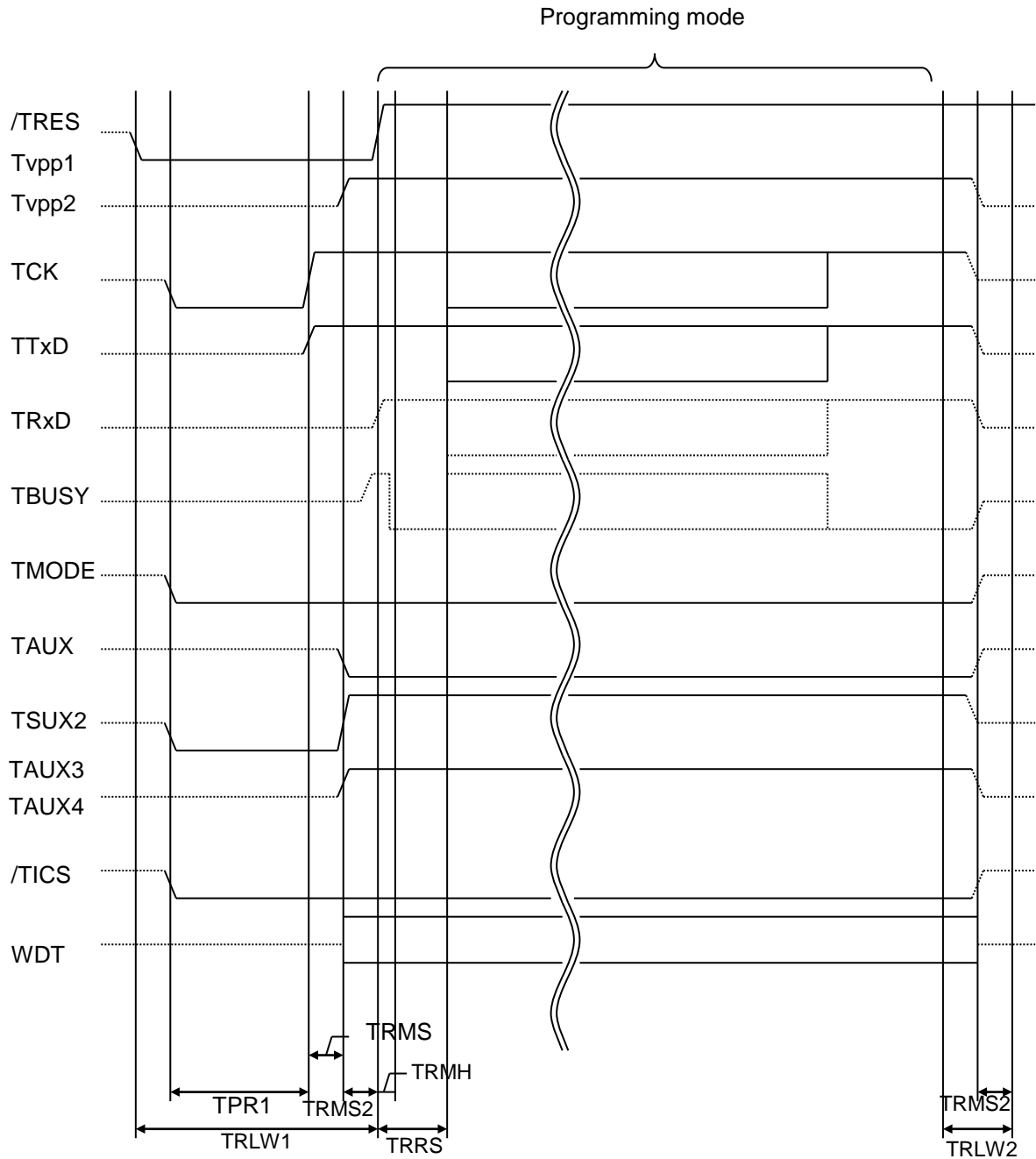
The clock signal defined with the WDT Clock Period [FUNC D 5] is generated from WDT signal terminal by the NET IMPRESS.

Connect this signal to the user circuit that requires the appropriate clock signal when programming the flash memory.

(3) TRES Signal:

The NET IMPRESS is provided with /TRES signal in the standard probe, which is an open collector type output so that it can make wired-or connection in the target system and be connected to /RESET signal of your microcomputer using the user circuit. /TRES signal can be used when the target system requires a reset signal of positive logic. TRES signal is a totem pole output signal.

4.3 Waveform of Control Signal



NET IMPRESS Specification	
TRLW1	350 ms (Minimum)
TRLW2	100 ms (Minimum)
TPR1	200 ms (Minimum)
TRMS1	50 ms (Minimum)
TRMS2	50 ms (Minimum)
TRMH	5 ms (Minimum)
TRRS	100 ms (Minimum)

*1: The dotted line “ ” indicates HIZ state.

- (1) Power on the NET IMPRESS first and the target system next.
- (2) /TICS signal is asserted by execution of the program command, and communication channel for programming is connected to the NET IMPRESS on the target system. (Multiplexing with this /TICS signal is not required for a system where communication channel and related signals for programming are exclusively used by the NET IMPRESS, independently from other user circuit.)
- (3) The NET IMPRESS asserts a reset signal to pull the target microcomputer into the programming mode.
- (4) TVpp is raised to the specified voltage.
- (5) The programming mode that is started by negating a reset signal starts communicating with the NET IMPRESS using a specified communication circuit.
Channels specified in the MPU Clock Frequency [FUNC D F] in advance will be selected for communication circuit.
- (6) When programming is finished, applying Vpp ends automatically.
- (7) The NET IMPRESS also negates /TICS signal. While /TRES signal is asserted, WDT signal continues to generate periodic pulse signal (the clock to input to a watchdog timer of the target system).

4.4 Probe

As the standard probes, four types of the probe (AZ410, AZ411, AZ412 and AZ413) are available for an additional order. Please contact us or your local distributor for ordering the probe.

For the connection diagram of each probe, see the NET IMPRESS Instruction Manual, the Section 8. 6. "Target Interface", or our Web site at the following URL:

<http://www.ydc.co.jp/micom/product/probe.htm>.

/AD (Pull-up Resistor) Assembly (Optional)

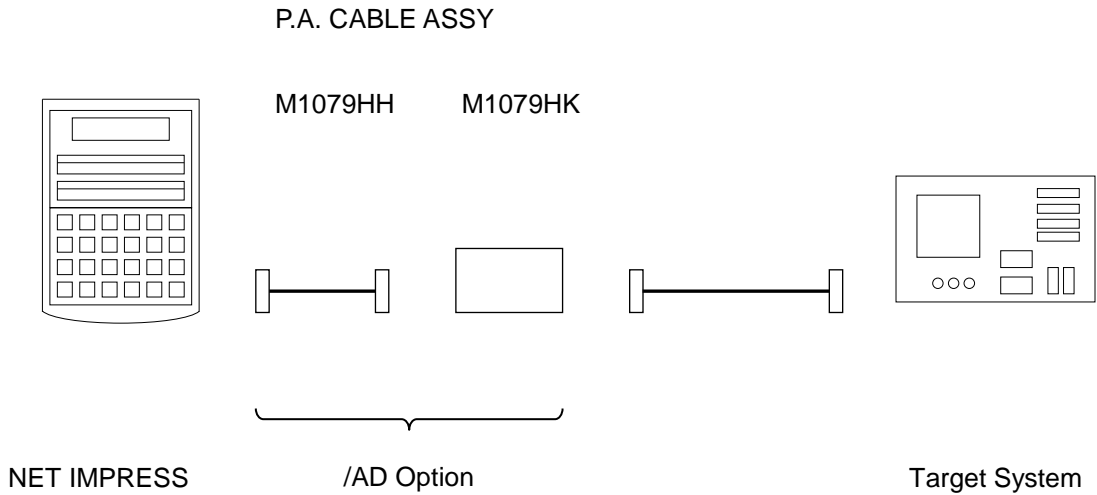
Most of I/O lines of the NET IMPRESS have 100KΩ pull-down resistors between the GND line and signal lines.

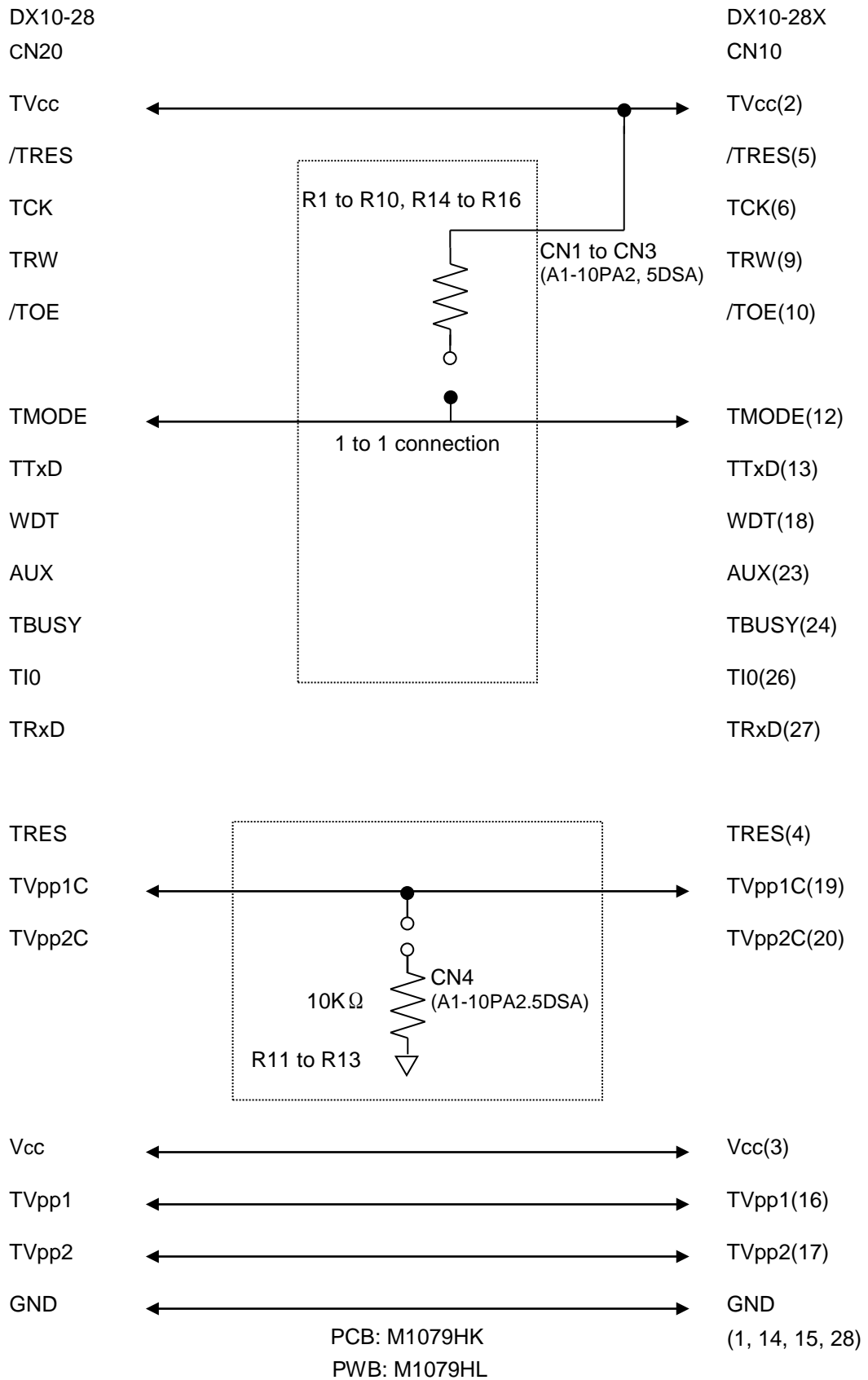
Also, control lines from the NET IMPRESS that are used on the target system must be kept negated not to disturb the target system when connectors for the NET IMPRESS are removed.

It is recommended to either pull up the power or pull down the GND signal for these control lines with about 10KΩ resistors on the user system.

In case the pull-up resistor of about 10KΩ cannot be added to the control signals within the user system, use /AD Assembly which is available for an additional order.

/AD Assembly enables you to optionally add pull-up/pull-down resistors to the control lines running from the NET IMPRESS.





5 Adapting to Derivative Microcomputers – Modifying Parameters

5.1 Minor Parameter Modification through the Keyboard of the NET IMPRESS

For the parameters that are defined by the function commands (FUNCTION D1 ~ FUNCTION DF) as described in the Section 5.4 “Parameters Settings” of the NET IMPRESS Instruction Manual, you can modify them through the keyboard of the NET IMPRESS. Parameters for communication interface with the target system, voltage of the target system, etc., for example, are the ones you can modify through the keyboard of the NET IMPRESS.

NOTE:

You cannot modify wide-ranging parameters and settings of the target microcomputer such as ROM block configuration of flash ROM address (FUNCTION D6) through the keyboard of the NET IMPRESS. For modifying them, it is recommended to use the remote controller AZ490 that is available for an additional order.

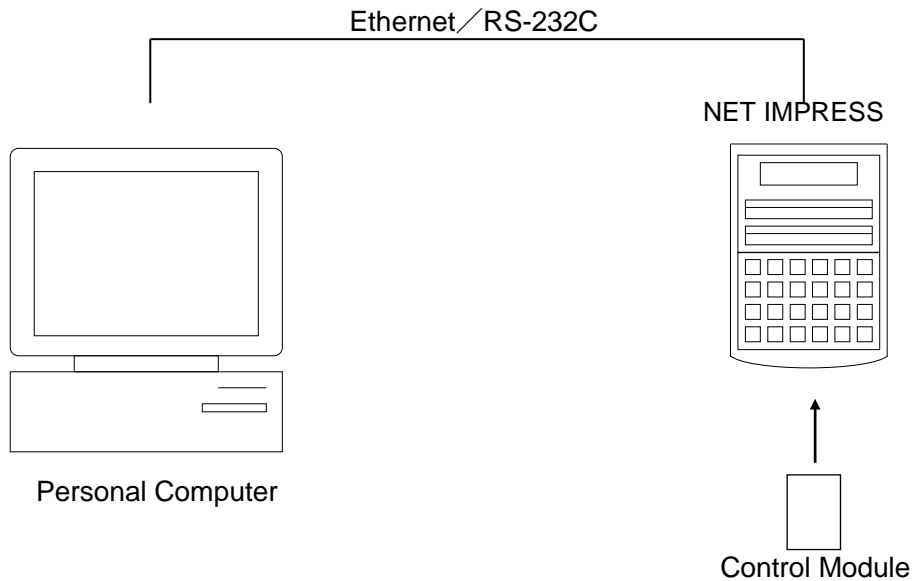
Also, the parameter list of actual microcomputers are available at our Web site. For details, contact your local distributor or us.

5.2 Modifying Parameters for Target Microcomputer using the Remote Controller

The remote controller software AZ490 for controlling the NET IMPRESS remotely from a PC is available for an additional order. This remote controller has the function to set up and confirm parameters besides the remote control capability. With the remote controller, you can set up and modify parameters including the following.

- MCU Type: Name of a target microcomputer
The name of a microcomputer displayed on the LCD of the NET IMPRESS can be customized.
- Flash ROM Area: Flash memory area of a target microcomputer
- ROM Block: Flash memory block alignment can be set up with address and size for each ROM group, enabling you to use the control module with derivative microcomputers.
- MCU Clock: MCU clock frequency
- Communication Interface: You can set up a communication interface with a target system.
- Other: Microcomputer-specific information defined by the control module (i.e., parameters specified by pressing → →)

5.3 How to Modify Parameters Using Remote Controller Software (AZ490)



Connect a PC and the NET IMPRESS using Ethernet cable (10BASE-T) or RS-232c cable. Insert the control module matching with the target microcomputer into the NET IMPRESS' card slot.

By running the remote controller on a Windows PC, you can modify or check parameter tables of the control module inserted in the NET IMPRESS.

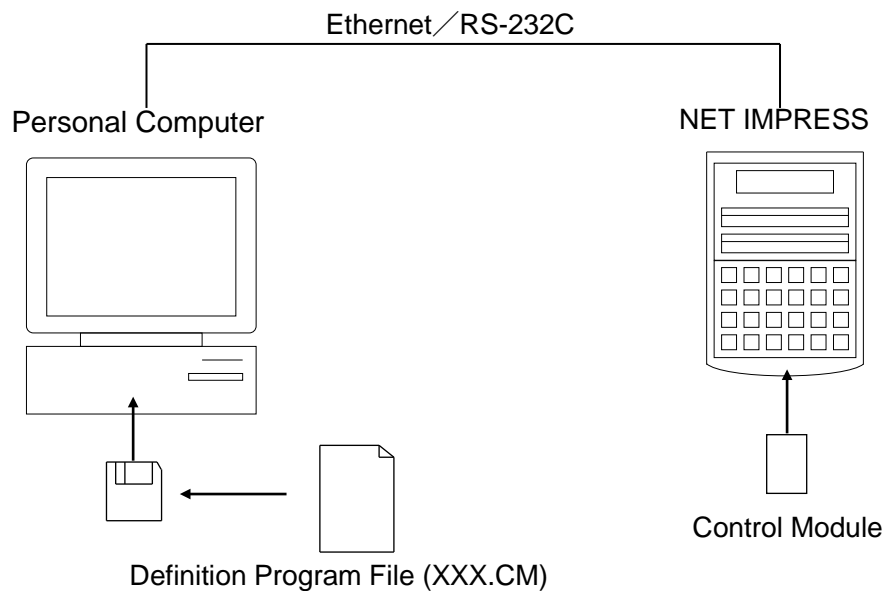
With the remote controller AZ490, you can load and save parameters all at once. By saving parameter information generated with the remote controller in a PC, you can easily modify parameter tables for various derivative microcomputers of the same family.

Also, using this function, you can easily load the Micom Pack, which you download from our Web site, into the control module.

6 Replacing Definition Program

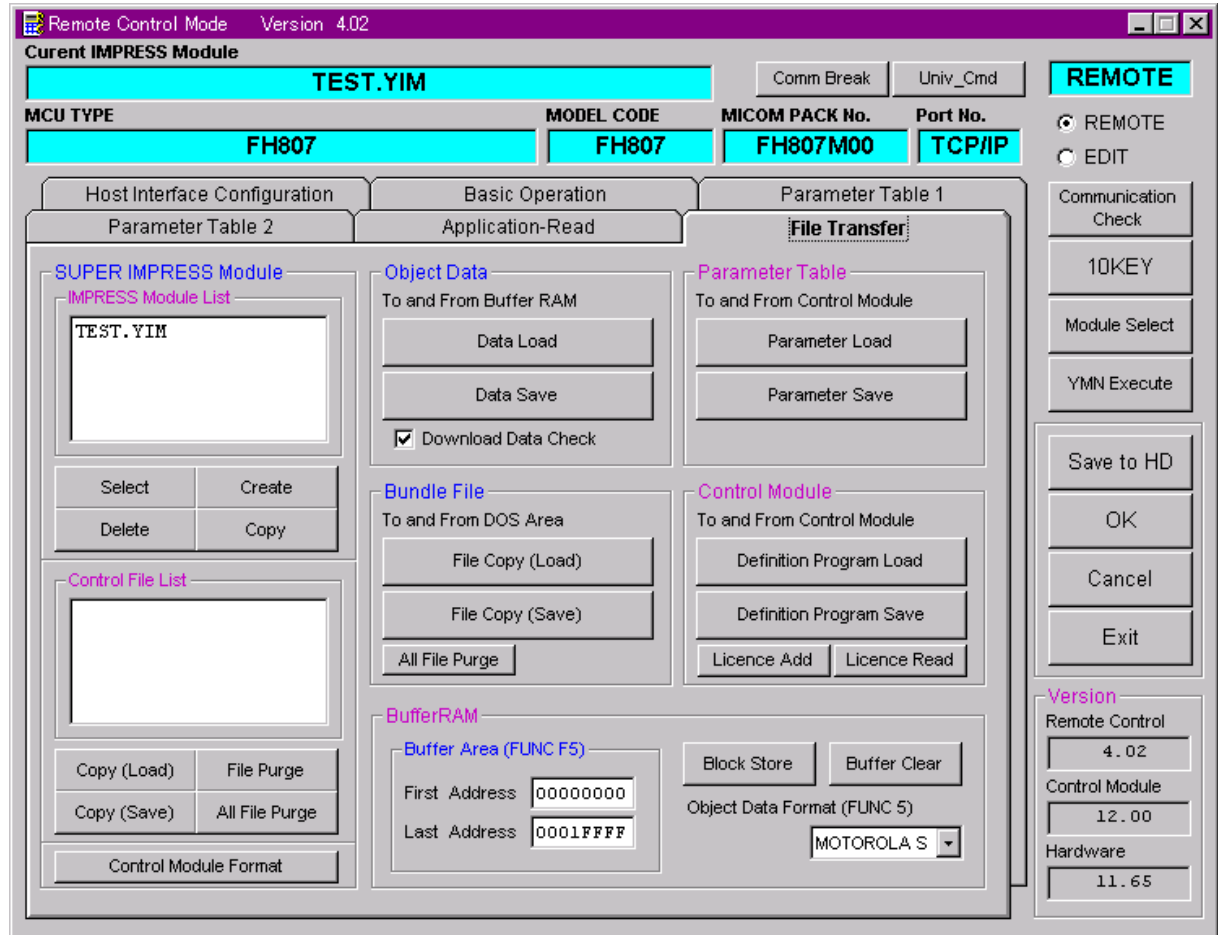
6.1 Overview

The IMPRESS MODULE has the function to support programming microcomputers that have different programming specifications from those of the target microcomputer. You can quickly replace the definition program using the definition program download function of the remote controller AZ490, instead of changing the control module. With this definition program replacement function, you can replace with other IMPRESS MODULE to program microcomputers of different programming specifications by adding the definition program license to the IMPRESS MODULE. The definition program license is available for your additional order. If you have any questions, contact your local distributor or us.



6.2 How to Replace Definition Program

By setting the IMPRESS MODULE added with a definition program license into the NET IMPRESS, you can replace the definition program of the control module using the definition program download function of the remote controller AZ490 (Control Module Load to HD button on the File Transfer tab). (Note that you cannot use this function if you are using the NET IMPRESS as stand-alone.) When you purchase the definition program license, download the definition program file (“xxx.CM”), which is in the floppy disk provided with the definition program license, into the IMPRESS MODULE.



7 Notes and Cautions for Using Control Module

- (1) The control module FH807 is built for the flash microcomputer programmers NET IMPRESS. *DO NOT* use this control module for any flash microcomputer programmers other than the NET IMPRESS series.
- (2) The control module FH807 is built tailored to the specific microcomputer. Do not use this control module for programming microcomputers other than the specified microcomputer. Using this control module for microcomputers other than the specified microcomputer would damage your target system.
- (3) The NET IMPRESS consumes power of several mA from Tvcc terminal to drive the interface IC with the target system (IC inside the NET IMPRESS).
- (4) *Be sure NOT to* initialize (format) the control module (Compact Flash Card). The control module contains the definition program (the control program), besides the DOS area where you can save your files. Initializing the control module results in destroying this control program.
- (5) *DO NOT insert or remove* the control module while the Device Functions or the Function key operations are being executed. Be sure not to insert or remove the control module from the flash microcomputer programmer while accessing it.
- (6) Use the flash microcomputer programmer with the control module inserted into it.