Control Module
Instruction Manual

Control Module
For
Flash Microcomputer Programmer
NETIMPRESS

FN820

Target Microcomputer: µPD70F3358

DTS INSIGHT CORPORATION

FN820

INSTRUCTION MANUAL

No. M2386EU-02

Revision History

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Contents

1   Overview

FN820 is the Control Module for NETMPRESS, the advanced on-board flash microcomputer programmer.

The Control Module FN820 supports programming the flash ROM inside NEC Electronics' µPD70F3358 and other equivalent flash microcomputers that have the same programming algorithm and protocol as NEC Electronics' µPD70F3358.

The Control Module FN820 consists of the Compact Flash Card containing the programming control software.

The free area of the Control Module (the Compact Flash Card) can be used as the DOS file area to temporarily store an object file you created on a host computer.

The Control Module FN820 is available in three types for your choice: /P128, /D128 and /D512.

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.

IMPORTANT:
> With the Control Module FN820, 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 7 "Adapting to Derivative Microcomputers — Modifying Parameters" of this manual.
>
> Check once again with the below listed points to be checked if your microcomputer is supported by the Control Module FN820, 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 (Vpp) 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 NETIMPRESS are applied.

Control Module	FN820
Target microcomputer	µPD70F3358
User flash memory capacity	1Mbyte
User flash memory address	#00000000 to #000FFFFF
Programming voltage (Vpp) *1	Not applied.
Default	—
Vccp (Minimum voltage during programming)	—
Object file format	Intel HEX, Motorola S, Binary
Default	Motorola S
Target interface	UART (Asynchronous communication) Interface *1 9600/10400/19200/31250/38400/62500/76800bps □MSB first ■LSB first CSI (Synchronous communication) /HIS-CIS (Handshake synchronous communication) Interface 62.5K/125K/250K/500K/850K/1.25M/2.5M (bps) ■MSB first □LSB first
Data transfer format between NETIMPRESS and a target system	Binary
Memory status when erased	#FF
MCU clock during programming	Input clock: 2.5MHz to 10.0MHz *2
Target interface voltage during programming	3.0V to 3.6V

*1: Baud rate 57600bps and 62500bps are not supported by the target microcomputer although they can be selected with NETIMPRESS. Therefore, communication will be performed at 38400bps when you select baud rate 57600bps and 62500bps.

*2: Set up internal clock (multiplication ratio) at the time of programming according to input clock as follows:

$2.5MHz \leq fxtal \leq 4.0MHz$ 8 multiplication

$4.0MHz < fxtal \leq 5.0MHz$ 4 multiplication

$5.0MHz < fxtal \leq 10.0MHz$ 1 multiplication

Change a multiplication setup value according to input clock.

For details about setting up multiplication ratio, see Section 2.2.3 "Parameter Table 2 tab" of this manual.

Set up an input clock for a value of MPU Clock Frequency [FUNC DF].

2.2　　Setting up MPU-Specific Parameters

Make the initial settings by using the Remote Controller AZ490. For how to use AZ490, see the AZ490 Instruction Manual.

2.2.1　Parameter Table 1 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 operating voltage of the target microcomputer. NETIMPRESS senses the operating voltage (TVcc) of the target microcomputer and executes the Device Functions when the TVcc gets higher than a specified value. For setting up TVcc threshold at the side of NETIMPRESS, see the MegaNETIMPRESS Instruction Manual, Section 5. 5. 5 "TVcc Threshold Setting".

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

Set up the on-chip flash memory area (First Address, Last Address).

With key operation of NETIMPRESS, you cannot set up flash memory and this is only for display.

For details, see the MegaNETIMPRESS Instruction Manual, Section 5. 5. 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 of a block group and Block Size.

Group No: You can use 14 groups (Group 1 to Group 14). A block group consists of memory blocks that have the same one block size on linear address. Block 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: NETIMPRESS understands that flash memory blocks of a size specified in Block Size are placed sequentially until a next block group address. Also, when 1 is set to a block size, its area becomes access-prohibited. The Device Functions cannot be executed in such access-prohibited area even if it is an area where the Device Functions can be executed.

Example:

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

Block Start Address

#F80000 →

Block Group 1

The above example shows the flash memory block which has 32-KB (#8000) block size from #F80000 continues until a next block size starts (#FA0000).

#F88000 →

#F90000 →

#F98000 →

#FA0000 →

Block Group 2

The above example shows the flash memory block that has 64-KB (#10000) block sizes from #FA0000 continues until the last address (FFFFFF) of the flash memory.

#FB0000 →

#FC0000 →

#FD0000 →

#FE0000 →

#FF0000 →

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(4) MCU Clock Frequency   [FUNC D F]

Set up an input clock to the target microcomputer. For how to set up a clock with NETIMPRESS, see the MegaNETIMPRESS Instruction Manual, Section 5. 5. 12 "Set MCU Operating Frequency".

(5) MCU Operation Mode [FUNC D 4]

Select either that the security setting (write disable flag/chip erase disable flag) can be changed or not.

	Mode	
NETIMRPESS LCD display	St'd (Default)	Opt
Setup value with Remote Controller	0000	0001
Security setting	Cannot be changed	Can be changed

• About the St'd (Standard) mode of the security setting:
With the default St'd mode of the security setting listed above, the write disable flag or the chip erase disable flag cannot be set to "0" (Disable state). In case the write disable flag or the chip erase disable flag is set to "0" (Disable state) in security setup data, or in case the boot block cluster write disable flag is set to "0" (Disable state), the error message is output, discontinuing execution of the Device Functions. Normally, use with this default mode.

• About the Opt (Optional) mode of the security setting
When the Opt mode is selected for security setting, the write disable flag or the chip erase disable flag can be set to "0" (Disable state). NETIMPRESS sets up contents of the security setup data as it is.   When you want to set the write disable flag or the chip erase disable flag to "0" (Disable state), or when you want to set the boot block cluster write disable flag to "0" (Disable state), use this Opt mode.

For details about the security setup function, see Chapter 4 "Setting Security" of this manual.

(6) WDT Clock Period   [FUNC D 5]

NETIMPRESS 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) listed in Table 6-1 "Signal List".   For setting up the WDT signal with NETIMPRESS, see the MegaNETIMPRESS Instruction Manual, Section 5. 5. 7 "Set Watch Dog Timer".

(7) Data Communication

Sets up communication between NETIMPRESS and the target microcomputer. For FN820, set up as follows:

• Communication Channel [FUNC D 1]

Select either UART (asynchronous communication) or CSI (synchronous communication). When using HS-CSI, choose CSI (synchronous communication) too.

For setting up a communication channel with NETIMPRESS, see the MegaNETIMPRESS Instruction Manual, Section 5. 5. 2. "Communication Channel Setting".

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

Choose a communication channel and channel number.

Set up "0" when making UART communication.

Set up "0" when making CSI (CSIB0) communication.

Set up "1" when making CSI (CSIB3) communication.

Set up "2" when making CSI-HS (CSIB0) communication.

Set up "3" when making CSI-HS (CSIB3) communication.

For setup conditions, see the Instruction Manual of the Micom Pack you are using. For setting up communication channels with NETIMPRESS, see the MegaNETIMPRESS Instruction Manual, Section 5. 5. 9. "Set Communication Channel".

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

Set up communication speed for UART communication by choosing from 9600/10400/19200/31250/38400/62500/76800bps. For how to set up the UART communication speed with NETIMPRESS, see the MegaNETIMPRESS Instruction Manual, Section 5. 5. 3. "UART Baud Rate Setting". Also, when making communication with 153600bps, see Section 2.2.3 "Parameter Table 2 Tab".

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

Set up a communication speed for CSI communication (HS-CSI) by choosing from 62.5Kbps, 125Kbps, 250Kbps, 500Kbps, 850Kbps, 1.25Mbps and 2.5Mbps. For how to set up the CSI communication speed with NETIMPRESS, see the MegaNETIMPRESS Instruction Manual, Section 5. 5. 4. "Set CSI Baud Rate".

Note: With NETIMPRESS, baud rate 57600bps and 62500bps can be selected for UART communication (asynchronous communication). However, since they are not supported by the target microcomputer, communication will be performed at 38400bps when you set up 57600bps or 62500bps.

(8) MCU Type   [FUNC D 8]

An MCU name set up here will be displayed in the MCU TYPE field located at the top left of this Remote Control Mode window and the NETIMPRESS main unit.

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

(9) 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) – (8) 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.
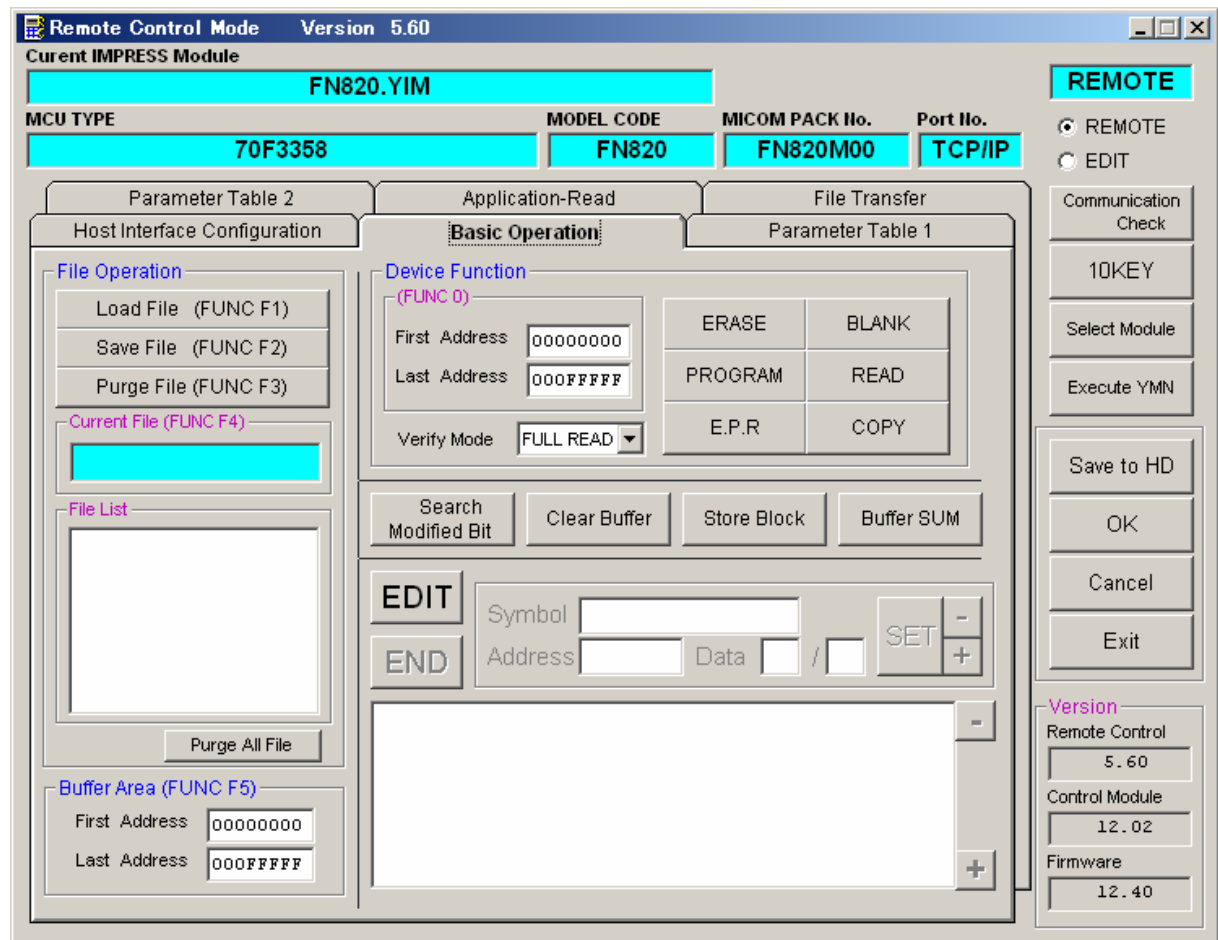
(1) Device Function [FUNC 0]

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 buffer memory of NETIMPRESS. Normally, set the same areas as those for fash 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.

7

Target MCU Memory Area

First Address

Block Boundary→

FUNC 0
Sets up address.

FUNC D 6
Displays flash memory area.

Area to execute Device Functions
(Target area to program)

Last Address

∞

Actual target area: 🟥 + 🟧
that will be automatically aligned
with block boundary.

Flash Memory:
Consists of a group of small
flash memory blocks, which
can be erased on in a unit of a
block, not in a unit of 1 byte.

Use AZ490 to set up block
configuration and flash
memory area.

FUNC 0   Address Setup & Address Alignment

Figure 2-1

Target MCU Memory Area

First Address ← **Address range when loading a binary file**

→ **Address range when saving**

FUNC 0
Sets up address

Flash Memory Area

FUNC D 6
Displays flash memory area

FUNC F 5
Sets address to send.

Last Address

Area to execute Device Function (Ex. Area you want to program)

FUNC 0
FUNC D 6   same setting
FUNC F 5

In case settings of FUNC 0, D5 and D6 are not matching, the alarm beep sounds when NETIMPRESS is switched on.

Caution

Be sure to set up one same address for First Address and ROM First.

Binary File

0001020

3040506

070809

…

DOS File: Area where a binary file is loaded (because a binary file has no address).

Address Setup Function

Figure 2- 2

2.2.3 Parameter Table 2 tab

The Parameter Table 2 tab contains the parameters specific to the microcomputer, which will be used to change multiplication ratio and division ratio, and to switch between the Normal mode and High-speed mode for UART baud rate.

Be sure not to change any values other than those described below.

When you open the Parameter Table 2, the dialog box as shown below appears asking you to enter a password. Then, enter "AF200". (The password you enter will be masked with asterisks.)
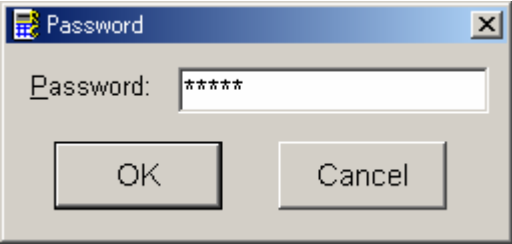
A value set up in "#0C3" on the Parameter Table 2 tab becomes a mode setup value for UART baud rate. Set up either of the two values listed below.

Setup Value	Mode
00	Normal mode
01	High-speed mode (High-speed mode is the mode to make communication at baud rate doubling a baud rate currently set up.)

Note: For 57600bps and 62500bps that are not supported by the target microcomputer, communication is made with 76800bps baud rate doubling 38400bps. When you double 31250bps, it becomes 62500bps that is not supported by the target microcomputer. In such case, 38400bps is used to make communication.

With the Control Module FN820, multiplication ratio and division ratio are calculated based on values of parameters #0C0 and #0C1. (Values are displayed in hexadecimal.)

Parameter value of "0C0" ÷ "parameter value of "0C1" = multiplication ratio (division ratio)

    Example: 02 ÷ 01 = 2 multiplication

                      05 ÷ 02 = 2.5 multiplication

                      01 ÷ 02 = one half (½) division

When you need to change these values, calculate parameter values using the above formula.
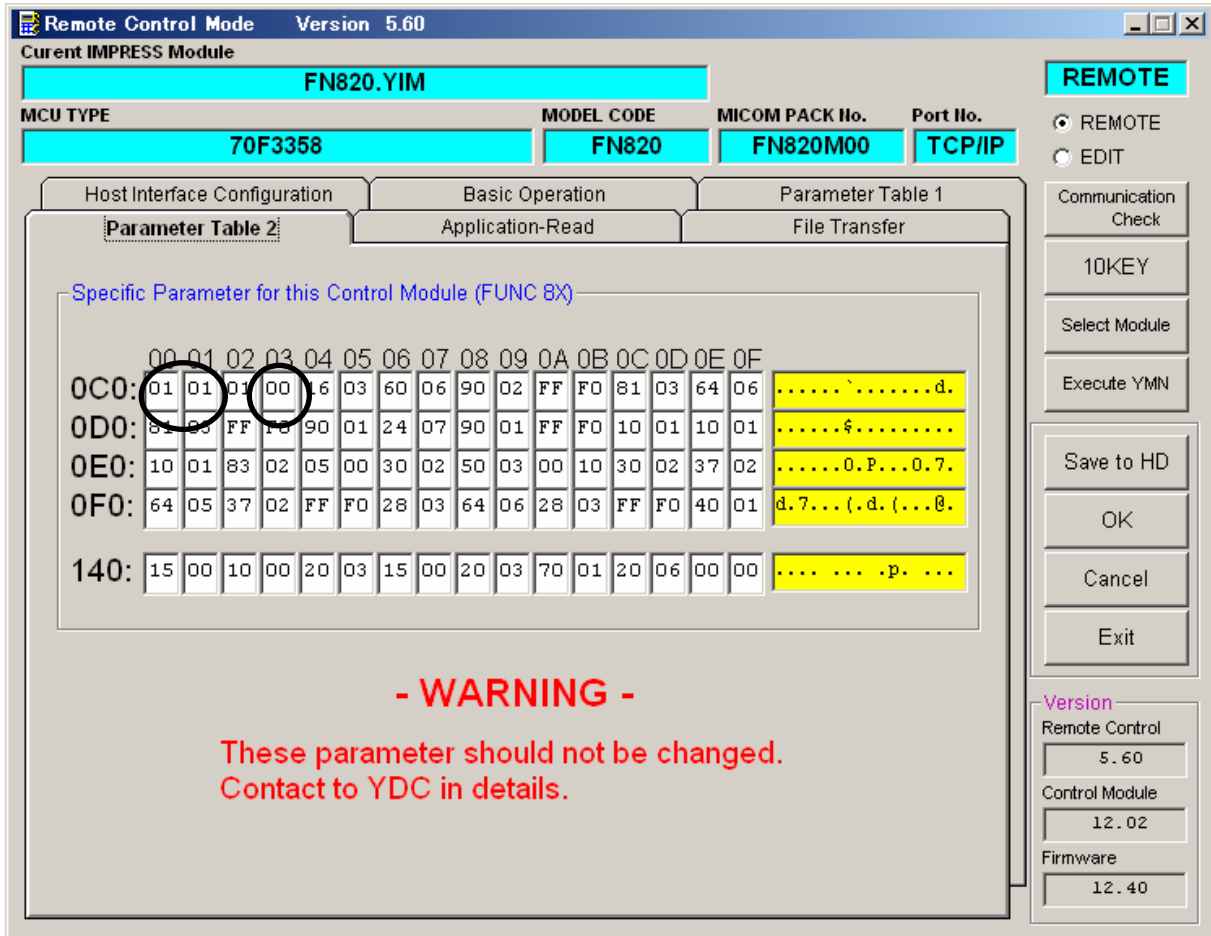
When you change the settings, be sure to press the OK button to reflect the changes.

2.3   Device Functions and Their Operation

The table below lists the operations to the flash memory that are executed when NET IMPRESS starts executing 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	Executed	Executed	Executed	Executed	Executed	Executed
	Entire area of flash memory by [FUNC D6] command	Executed	Executed	Executed	Executed	Executed	Executed
Operation to Flash Memory		■Erase ■Blank	■Blank	□Erase □Blank ■Program ■Read *1	■Read *1	■Erase ■Blank ■Program ■Read *1	■Copy ■Read
Remarks:		Each device function is executed in a unit of block.					

*1: Verify is executed in the Verify mode that is specified with a value set up with [FUNC 99]. However, when the Full Verify mode is specified, SUM Verify is executed, and Verify is executed with the Full Verify mode.

3   YPM File

YPM file is the file that stores parameters to calculate a wait value at the time of execution of each command.

Be sure to place a YPM file (extension "YPM") in the DOS area of the Control Module.

4 Setting Security

4.1 Overview

The target microcomputer supported by the Control Module FN820 has the security feature to restrict illegal access to flash memory by a third person.

4.2 Setting up security

To set up security, you need to create a setup file. Create a setup file with a current file name + extension YDD in Motorola S format by using the Key File Generator AZ481 and place it in the DOS area of the Control Module, which is a must.

The sample YDD file containing the default security values is provided.

As long as you use the Control Module FN820 with the default security values, you do not have to refer to the remaining sections of this Chapter 4 (Section 4.2.1 "Setting up security", Section 4.2.2 "Setting up address for the Reset Vector Handler function", Section 4.2.3 "Setting a last block number of boot cluster" and Section 4.3 "Setup Process Flow".)

When you want to change the default security values, please contact NEC Electronics or our support center. (The technical information described in Section 4.2.1 "Setting up security", Section 4.2.2 "Setting up address for the Reset Vector Handler function", Section 4.2.3 "Setting a last block number of boot cluster" and Section 4.3 "Setup Process Flow" will be provided.)

The screen shot below shows an example to create a setup file using the Key File Generator 481.
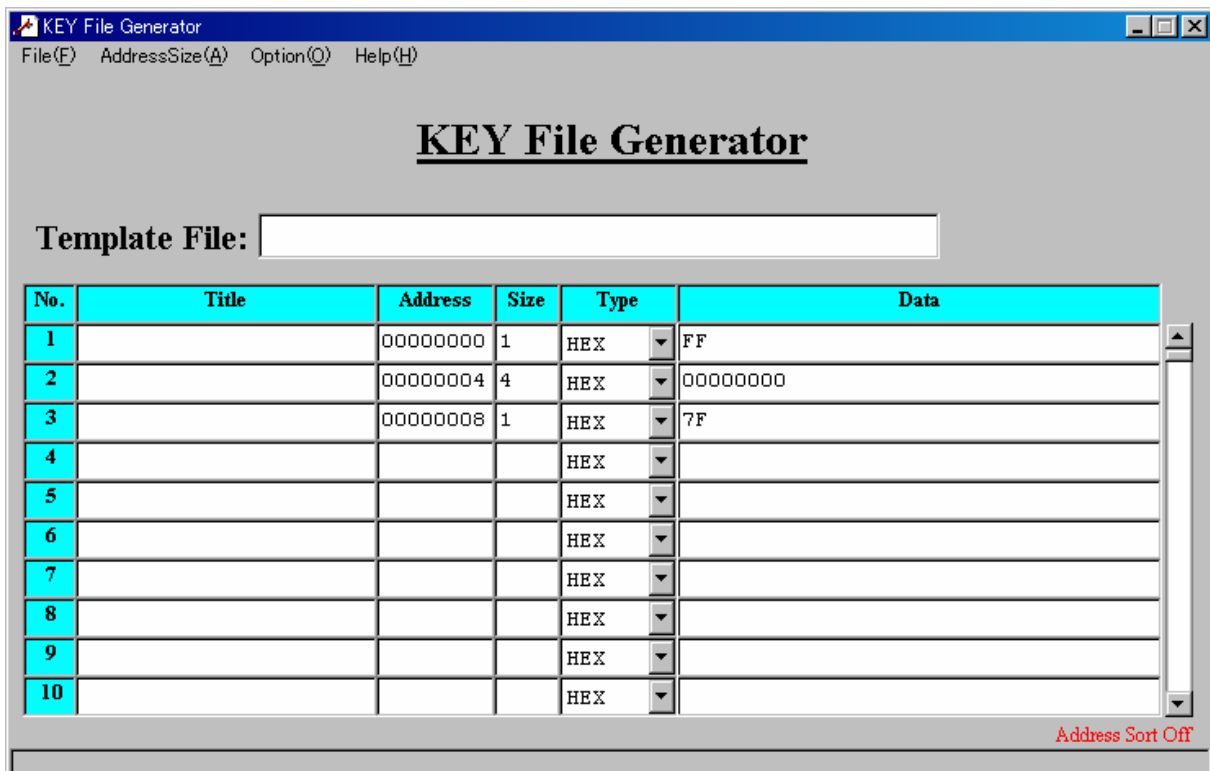
4.2.1 Setting up security

The table below lists the format to set up values for security.

Address: #00000000 (fixed)

Size: 1 (fixed)

Data: See the table below.

The table below lists the values to set up for security.

Item	Description
Bit7-5	Fixed to "1" *1
Bit4	Boot block cluster write disable flag (1: Enable, 0: Disable) *2, *3
Bit3	Read disable flag (1: Enable, 0: Disable)
Bit2	Write disable flag (1: Enable, 0: Disable) *2
Bit1	Block erase disable flag (1: Enable, 0: Disable)
Bit0	Chip erase disable flag (1: Enable, 0: Disable) *2, *4

*1:   In case "0" (Disable) is set up, the file format error is output.

*2:   When using with the default security setting mode set in MCU Operation Mode [FUNC D 4], and if this is set to "0" (Disable), the error message is output discontinuing execution of the Device Functions.

*3:   In case the boot block cluster disable flag is set to "0" (Disable), reprogramming all flash areas cannot be performed. Also, the boot block cluster disable flag can be only changed from "1" (Enable) to "0" (Disable).

*4:   In case the chip erase disable flag is set to "0" (Disable), reprogramming with NETIMPRESS cannot be performed.

4.2.2 Setting up address for the Reset Vector Handler function

Set up address for the reset vector handler function using the format listed below.

Address: #00000004 (fixed)

Size: 4 (fixed)

Data: Reset vector handler address (in Big Endian). However, only Bit 23 to Bit 0 is effective.

4.2.3 Setting a last block number of boot cluster

Set up a last block number as listed below:

Address: #00000008 (fixed)

Size: 1 (fixed)

Data: 0x00 to 0x7F (*1)

*1: The data range you can set up varies depending on a microcomputer. For details, please contact NEC Electronics or our support center.

4.3 Setup Process Flow

The security setup function becomes effective when a file with a current object file name and extension YDD is created correctly and placed in the DOS area at the time of execution of the Device Function E.P.R.

The figure below shows the process flow how NETIMPRESS sets up security.

```
                    ┌─────────────────────────┐
                    │   Starts executing E.P.R │
                    └─────────────────────────┘
                                │
                                ▼
                          ◇ Is there YDD file? ◇ ──── No ──────┐
                                │                               │
                               Yes                              │
                                ▼                               │
                          ◇ Checks operation mode. ◇ *1 ───────┤
                                │                               │
                                ▼                               │
              *2   ◇ Current security state ◇ ─────────────────┤
               │                │ *3                            │
               ▼                ▼                               │
    ┌──────────────────┐  ┌──────────────────┐                 │
    │ Executes E.P.R   │  │ Executes E.P.R   │          ┌──────────────────┐
    │ with the block   │  │ with the chip    │          │ Outputs the error.│
    │ erase command.   │  │ erase command.   │          └──────────────────┘
    └──────────────────┘  └──────────────────┘
               │                │
               │                ▼
               │         ┌──────────────────┐
               │         │ Sets up the      │
               │         │ security.        │
               │         └──────────────────┘
               │                │
               └────────────────┤
                                ▼
                    ┌─────────────────────────┐
                    │ Completes execution of  │
                    │ E.P.R.                  │
                    └─────────────────────────┘
```

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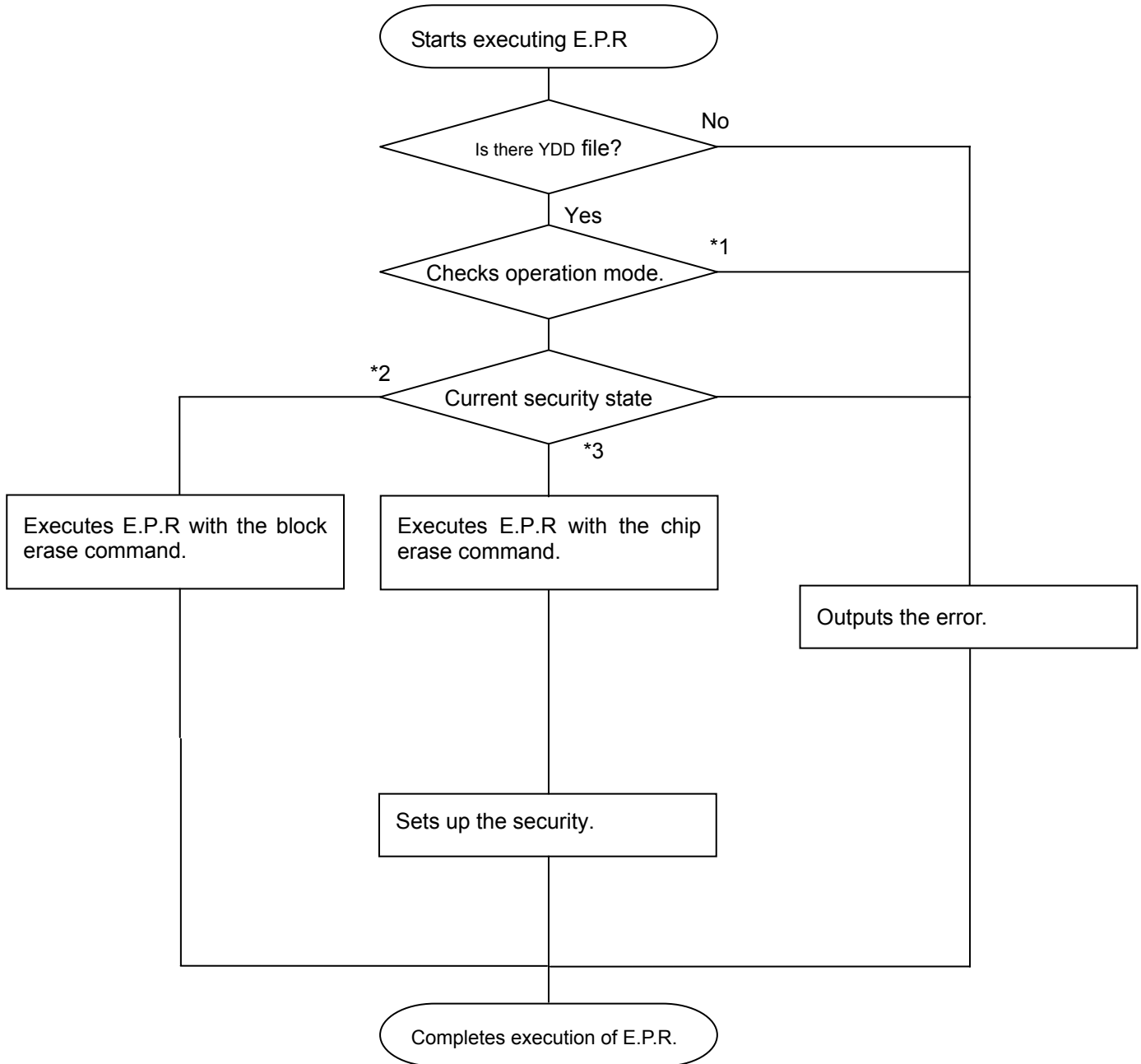
*1: MCU Operation Mode [FUNC D4]

Select either the security setting (write disable flag/chip erase disable flag) can be changed or not.

	Mode	
NETIMRPESS LCD display	St'd (Default)	Opt
Setup value with Remote Controller	0000	0001
Security setting	Cannot be changed	Can be changed

• About the St'd (Standard) mode of the security setting:
With the default St'd mode of the security setting listed above, the write disable flag or the chip erase disable flag cannot be set to "0" (Disable state). In case the write disable flag or the chip erase disable flag is set to "0" (Disable state) in security setup data, or in case the boot block cluster write disable flag is set to "0" (Disable state), the error message is output, discontinuing execution of the Device Functions. Normally, use with this default mode.

• About the Opt (Optional) mode of the security setting
When the Opt mode is selected for security setting, the write disable flag or the chip erase disable flag can be set to "0" (Disable state). NETIMPRESS sets up contents of the security setup data as it is. When you want to set the write disable flag or the chip erase disable flag to "0" (Disable state), or when you want to set the boot block cluster write disable flag to "0" (Disable state), use this Opt mode.

*2: The process flow takes this path when the Device Functions execution area is set to a partial area with [FUNC 0] or when a value to be set up does not require execution of the chip erase command.

*3: The process flow takes this path when the boot block cluster write disable flag is set to "1" (Enable) and the Device Functions execution area is set to all areas with [FUNC 0].

When neither the above *2 nor *3 conditions are not applicable, execution of the Device Function is discontinued with the error message.

5   Error Message

This chapter describes the error messages specific to the Control Module FN820 that may be output for incorrect connection of signal lines and invalid parameter settings when the Device Functions are executed.

For error messages other than those described here, see the MegaNETIMPRESS Instruction Manual.

5.1   Error Code

The table below lists the Device Error codes and their meanings. The error codes are displayed as "DEVICE ERROR XX" at the end.

Error Code	Meaning
04	The command not supported is received by the microcomputer.
05	Parameter accompanying the command is not correct.
07	The sum value of communication frame is not correct.
08	Error occurred when write is performed.
09	Error occurred when write or verify is performed.
0A	Error occurred when verify is performed.
0B	Error occurred when erase is performed.
0C	Error occurred when erase is performed.
0D	Error occurred when erase is performed.
11	Blank check error occurred.
13	Error occurred when erase is performed.
0F	Data sent from the Programmer and verify result of data within the microcomputer are not matching.
10	You tried to execute the operation prohibited for security settings.
15	Negative acknowledgement (NACK) is received.
16	Error occurred with flash control macro.
FF	Number of retry times for Busy response exceeded the limit.

5.2　Error Message

The table below lists the error messages specific to the Control Module FN820.

Error Message	Cause & Action	
1120: YDD FILE NOT FOUND	Cause	YDD file does not exist.
	Action	Check if YDD file is correctly placed. For YDD file, see Chapter 4 "Setting Security".
1121: YDD FILE OPEN ERR	Cause	Failed to obtain YDD file.
	Action	Check if YDD file is correctly placed. For YDD file, see Chapter 4 "Setting Security".
1122: YDD FILE FORMAT ERR	Cause	Setup value of YDD file is not correct.
	Action	Check contents of YDD file. For YDD file, see Chapter 3 "YPM File".
1124: YPM FILE NOT FOUND	Cause	YPM file does not exist.
	Action	Check if YPM file is correctly placed. For YDD file, see Chapter 3 "YPM File".
1128: WARNNING SECURITY SETTING	Cause	Write disable flag or chip erase disable flag is set to "0" (Disable)".
	Action	Check contents of YDD file. Set the security setting to the Opt mode with [FUNC D4].
1129: SIGNATURE NO MATCH ERROR	Cause	Signature obtained from CPU does not match with Parameter file.
	Action	Check if the parameter file is the one for the target microcomputer.
112A: NO SUPPORT SIGNATURE ERROR	Cause	Signature obtained from CPU is not supported with the Control Module FN820.
	Action	Check if the parameter file is the one for the target microcomputer.

6 Connecting to the Target System and Connector

6.1 Signal List

The table below lists signal example at the side of the target probe connector when using the Control Module FN820.

CPU Signal	NETIMPRESS Standard Signal				CPU Signal
EVss	GND	(15)	(1)	GND	EVss
	TVpp1	16	(2)	TVccd	EVdd
	TVpp2	17	(3)	Vcc	-
	WDT	(18)	(4)	TRES	
	TAUX3	(19)	(5)	/TRES	/RESET
FLMD0	TAUX4	(20)	(6)	TCK	SCKB0/SCKB3 *1 *2
	Reserved	21	7	Reserved	
	Reserved	22	8	Reserved	
	TAUX	(23)	9	TAUX2	
PCM0 *2*3	TBUSY	(24)	(10)	/TICS	
	TI0	25	11	/TOE	
	TVccs	26	(12)	TMODE	FLMD1
SOB0/SOB3/TXDA0 *1	TRXD	(27)	(13)	TTXD	SIB0/SIB3/RXDA0 *1
EVss	GND	(28)	(14)	GND	EVss

- Be sure to connect the signals marked with " ◯ " to a target system.

- For the signals in parentheses, connect them when necessary.

- For the signals not marked with " ◯ " or those not in parentheses, be sure not to connect them to a circuit of e target system.

*1: UART: TXDA0, RXDA0
    CSI, CSI-HS (CSIB0): SCKB0, SOB0, SIB0
    CSI, CSI-HS (CSIB3): SCKB3, SOB0, SIB0

*2: Not required to be connected when using with UART.

*3: Not required to be connected when using with UART or CSI (without HS).

6.2   Model Connection to Target System

NET IMPRESS

Wire

Signal	Wire	Target System μPD70F3358
WDT	(18)	}*1
/TICS	(10)	
TRES	(4)	
/TRES	(5)	/RESET
TCK	(6)	SCKB0/SCKB3 *3
	(13)	SIB0/SIB3/RxDA0
TRxD	(27)	SOB0/S0B3/TxDA0
TBUSY	(24)	PCM0 *3 *4
TMODE	(12)	FLMD1 *2
TAUX4	(20)	FLMD0
TVccd	(2)	EVdd EVss / BVdd BVss / Vdd Vss
GND	(1, 14, 15, 28)	

3.3V

+3.3V
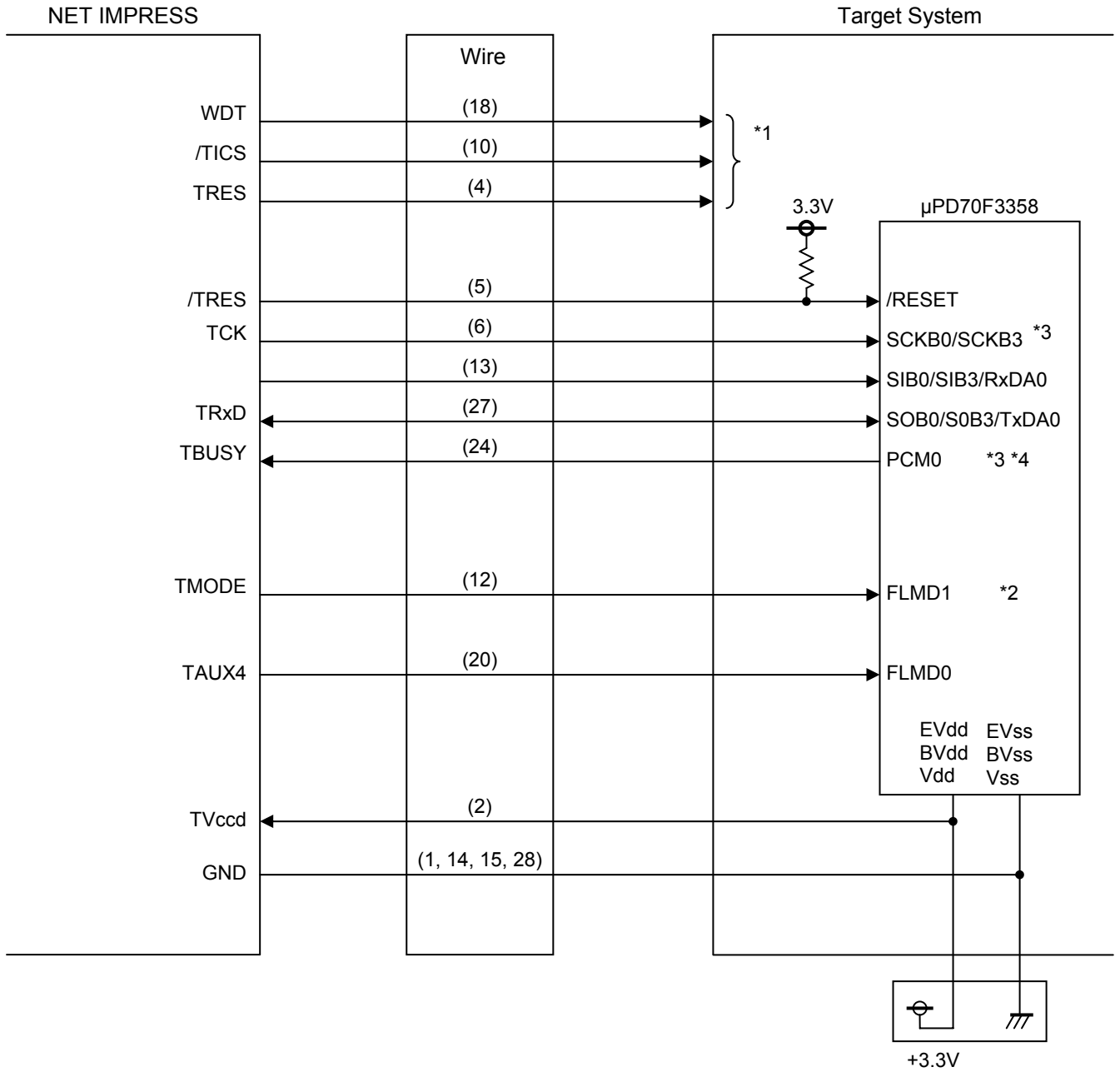
*1: They are optional.

*2: Not required to be connected when it is set as specified on a target system.

The table below lists the value to be set up.

Signal Name	Value
FLMD1	EVss

*3: Not required to be connected when using in UART.

*4: Not required to be connected when using in UART or CIS (without handshake).

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

/TICS signal is asserted only when NETIMPRESS is executing 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 a user system can produce the same conditions with a state where NETIMPRESS 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 NETIMPRESS.

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

(3) /TRES Signal:

NETIMPRESS 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 a target system and be connected to /RESET terminal of your microcomputer using a user circuit. TRES signal can be used when a target system requires a reset signal of positive logic. TRES signal is a totem pole output signal.

6.3　**Waveform of Control Signal**
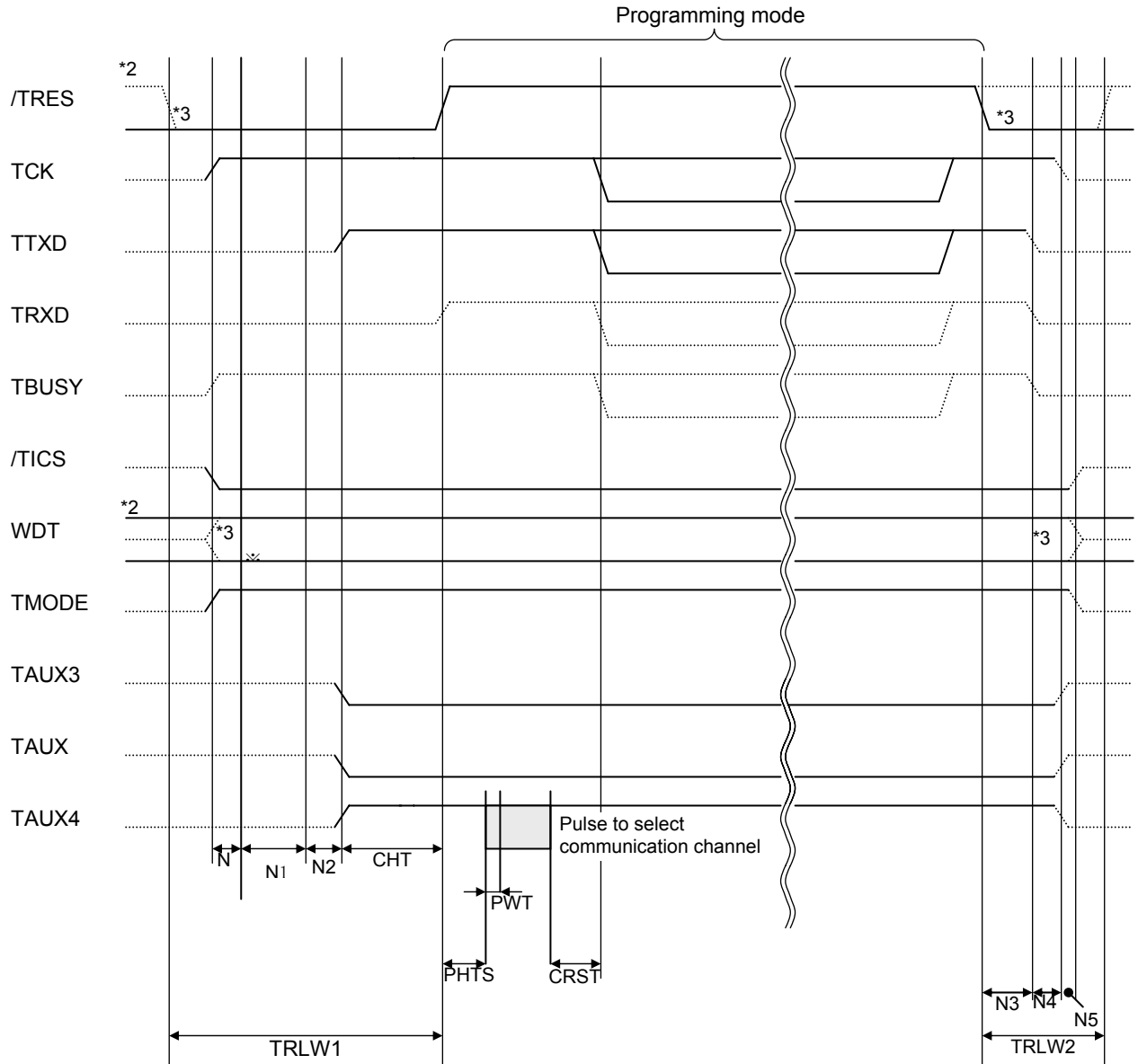
	NETIMPRESS Specification
TRLW1	300ms (Minimum)
TRLW2	150ms (Minimum)
N	10ms (Minimum)
N1	100ms (Minimum)
N2	100ms (Minimum)
N3	60ms (Minimum)
N4	50ms (Minimum)
N5	10ms (Minimum)

	Parameter	Max.	Min.	Meaning
CHT	INI<PM2>	—	2ms	Reset timing
PHTS	INI <PM3>	—	20.8ms	Pulse timing
PWT	INI <PM4>	—	50µs	Pulse width
CRST	INI <PM5>	—	50ms	Communication start timing

*For PHTS, operation frequency is calculated with 4.0MHz.

*1: The dotted line " ⋯⋯⋯⋯⋯⋯⋯ " indicates HIZ state.

*2: /TRES and WDT are the open collector output signals.

*3: Optional.

(1) Turn on the power of NETIMPRESS first and then a target system. Then, NETIMPRESS asserts /TRESI right after its power is turned on. Also, it starts outputting periodic pulse of WDT.

(2) /TICS is asserted by execution of the program command, and communication channel for flash programming is connected to NETIMPRESS on a target system. (Multiplexing with this /TICS signal is not required for a system where communication channel and related signals for flash programming are exclusively used by NETIMPRESS, independently from other user circuit.)

(3) NETIMPRESS raises TVpp to a specified voltage.

(4) The programming mode is started and communication with NETIMPRESS is started using a specified communication circuit. Communication is performed in conditions set up in advance.

(5) When programming completes, NETIMPRESS automatically completes applying TVpp.

(6) NETIMPRESS negates /TICS too. NETIMPRESS continues asserting /TRES signal even while the Device Functions are not executed. Also, it continues generating periodic pulse of WDT.

6.4   Probe

As the standard probes, four types of the probe (AZ410, AZ411, AZ412 and AZ413) are available for an additional order. For ordering the probe, contact your local distributor or us. For a connection diagram of each probe, see the MegaNETIMPRESS Instruction Manual, the Section 8. 5. "Target Interface", or check with our Web site.

AZ411/AZ413

Most of I/O lines of NETIMPRESS have 1MΩ pull-down resistors between the GND line and signal lines.

Also, control lines from NETIMPRESS, which are used on a target system, must be kept negated not to disturb a target system when connectors for NETIMPRESS are removed.

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

In case the pull-up resistor of about 10KΩ cannot be added to the control signals within a user system, use AZ411/AZ413.

AZ411/AZ413 enables you to optionally add pull-up/pull-down resistors to the control lines running from NETIMPRESS.

IC clip
or
Cable end not treated.

NET IMPRESS   AZ411/AZ413   Target System
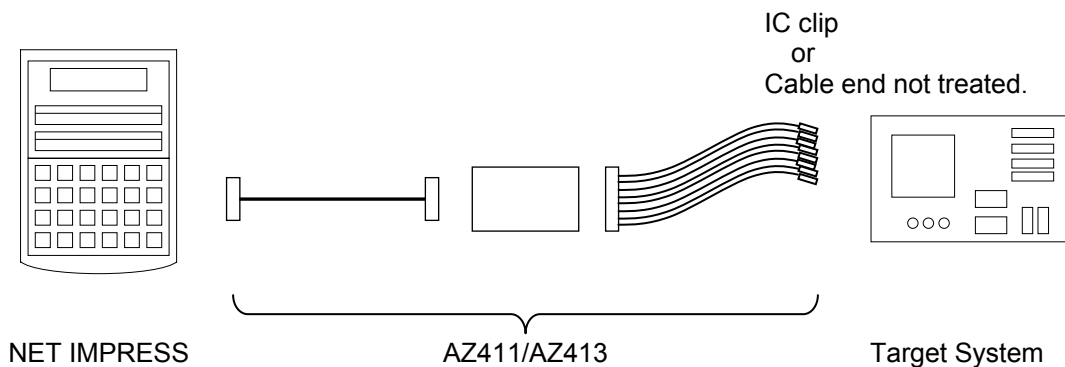
AZ411/AZ413

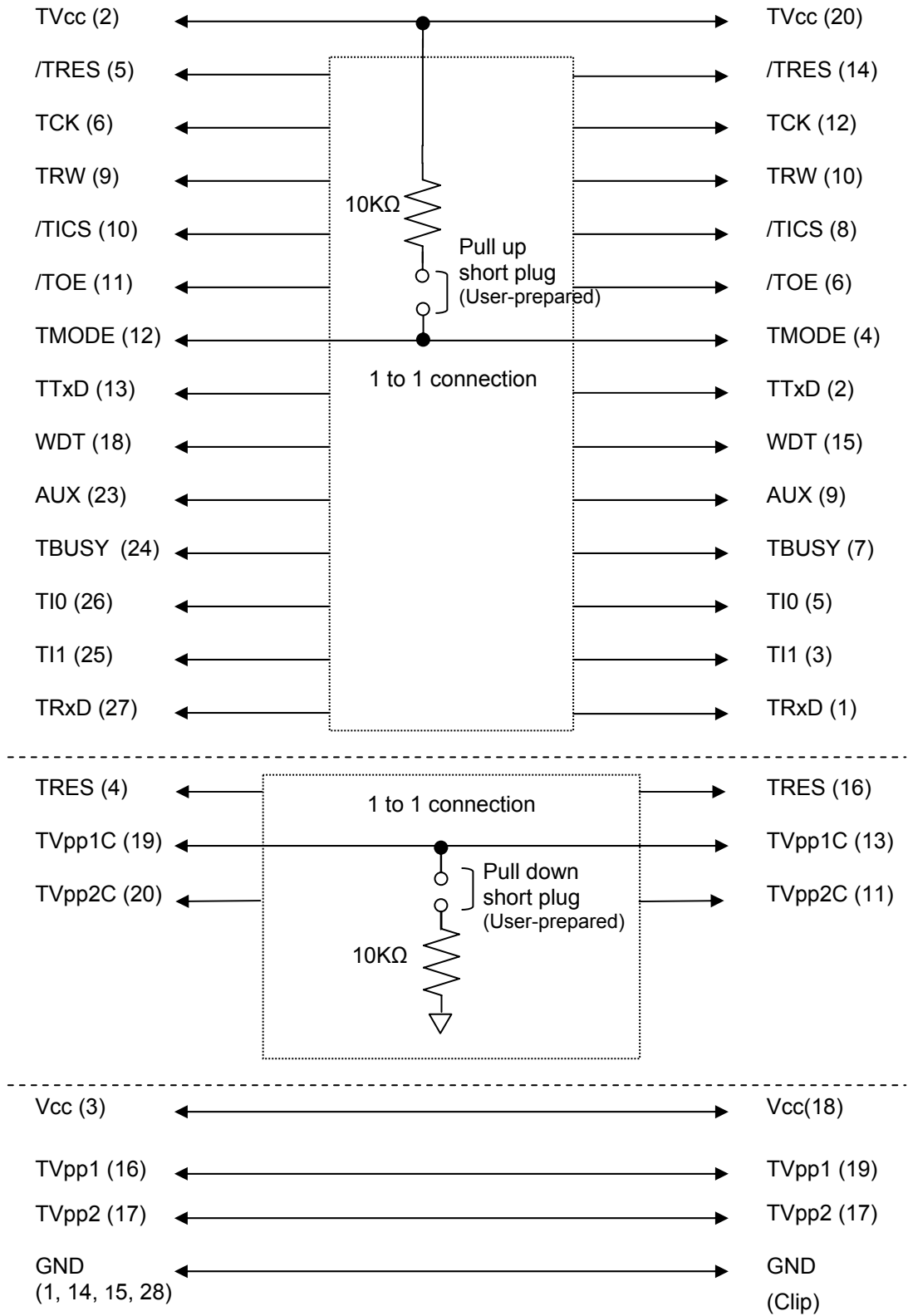NET IMPESS' side   User Target's side

TVcc (2) ←——————————————————•——————————————————→ TVcc (20)

/TRES (5) ←——————————————————————————————————→ /TRES (14)

TCK (6) ←———————————————————————————————————→ TCK (12)

TRW (9) ←———————————————————————————————————→ TRW (10)

/TICS (10) ←——————————————————————————————————→ /TICS (8)

/TOE (11) ←——————————————————————————————————→ /TOE (6)

TMODE (12) ←—————————————————•—————————————————→ TMODE (4)

10KΩ

Pull up
short plug
(User-prepared)

1 to 1 connection

TTxD (13) ←——————————————————————————————————→ TTxD (2)

WDT (18) ←———————————————————————————————————→ WDT (15)

AUX (23) ←———————————————————————————————————→ AUX (9)

TBUSY (24) ←—————————————————————————————————→ TBUSY (7)

TI0 (26) ←———————————————————————————————————→ TI0 (5)

TI1 (25) ←———————————————————————————————————→ TI1 (3)

TRxD (27) ←——————————————————————————————————→ TRxD (1)

- -

TRES (4) ←———————————————————————————————————→ TRES (16)

1 to 1 connection

TVpp1C (19) ←————————————————•————————————————→ TVpp1C (13)

Pull down
short plug
(User-prepared)

TVpp2C (20) ←————————————————————————————————→ TVpp2C (11)

10KΩ

- -

Vcc (3) ←———————————————————————————————————→ Vcc(18)

TVpp1 (16) ←—————————————————————————————————→ TVpp1 (19)

TVpp2 (17) ←—————————————————————————————————→ TVpp2 (17)

GND
(1, 14, 15, 28) ←————————————————————————————→ GND
                                                   (Clip)

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7 Adapting to Derivative Microcomputers ─ Modifying Parameters

7.1   Minor Parameter Modification through the Keyboard of NETIMPRESS

For the parameters that are defined by the function commands (FUNCTION D1 to FUNCTION DF) as described in the Section 5.4 "Parameters Settings" of the MegaNETIMPRESS/C"arNETIMPRESS Instruction Manual, you can modify them through the keyboard of NETIMPRESS. Parameters for communication interface with a target system, voltage of a target system, etc., for example, are included in those you can modify through the keyboard of NETIMPRESS.

IMPORTANT:
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 NETIMPRESS. 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 is available at our Web site. For details, contact your local distributor or us.

7.2   Modifying Parameters for Target Microcomputer using the Remote Controller

The Remote Controller AZ490 for controlling NETIMPRESS 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 the following parameters.

- MCU Type: Name of a target microcomputer displayed on the LCD of NETIMPRESS

- Flash ROM Area: Flash memory area of the target microcomputer

- ROM Block: Flash memory block alignment can be set up with address and size for each block group, enabling you to use the Control Module with derivative microcomputers.

- MCU Clock: MCU clock frequency

- Communication Interface: Communication interface with a target system.

- Other: Microcomputer-specific information defined by the Control Module

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

Ethernet

NET IMPRESS

Personal Computer
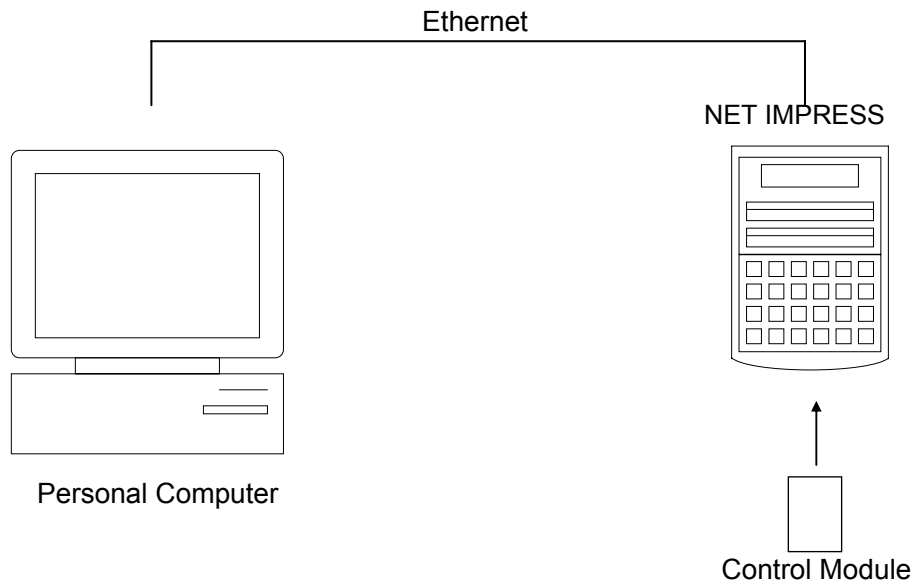
Control Module

Connect a PC and NETIMPRESS using Ethernet cable (10BASE-T or 100BASE-TX).

Insert the Control Module matching with the target microcomputer into NETIMPRESS' card slot.

By running the remote controller on a Windows PC, you can modify or check parameter tables of the Control Module inserted in NETIMPRESS.

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.

# 8 Replacing Definition Program

8.1 Overview

The Compact 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 Compact Module to program microcomputers of different programming specifications by adding the definition program license to the Compact Module. The definition program license is available for your additional order. If you have any questions, contact your local distributor or us.

Ethernet

Personal Computer   NETIMPRESS

Definition Program File (XXX.CM)   Control Module
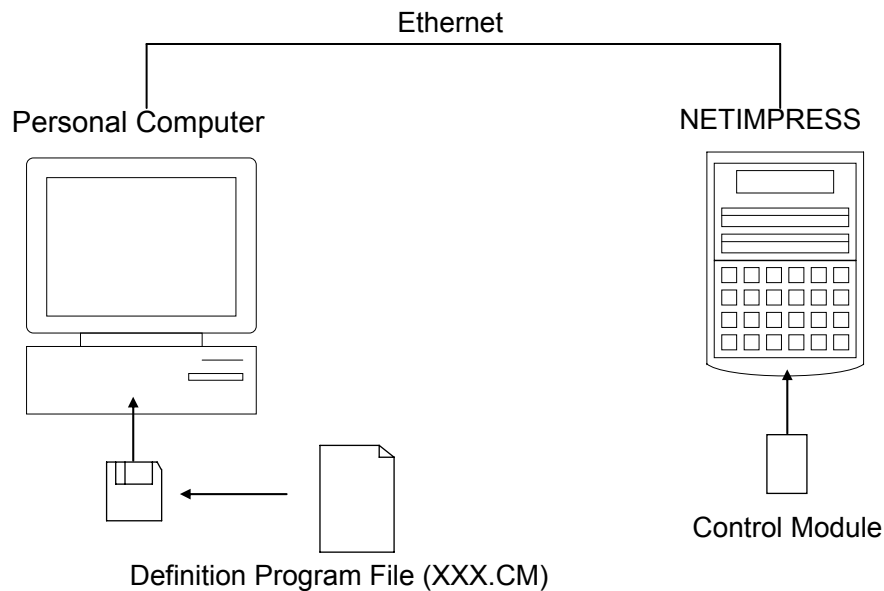
8.2   How to Replace Definition Program

By setting the Compact Module added with a definition program license into NETIMPRESS, you can replace the definition program of the Control Module using the definition program download function of the Remote Controller AZ490 (Load Definition Program button on the File Transfer tab). (Note that you cannot use this function if you are using NETIMPRESS as stand-alone.) When you purchase the definition program license, download the definition program file ("xxx.CM"), which is in the CD provided with the definition program license, into the Compact Module.
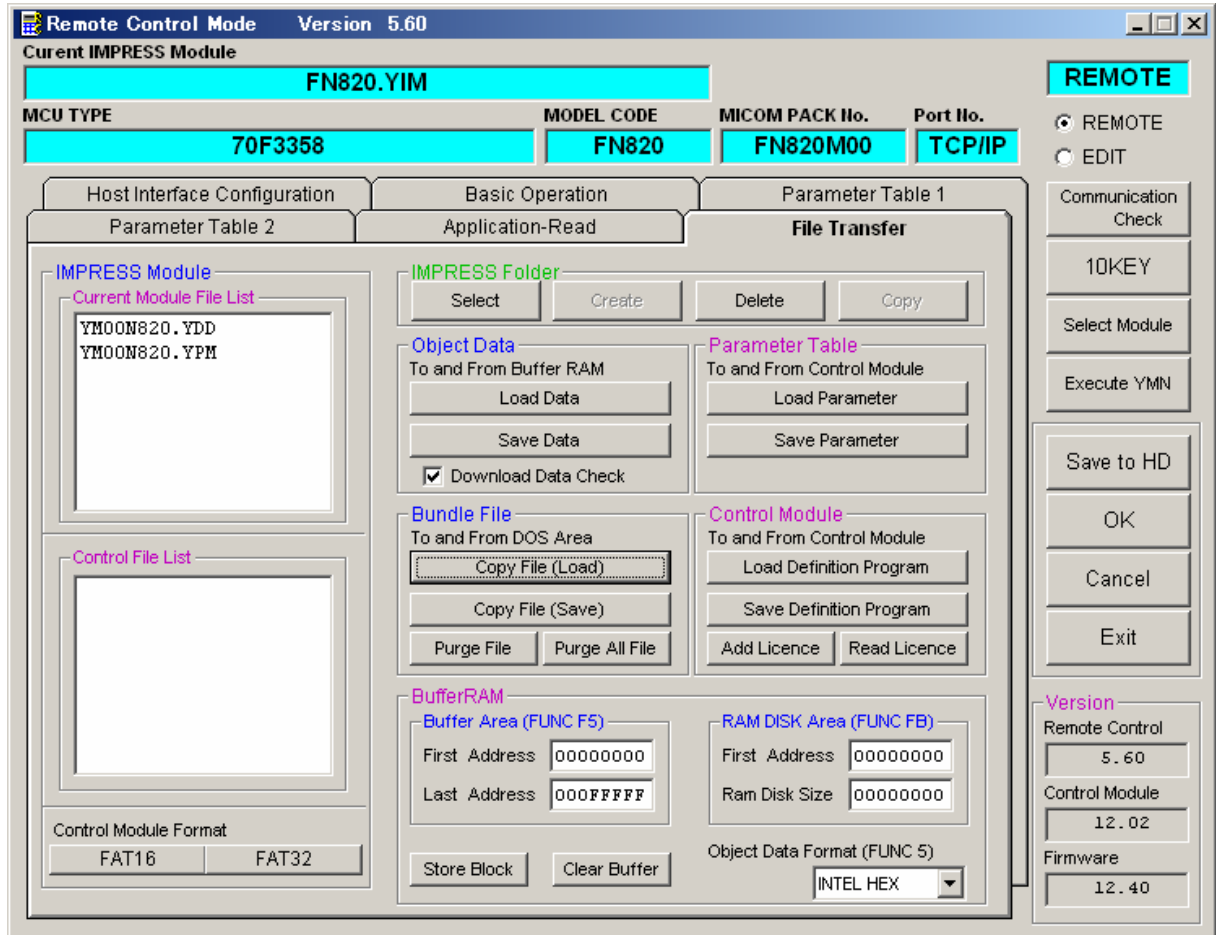
9   Notes and Cautions for Using Control Module

(1) The Control Module FN820 is built for NETIMPRESS. *DO NOT* use this Control Module for any flash microcomputer programmers other than NETIMPESS series.

(2) The Control Module FN820 is designed for 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) NETIMPRESS consumes power of several mA from Tvccd terminal to drive the interface IC with a target system (IC inside NETIMPRESS).

(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 operation is being executed. Be sure not to insert the Control Module into or remove it from the flash programmer while accessing it.

(6) Use NETIMPRESS with the Control Module inserted into it.