

**Control Module  
Instruction Manual**

**Control Module  
For  
Flash Microcomputer Programmer**

**NET IMPRESS  
(MegaNETIMPRESS/C"arNETIMPRESS)**

**FF801**

**Target Microcomputer: MB91F355**

**Yokogawa Digital Computer Corporation**

**FF801 (MB91F355)**

**Instruction Manual**

**No. M2329DC-01**

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## 1 Overview

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The FF801 is the control module for the MegaNETIMPRESS or C"arNETIMPRESS ("NETIMPRESS" collectively), the advanced on-board flash microcomputer programmer.

The control module FF801 supports programming the flash ROM inside Fujitsu MB91F355 and other equivalent flash microcomputers that have the same programming algorithm and protocol as Fujitsu MB91F355.

The control module FF801 consists of the Compact Flash Card containing the programming 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 FF801 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 FF801, 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 FF801 is designed to support programming microcomputers of a wide range and you can program a microcomputer of different programming voltage (Vpp) 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 FF801, 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.

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## 2 Specifications

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### 2.1 Target Microcomputer and Specifications

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

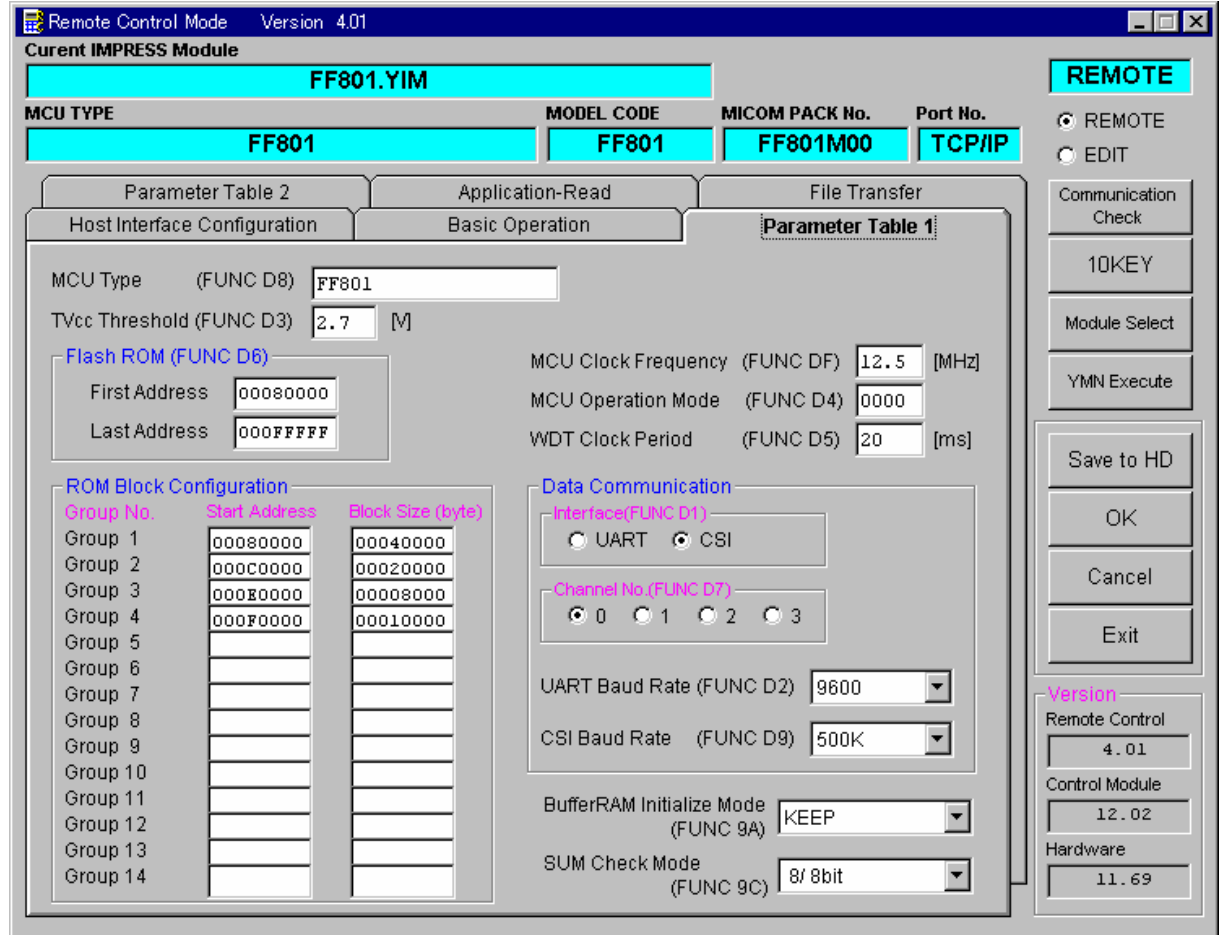
Control Module	FF801
Target Microcomputer	MB91F355
User Flash Memory Capacity	512Kbyte
User Flash Memory Address	#00080000 to #000FFFFFF *1
Programming Voltage (Vpp)	Not applied.
Default	
Vccp (Minimum voltage during programming)	—
Object File Format	Motorola S Binary
Default	Motorola S
Target Interface	CSI (Synchronous communication) Interface 62.5Kbps/125Kbps/250Kbps/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	10.0MHz to 12.5MHz
Voltage of target interface during programming	3.0V to 3.6V

## 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 NETIMPRESS senses the operation voltage (TVcc) of the target microcomputer and executes the Device Functions when the TVcc gets higher than the specified value.

For setting up TVcc threshold at the side of the NETIMPRESS, see the MegaNETIMPRESS/C"arNETIMPRESS 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 NETIMPRESS and this is only for display.

For details, see the MegaNETIMPRESS/C"arNETIMPRESS 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:**

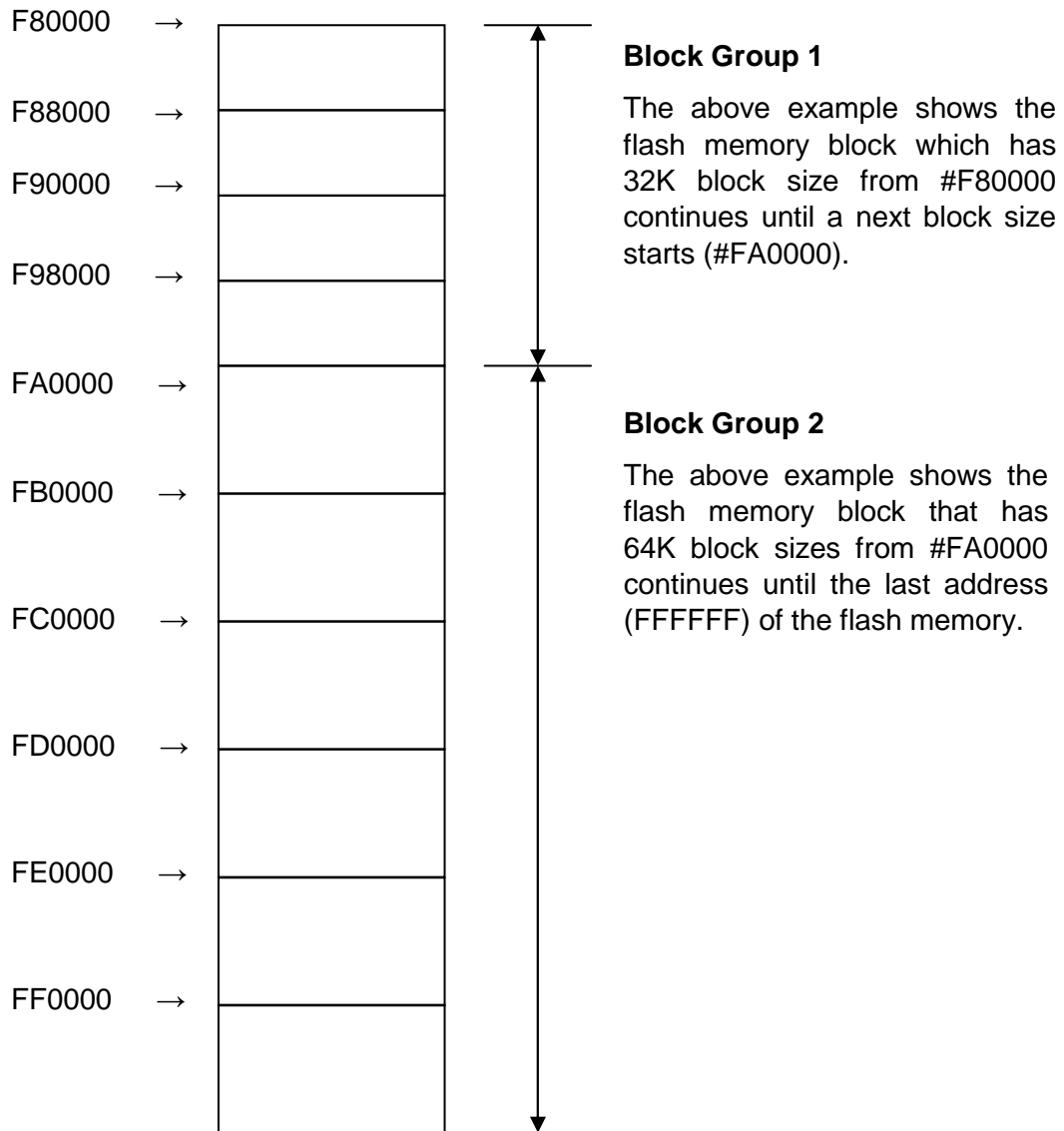
The block data table consists of information of three kinds: Group No., Start Address and Block Size.

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 NETIMPRESS understands that the flash memory blocks of a size specified in the Block Size are placed sequentially until a next block group address. Also, if a block size is set to 1, it becomes an access-prohibited area. The Device Functions cannot be executed in such access-prohibited area even if it is an area to execute the Device Functions.

Example:

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

Block Start Address



#### **(4) MCU Clock Frequency [ FUNC D F ]**

This setting is not required with FF801.

#### **(5) MCU Operation Mode [FUNC D 4]**

This setting is not required with FF801.

#### **(6) WDT Clock Period [FUNC D 5]**

The 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) that is listed in the target probe signal list of Section 4.1 "Signal List".

For setting up the WDT signal with the NETIMPRESS, see the MegaNETIMPRESS/C"arNETIMPRESS Instruction Manual, Section 5.4.7 "Setting Watch Dog Timer".

#### **(7) Data Communication**

This is the field to make communication settings between the NETIMPRESS and the target microcomputer. For the FF801, make the settings as follows.

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

Be sure to select CSI (synchronous communication). For setting up a communication method with the NETIMPRESS, see the MegaNETIMPRESS/C"arNETIMPRESS Instruction Manual, Section 5. 4. 2. "Communication Channel Setting".

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

This setting is not required with FF801.

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

This setting is not required with FF801.

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

Set up a communication speed for the CSI communication.

For setting up the CSI Baud Rate with the NETIMPRESS, see the MegaNETIMPRESS/C"arNETIMPRESS Instruction Manual, Section 5. 4. 4. "CSI Baud Rate Setting".

#### **(8) 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 NETIMPRESS main unit.

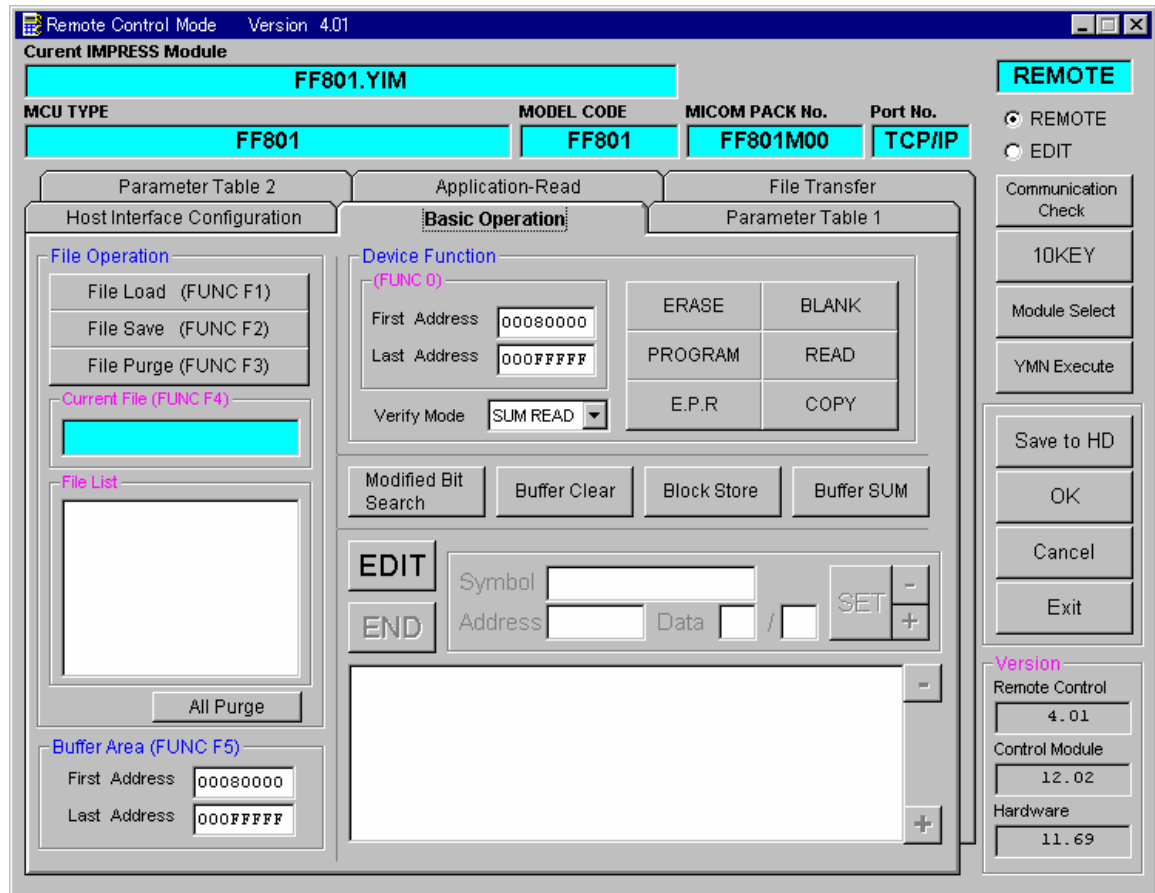
You can enter any characters up to 16 characters such as microcomputer's model name or device name you are using.

#### **(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) – (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 NETIMPRESS (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.

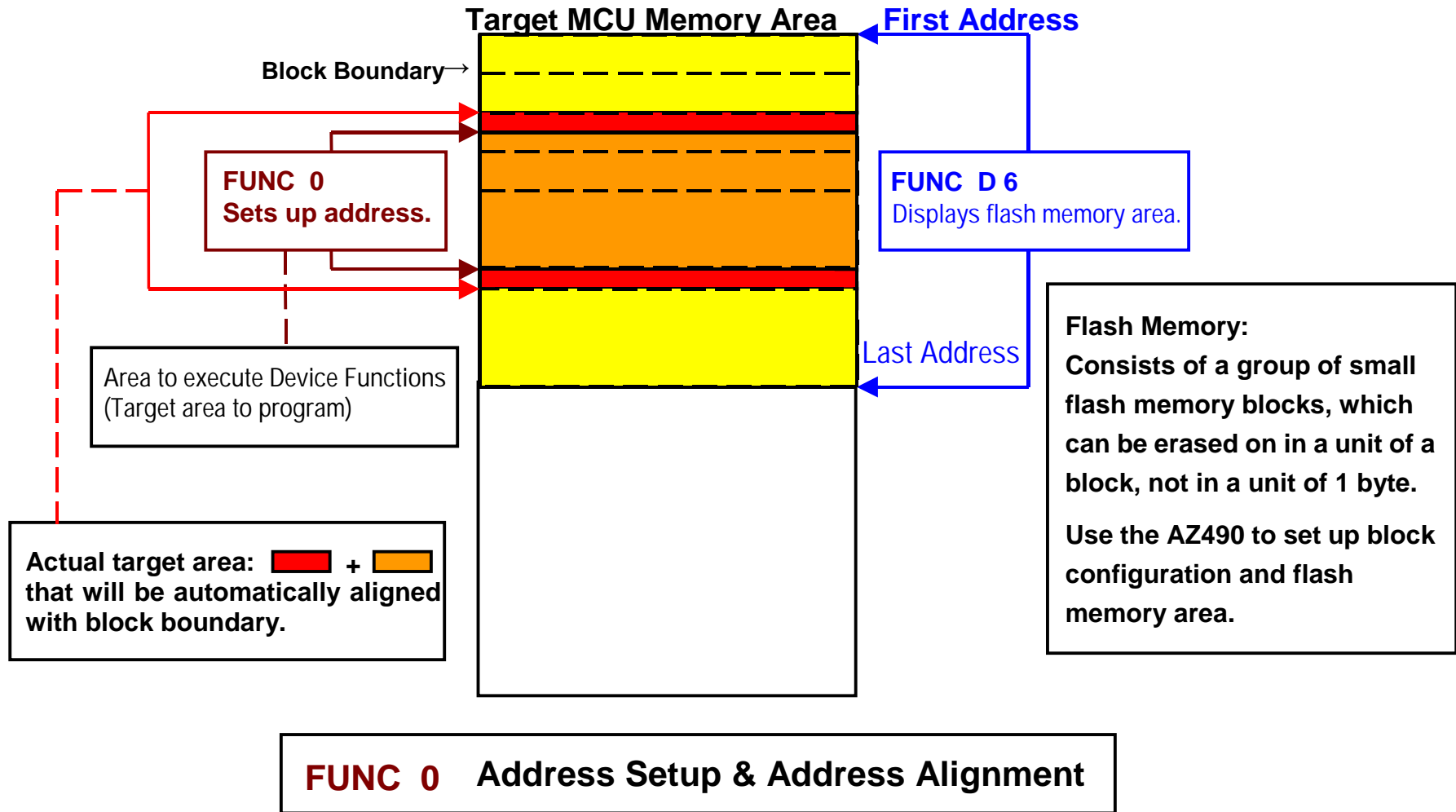


Figure 2-1

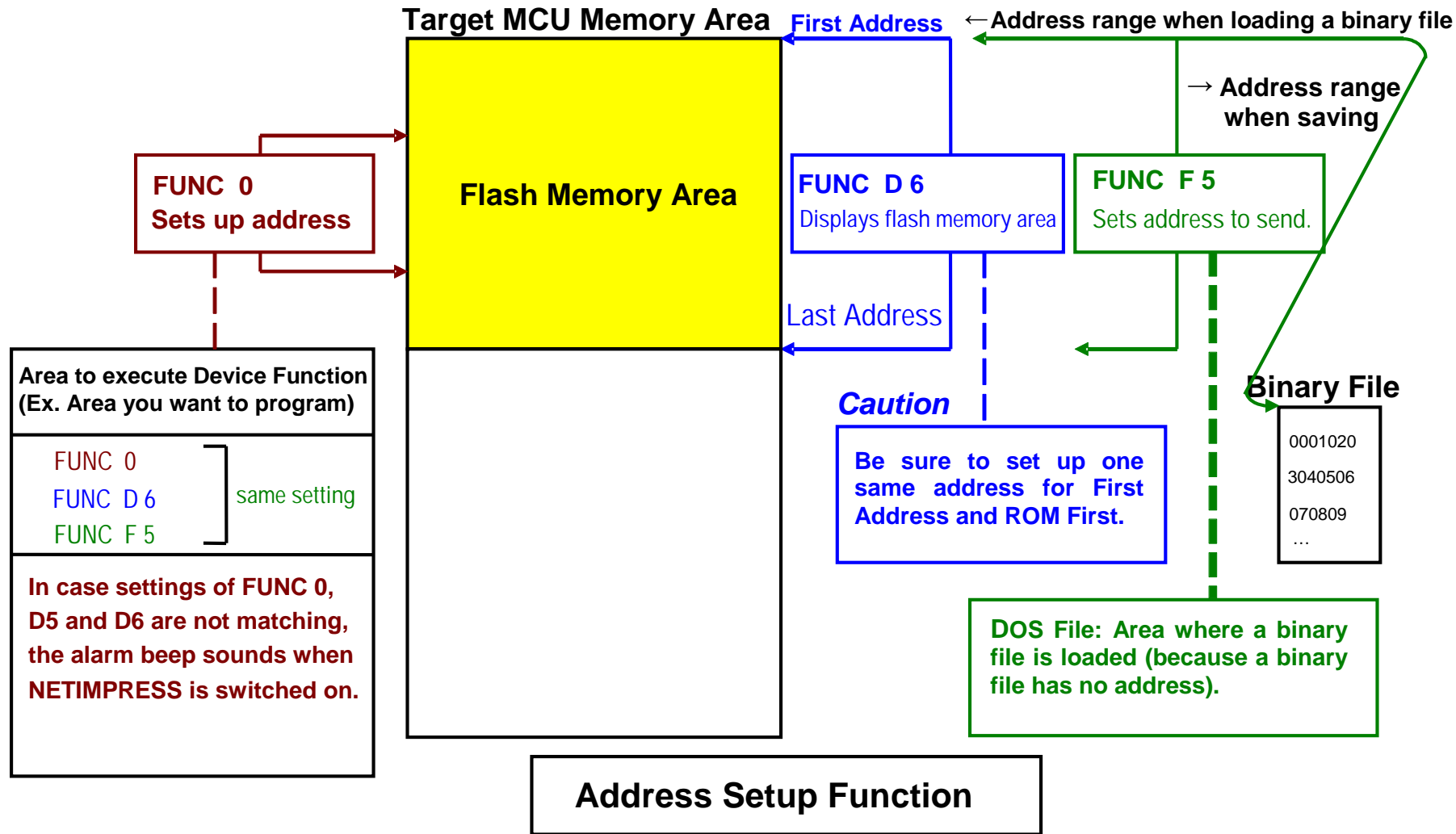


Figure 2- 2

### 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 4.01

Current IMPRESS Module: **FF801.YIM**

MCU TYPE: **FF801**    MODEL CODE: **FF801**    MICOM PACK No.: **FF801M00**    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	08	00	00	03	F0	30	00	01	13	88	F1	9F	19	00
0D0:	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0E0:	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0F0:	EA	64	03	E8	03	E8	B6	F5	01	90	08	01	00	00	00	00
140:	00	00	00	00	00	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: 4.01  
Control Module: 12.02  
Hardware: 11.69

### 2.3 Device Functions and Their Operation

The table below lists the operations to the flash memory that are executed when the NETIMPRESS 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)	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		<input checked="" type="checkbox"/> Erase <input checked="" type="checkbox"/> Blank	<input checked="" type="checkbox"/> Blank	<input type="checkbox"/> Erase <input type="checkbox"/> Blank <input checked="" type="checkbox"/> Program <input checked="" type="checkbox"/> Read	<input checked="" type="checkbox"/> Read	<input checked="" type="checkbox"/> Erase <input checked="" type="checkbox"/> Blank <input checked="" type="checkbox"/> Program <input checked="" type="checkbox"/> Read	<input checked="" type="checkbox"/> Copy <input checked="" type="checkbox"/> Read

---

## 3 Copying Write Control Program into Microcomputer

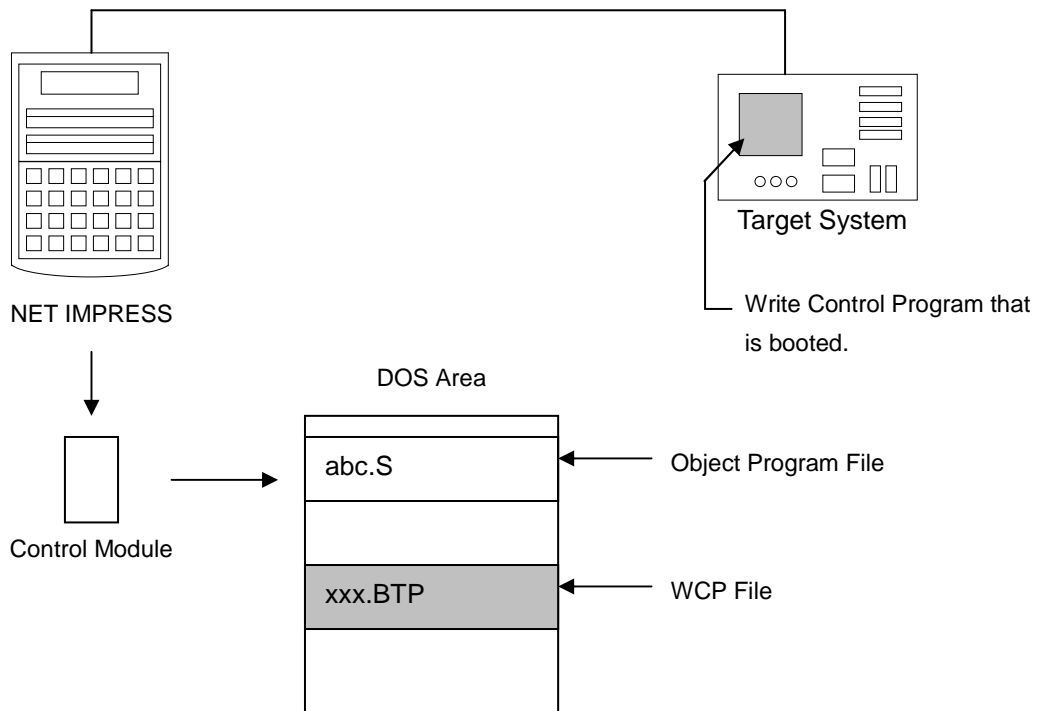
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### 3.1 Overview

With the control module FF801, 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 Micom Pack Disk provided with the control module, select the file with extension BTP, and place it in the DOS area of the control module.

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

- (1) Set the control module in the drive for Compact Flash, that is, PCMCIA card slot of a PC. Make sure that the driver for the Compact Flash has been properly installed in advance.
- (2) Copy the write control program (xxx. BTP) from the Micom Pack Disk into the root of the Compact Flash.

## 4 Connecting to the Target System and Connector

### 4.1 Signal List

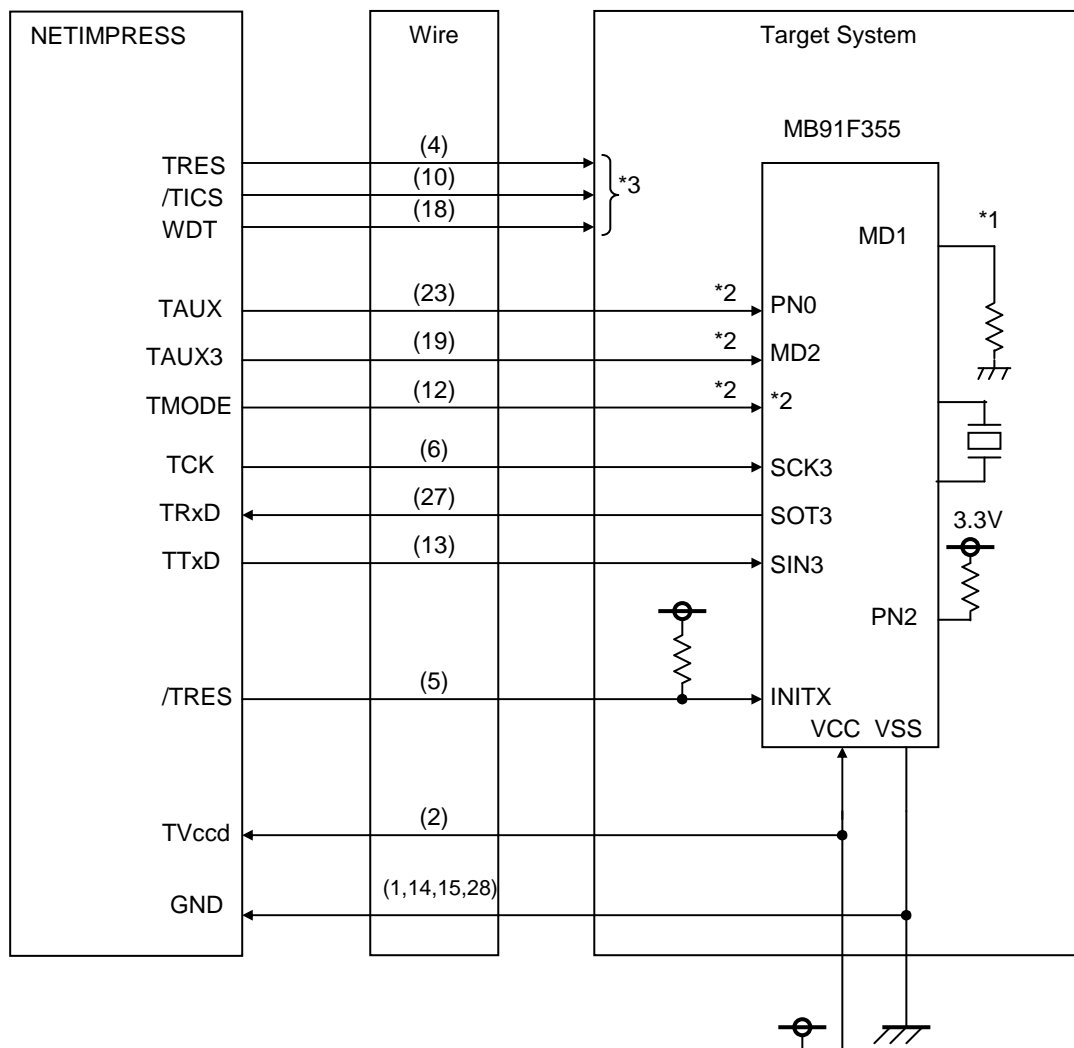
The table below lists signal example at the side of the target probe connector when using the control module FF801.

CPU Signal	NETIMPRESS Standard Signal				CPU Signal
VSS	GND	15	1	GND	VSS
	TVpp1	16	2	TVccd	VCC
	TVpp2	17	3	Vcc	
Watchdog pulse signal	WDT	(18)	(4)	TRES	Positive /TRES
MD2	TAUX3 TVpp1c	(19)	5	/TRES	INITX
	TAUX4 TVpp2c	20	6	TCK	SCK3
	Reserved	21	7	Reserved	
	Reserved	22	8	Reserved	
PN0	TAUX	(23)	9	TAUX2 (TRW)	
	TBUSY	24	(10)	/TICS	for Multiplexer
	TI0	25	11	TAUX5 (/TOE)	
	TVccs	26	(12)	TMODE	MD0
SOT3	TRxD	27	13	TTxD	SIN3
VSS	GND	28	14	GND	VSS

**Table 4-1: Target Probe Signal List (MB91F355)**

- Be sure to connect the signals marked with “○” to the target system.
- For the signals in parentheses, connect them only when necessary.
- For the signals not marked with “○” or not in parentheses, be sure not to connect them to a circuit of the target system.

## 4.2 Model Connection to Target System



\*1: Set MD1 to “L” and PN2 to “H” respectively on a target system.

\*2: They are not required to be connected when they are set up to the specified values as listed below on a target system.

Signal Name	Value
PN0	VSS
MD0	VSS
MD2	VCC

When connecting with the NETIMPRESS, use either pull-up or pull-down resistor of about 10K $\Omega$  according to a mode you want to use.

\*3: They are the optional functions.

(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 NETIMPRESS 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 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 the NETIMPRESS.

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

(3) TRES Signal:

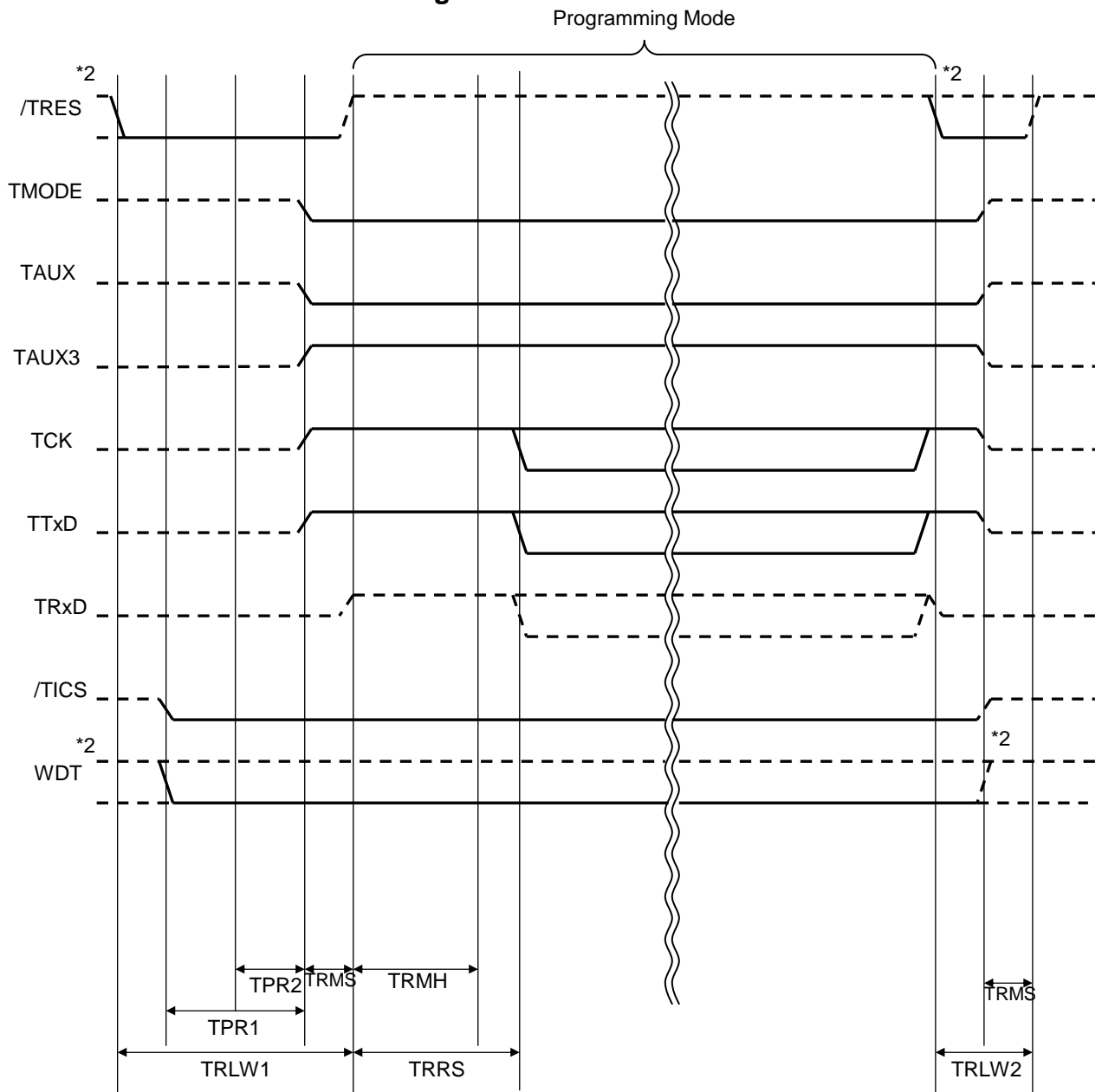
The NETIMPRESS is provided with /TRES signal in the standard probe, which is an open collector type output so that it can make wired-or connection in the target system and be connected to /RESET signal of your microcomputer using the user circuit. /TRES signal can be used when the target system requires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

(4) MD0, MD1 and MD2 Signals

MD0 to MD2 at the side of a target microcomputer are the pins to determine an operation mode of a microcomputer you will use. However, when programming flash memory, "flash programming mode" signals are output to these signals from the NETIMPRESS.

Use either a pull-up or pull-down resistor of about 10K $\Omega$  according to an operation mode.

### 4.3 Waveform of Control Signal



NETIMPRESS Specification	
TRLW1	300 ms (Minimum)
TRLW2	100 ms (Minimum)
TPR	200 ms (Minimum)
TRMS	50 ms (Minimum)
TRMH	400 ms (Minimum)
TRRS	410 ms (Minimum)

\*1: The dotted line "-----" indicates HIZ state.

\*2: /TRES and WDT are the open collector output signals and can be switched for output control. For details, contact our support center.

- (1) Power on the NETIMPRESS 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 NETIMPRESS 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 NETIMPRESS, independently from other user circuit.)
- (3) The NETIMPRESS 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 NETIMPRESS using a specified communication circuit.  
Channels specified in the MPU Clock Frequency [FUNC D F] in advance will be selected for communication circuit.
- (7) When programming is finished, applying Vpp automatically ends.
- (6) The NETIMPRESS 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 MegaNETIMPRESS/C”arNETIMPRESS Instruction Manual, Section 8. 6. “Target Interface”.

### AZ411/AZ413

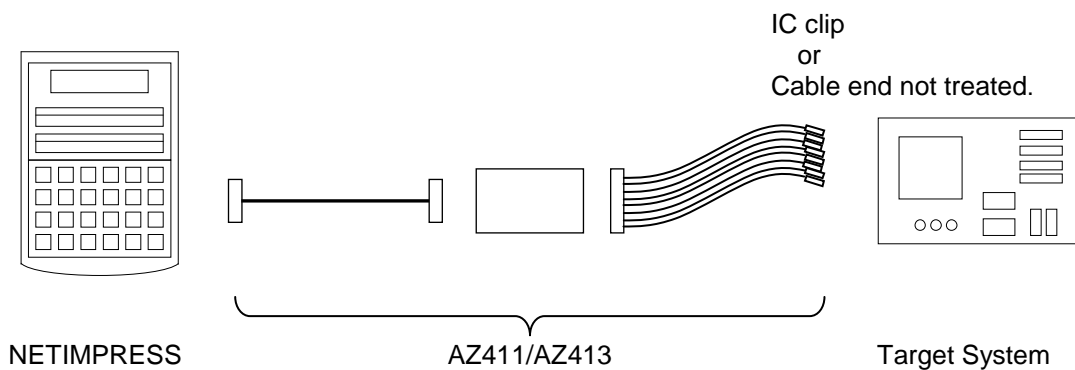
Most of I/O lines of the NETIMPRESS have  $1M\Omega$  pull-down resistors between the GND line and signal lines.

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

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

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

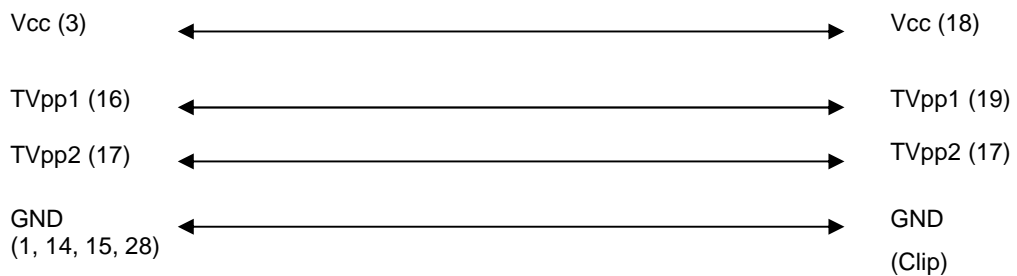
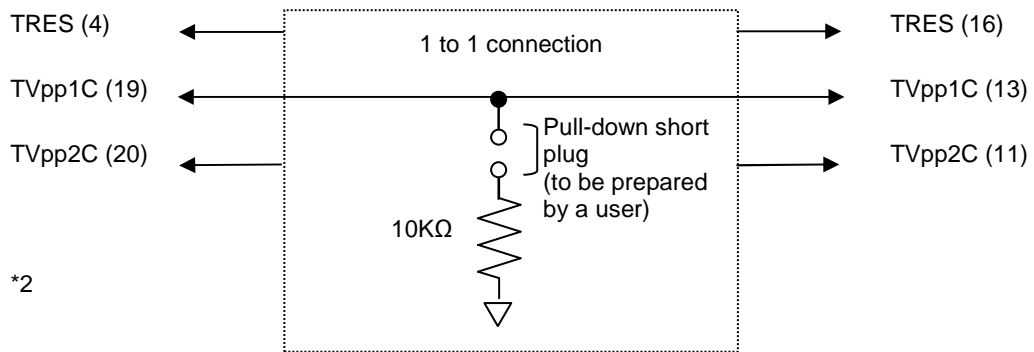
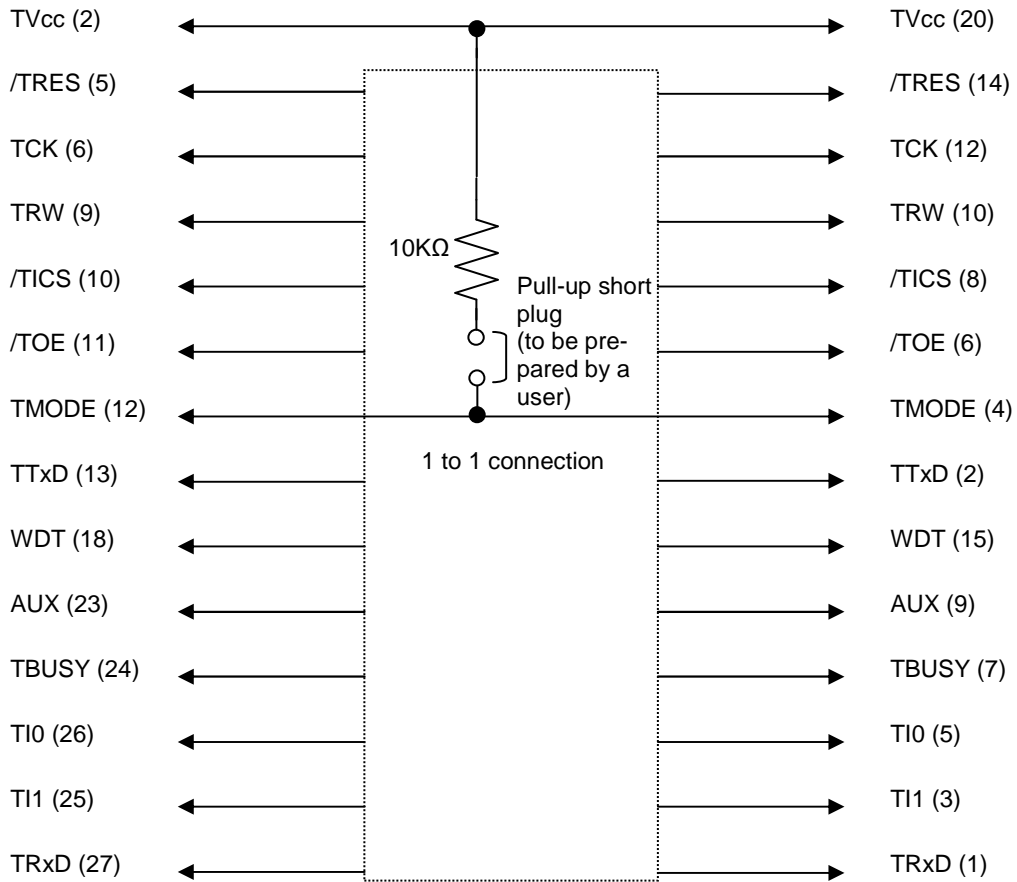
AZ411/AZ413 enables you to optionally add pull-up/pull-down resistors to the control lines running from the NETIMPRESS.



# AZ411/AZ413

NET IMPRESS' side

User Target's side



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## 5 Adapting to Derivative Microcomputers – Modifying Parameters

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### 5.1 Minor Parameter Modification through the Keyboard of the 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 the NETIMPRESS. 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 NETIMPRESS.

**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 NETIMPRESS. For modifying them, it is recommended to use the remote controller AZ490 that is available for an additional order.

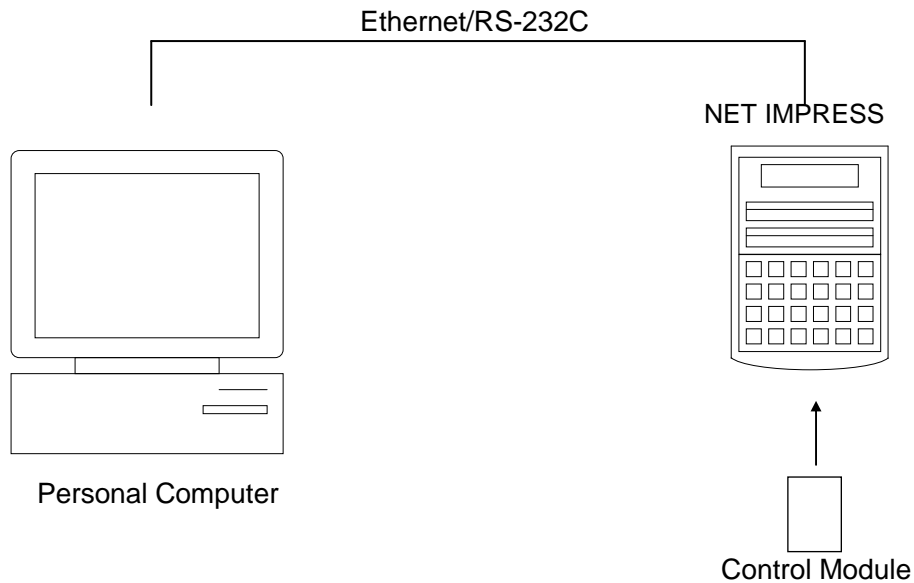
Also, the parameter list of actual microcomputers are available at our Web site. For details, contact your local distributor or us.

### 5.2 Modifying Parameters for Target Microcomputer using the Remote Controller

The remote controller software AZ490 for controlling the 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 parameters including the following.

- MCU Type: Name of a target microcomputer  
The name of a microcomputer displayed on the LCD of the NETIMPRESS 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 NETIMPRESS using Ethernet cable (10BASE-T) or RS-232c cable.

Insert the control module supporting the target microcomputer into the NETIMPRESS' card slot.

By running the Remote Controller on a PC, you can modify or check parameter tables of the control module inserted in the 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.

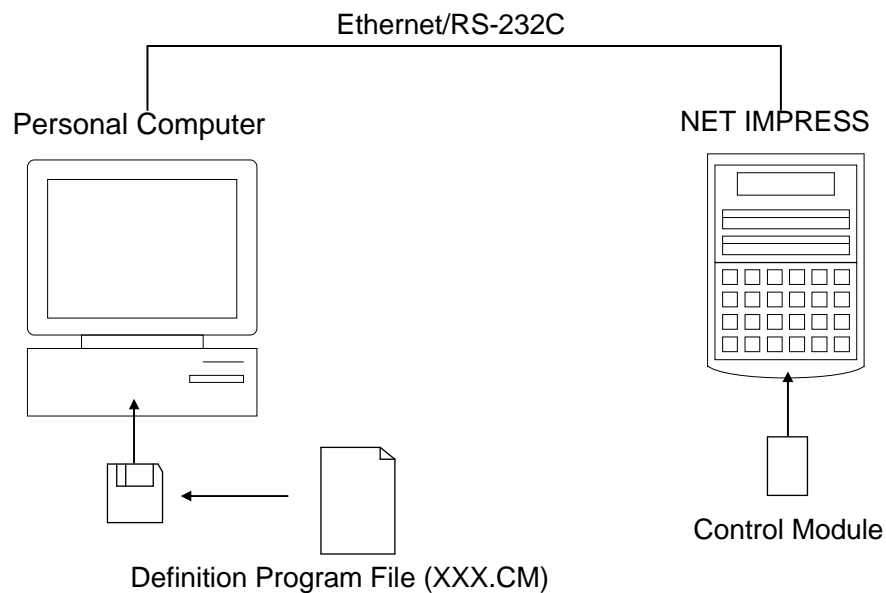
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## 6 Replacing Definition Program

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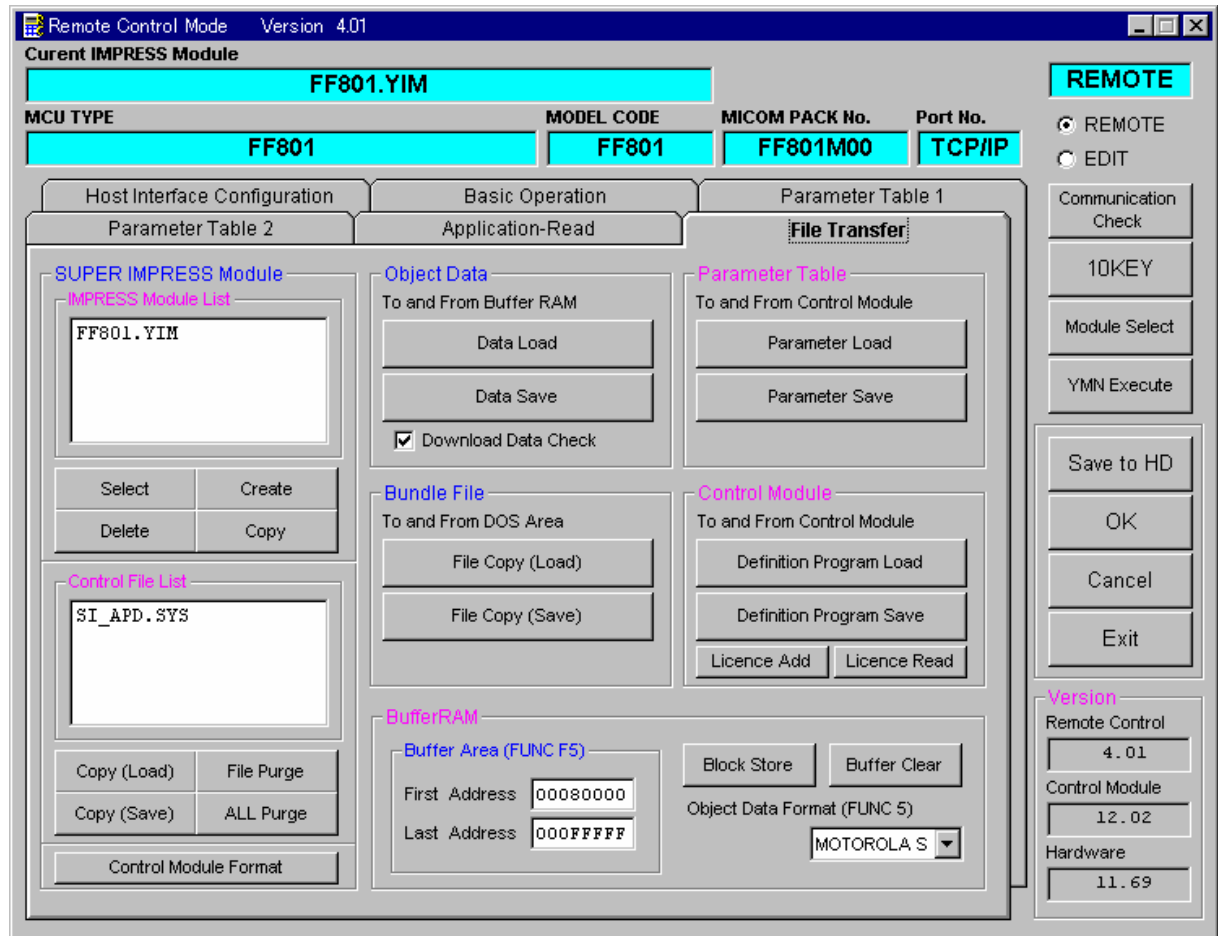
### 6.1 Overview

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. For 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 NETIMPRESS, 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 NETIMPRESS 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 Creating the Control Module

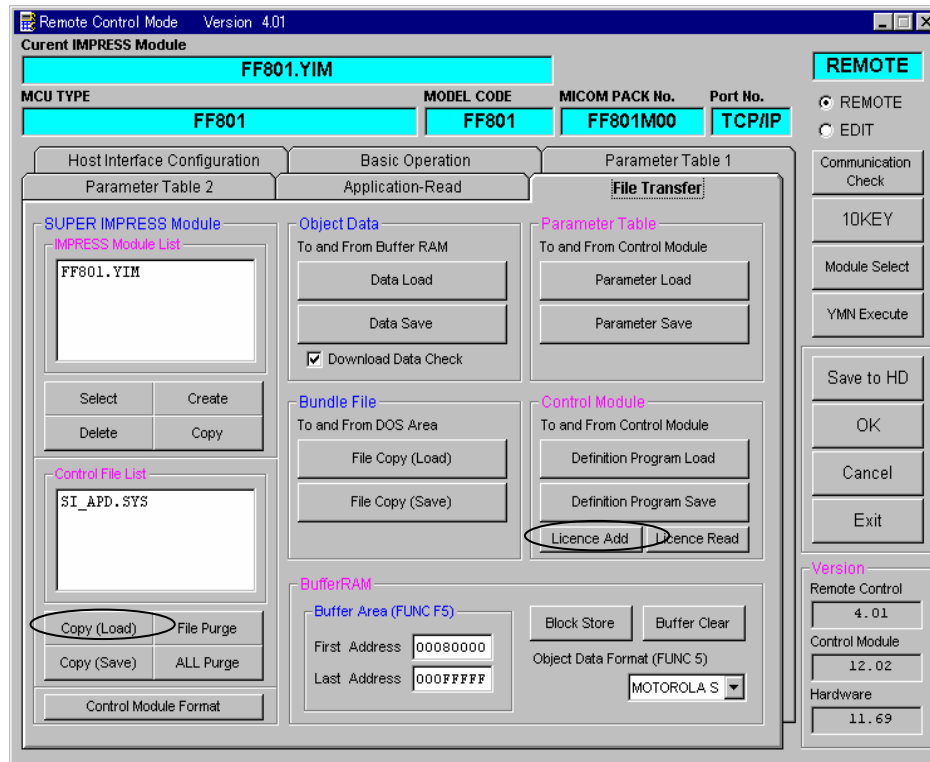
You can create the control module by performing the following steps.

(1) The first step is to add a license.

When you use the Remote Controller AZ490 to add a license, click [Copy (Load)] to choose a license from the license file (\*.yhc) and place it in the root directory in the Compact Flash.

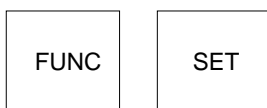
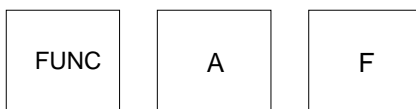
(Be sure to place only license file in the root directory in the Compact Flash.)

Then, click [License Add] to add the license.

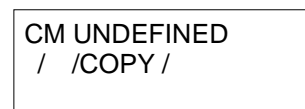
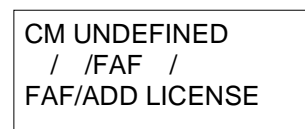


When using the NETIMPRESS as standalone, you can execute adding a license with [FUNC A F].

[Key Operation]

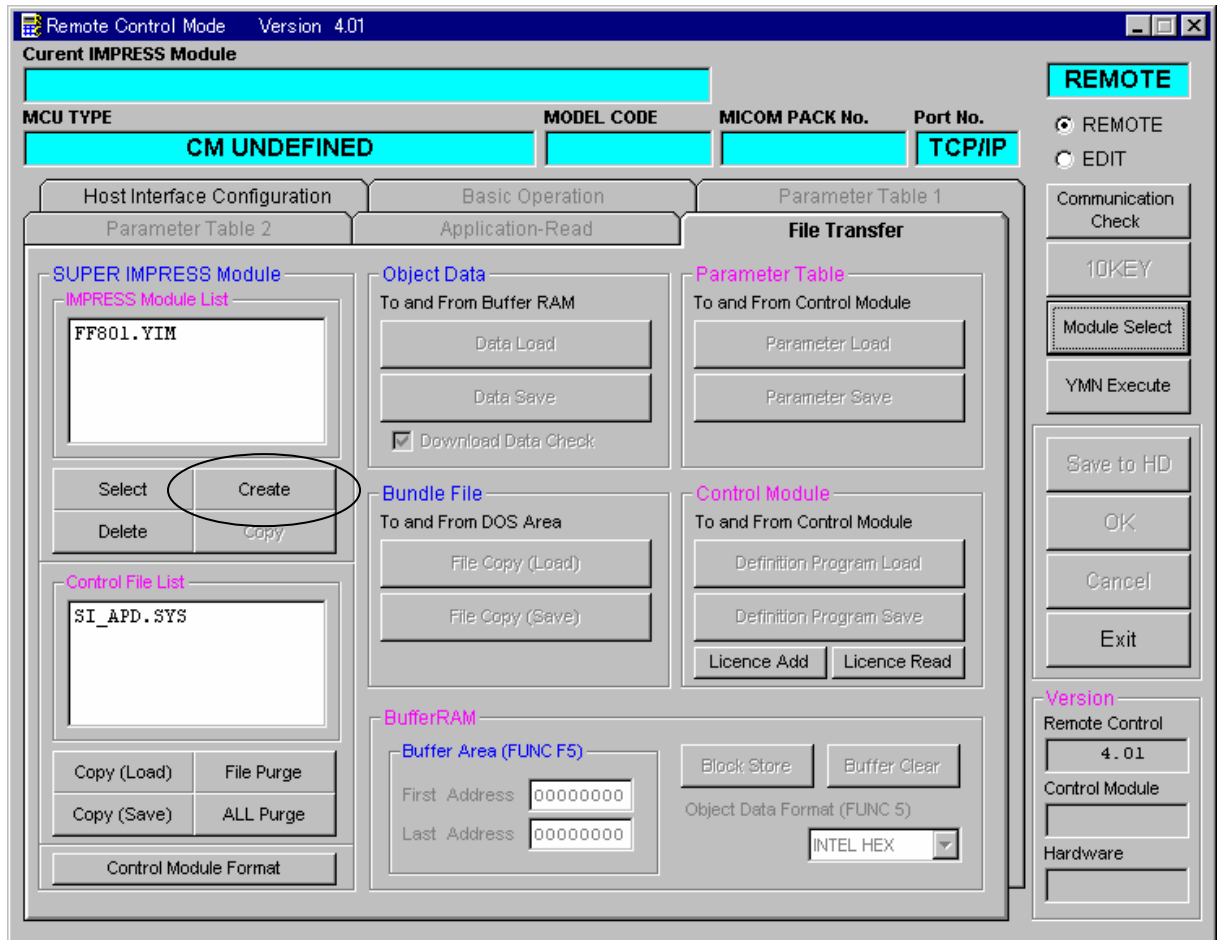


[LCD Display]

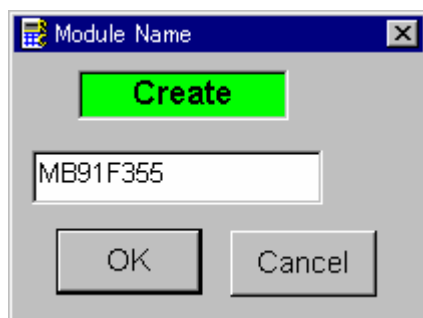


Execute adding the license.

(2) When you use the Remote Controller AZ490 to create the IMPRESS Module folder (\*.yim), the window as shown below appears. Click [Create].

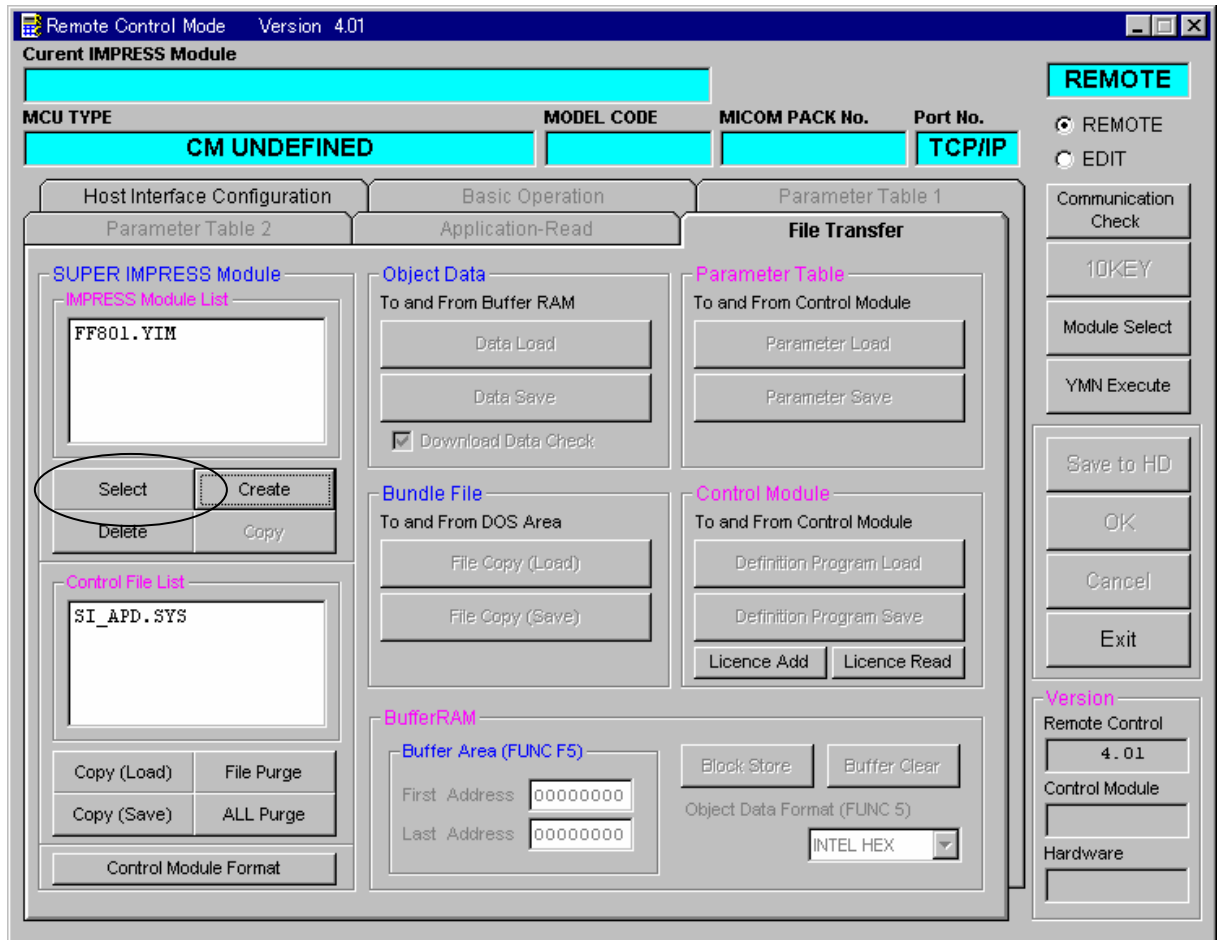


The window as shown below appears. Enter a folder name and click [OK].

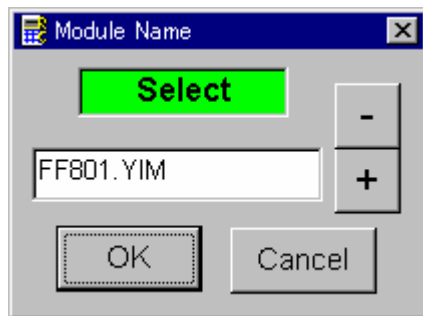


When using the NETIMPRESS as standalone, you can create the IMPRESSSS Module folder with [FUNC B 1] → [SET] → [FUNC SET].

(3) Set up a current IMPRESS Module folder. Click [Select].

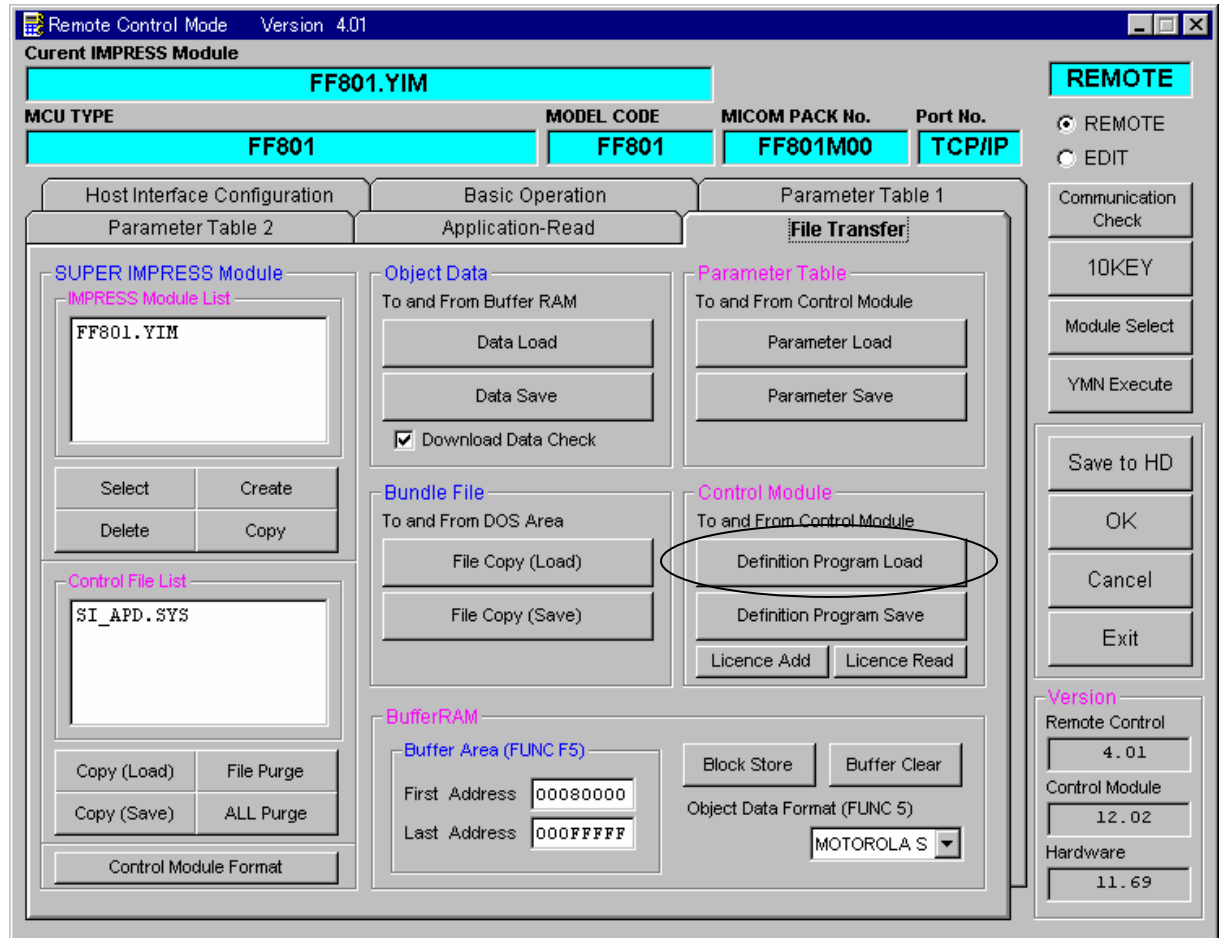


The window as shown below appears. Enter a folder name and click [OK].



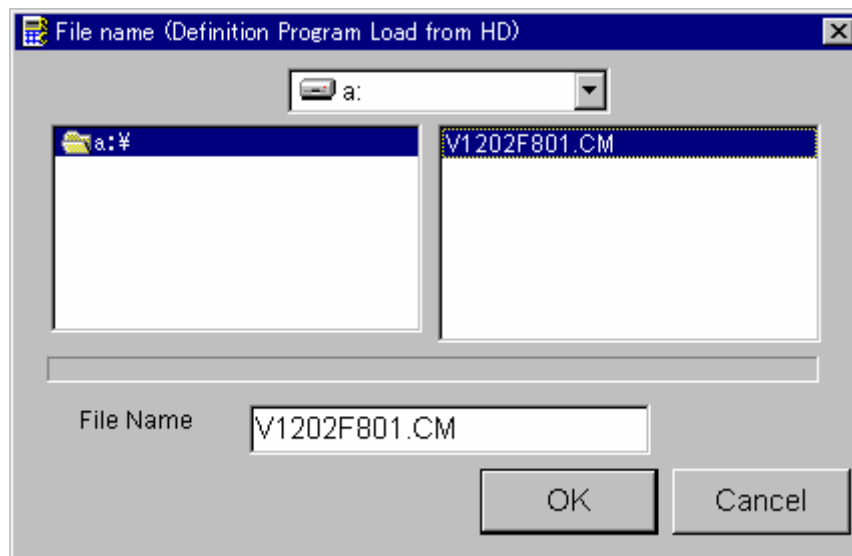
When using the NETIMPRESS as standalone, you can create the IMPRESSSS Module folder with [FUNC B 0] → [SET] → [FUNC SET].

(4) Click [Definition Program Load] to download the control module (\*CM).



The window as shown below appears.

Choose a CM file from the License Pack floppy disk, and click [OK].



Now, the control module is created.

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## 8 Notes and Cautions for Using Control Module

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- (1) The control module FF801 is built for the flash microcomputer programmers NETIMPRESS. *DO NOT* use this control module for any flash microcomputer programmers other than the NET IMPRESS series.
- (2) The control module FF801 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 NETIMPRESS consumes power of several mA from Tvcc terminal to drive the interface IC with the target system (IC inside the 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 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.