ＦＮ８２０Ｍ１４

Micom Pack
for NET IMPRESS
Control Module

Applicable microcomputers: μPD70F3378(V850ES/FJ3)
μPD70F3375(V850ES/FG3)
μPD70F3373(V850ES/FF3)
μPD70F3371(V850ES/FE3)

Instruction Manual for Micom Pack

Yokogawa Digital Computer Corporation

ＦＮ８２０Ｍ１４ (μＰＤ７０Ｆ３３７８・７０Ｆ３３７５・７０Ｆ３３７３・７０Ｆ３３７１)

Publication History

Edition	Date of Issue	Description
First edition	March 9, 2007	Initial publication
Second edition	May 26, 2008	Data flash memory added.
Third edition	November 14, 2008	Parameter file changed.

Table of Contents

1. Overview

This FN820M14 is Micom Pack for the control module FN820 for the NET IMPRESS and contains the parameter tables for Renesas Electronics' microcomputers, μPD70F3378, μPD70F3375, μPD70F3373, and μPD70F3371.

For details about compatibility with other microcomputers, contact Yokogawa Digital Computer Corporation or a dealer.

The following shows the controller module that can use this Micom Pack.

[Applicable control module]
FN820

<CAUTION>

This Micom Pack can be operated in combination with the specified control module.

Do not operate the Micom Pack in combination with a control module other than that specified.

Handing precautions specific to the Micom Pack are described on the Instruction Manual for Micom Pack.

Before operating the Micom Pack, be sure to read these cautions thoroughly.

This Micom Pack is operated with an optional remote controller (AZ490) (sold separately).

For details about how to load the Micom Pack, see Chapter 4.

If any question arises, please contact Yokogawa Digital Computer Corporation or a dealer.

[Check items]
a. Is the combination of Micom Pack and control Module right?
   Check that the microcomputer to be used, memory size, and power supply specifications are correct.
   Incorrect parameter values **may cause the microcomputer to break. So, carefully check the parameter values.**

If any question arises, please contact Yokogawa Digital Computer Corporation or a dealer.

2. Specifications

2-1. Applicable Microcomputers and Specifications

Items not described particularly conform to the NET IMPRESS standards.

	Typical microcomputer	FN820M14
Microcomputer	μPD70F3358	μPD70F3378 *2 μPD70F3375 μPD70F3373 μPD70F3371
Flash memory capacity	1MByte	256 Kbytes
Data flash memory capacity	-	32 Kbytes (64 Kbytes) *3
Flash memory address	#000000 to #0FFFFF	#000000 to #03FFFF
Data flash memory address	-	#1F8000 to #1FFFFF or #3F8000 to #3FFFFF or #7F8000 to #7FFFFF or #FF8000 to #FFFFFF (#100000 to #10FFFF) *3
Vpp during wire control	Not applied.	Same as left.
Default value	-	Same as left.
Object file format	Intel HEX Motorola S Binary	Same as left.
Default	Intel HEX	Same as left.
Target interface	UART (asynchronous communication) interface 9600/10400/19200/31250/38400/62500/76800 bps □ MSB First ■ LSB First	
	CSI (synchronous communication)/ HS-CSI (handshake synchronous communication) interface 62.5K/125K/250K/500K/850K/1.25M/2.5Mbps ■ MSB First □ LSB First	
Transfer data format between target and programmer	Binary	Same as left.
Microcomputer erase status	#FF	Same as left.

Target microcomputer operation frequency during data program	Operation clock
	  5.0 MHz to 32.0 MHz
	Input clock
	  2.5 MHz to 10.0 MHz
		Operation clock
		  16.0 MHz to 32.0 MHz
		Input clock *1
		  4.0 MHz to 16.0 MHz

Target interface voltage during data program	3.0 V to 3.6 V	3.3 V to 5.25 V

*1 The internal clock (multiplication ratio) during programming is set as follows according to the input clock.

4.0 MHz	8-multiplication
4.0 MHz $<$ fxtal $\leqq$ 8.0 MHz	4-multiplication
8.0 MHz $<$ fxtal $\leqq$ 16.0 MHz	2-multiplication

This Micom Pack provides three kinds of parameter files according to the input clock range.
Be sure to use the parameter file suitable for conditions. For details, see Chapter 4.
Set the input clock for the set value of [FUNC DF].
For details about [FUNC DF] setting, see the Instruction Manual for Control Module.

*2 In this manual, "μPD70F3378" is described as a typical microcomputer in later portions.

*3 About data flash memory
4-byte ID Tag string is laid out after 4-byte data in the object file for the data flash memory.

Address		Data	ID Tag	Data	ID Tag
00100000	:	00400000	00000000	00400004	00000000
00100010	:	00400008	00000000	0040000C	00000000

The data flash memory capacity on the NET IMPRESS is controlled as a capacity including the ID Tag.
(For example, 32 Kbyte-data flash memory is controlled as 64 Kbyte-memory including the ID Tag.)
The top address of data flash memory in buffer RAM of programmer is #00100000. An object file is created with the address setting including the ID Tag.

2-2. Setting the Serial Communication

The communication setting between the NET IMPRESS and target microcomputer is specified.
For the FN820M14, each item in the window is set as follows.

・Communication Path Selection [FUNC D1]
   Select UART (asynchronous communication) or CSI (synchronous communication).
   Even when using with CSI-HS, select CSI (synchronous communication).
   For details about how to set the communication path of the NET IMPRESS, see Section 5-4-2, "Setting
   the Communication Path", in the Instruction Manual for NET IMPRESS.

・Channel No. [FUNC D7]
   Set "0" for the UART communication.
   Set "0" for the CSI (CSIB0) communication.
   Set "2" for the CSI-HS (CSIB0) communication.
   For details about how to set the communication channels of the NET IMPRESS, see Section 5-4-9,
   "Setting the Communication Channels", in the Instruction Manual for NET IMPRESS.

・UART Baud Rate [FUNC D2]
   Set a communication speed for the UART communication.
   Select any of 9600/10400/19200/31250/38400/62500/76800 bps.
   For details about the UART communication speed setting of the NET IMPRESS, see Section 5-4-3,
   "Setting the UART Communication Speed", in the Instruction Manual for NET IMPRESS.

・CSI Baud Rate [FUNC D9]
   Set a communication speed for the CSI communication.
   Select any of 62.5K/125K/250K/500K/850K/1.25M/2.5 Mbps.
   For details about the CSI communication speed setting of the NET IMPRESS, see Section 5-4-4,
   "Setting the CSI Communication Speed", in the Instruction Manual for NET IMPRESS.

3. Connecting with the Target System and Dedicated Connector

3-1. Signal Table

Table 3-1 shows the signals at the target probe connector ends when using this Micom Pack.

Table 3-1　Target probe signal table (μPD70F3378)

Microcomputer signal	Standard signal name of NET IMPRESS				Microcomputer signal name
EVss	GND	(15)	(1)	GND	EVss
	TVpp1	16	(2)	TVccd	EVdd
	TVpp2	17	3	Vcc	-
Watchdog pulse signal	WDT	(18)	(4)	TRES	Positive logic/TRES
	TAUX3	19	(5)	/TRES	/RESET
FLMD0	TAUX4	(20)	(6)	TCK	SCKB0 *1*2
	Reserve	21	7	Reserve	
	Reserve	22	8	Reserve	
	TAUX	23	9	TAUX2	
PCM0　*2*3	TBUSY	(24)	(10)	/TICS	Signal for multiplex
	TI0	25	11	/TOE	
	TI1	26	(12)	TMODE	FLMD1
SOB0 TXDD0　*1	TRXD	(27)	(13)	TTXD	SIB0 RXDD0 *1
EVss	GND	(28)	(14)	GND	EVss

○ shows signal lines that need to be connected absolutely.

Signal lines in ( ) are used when necessary.

*1　UART:　　　　　　　TXDD0, RXDD0
　　CSI, CSI-HS (CSIB0):　SCKB0, SOB0, SIB0

*2　The connection is not needed when using with UART.

*3　The connection is not needed when using with UART or CSI (without handshake).

CAUTION:　Never connect the signal lines without ○ or ( ) to the target.
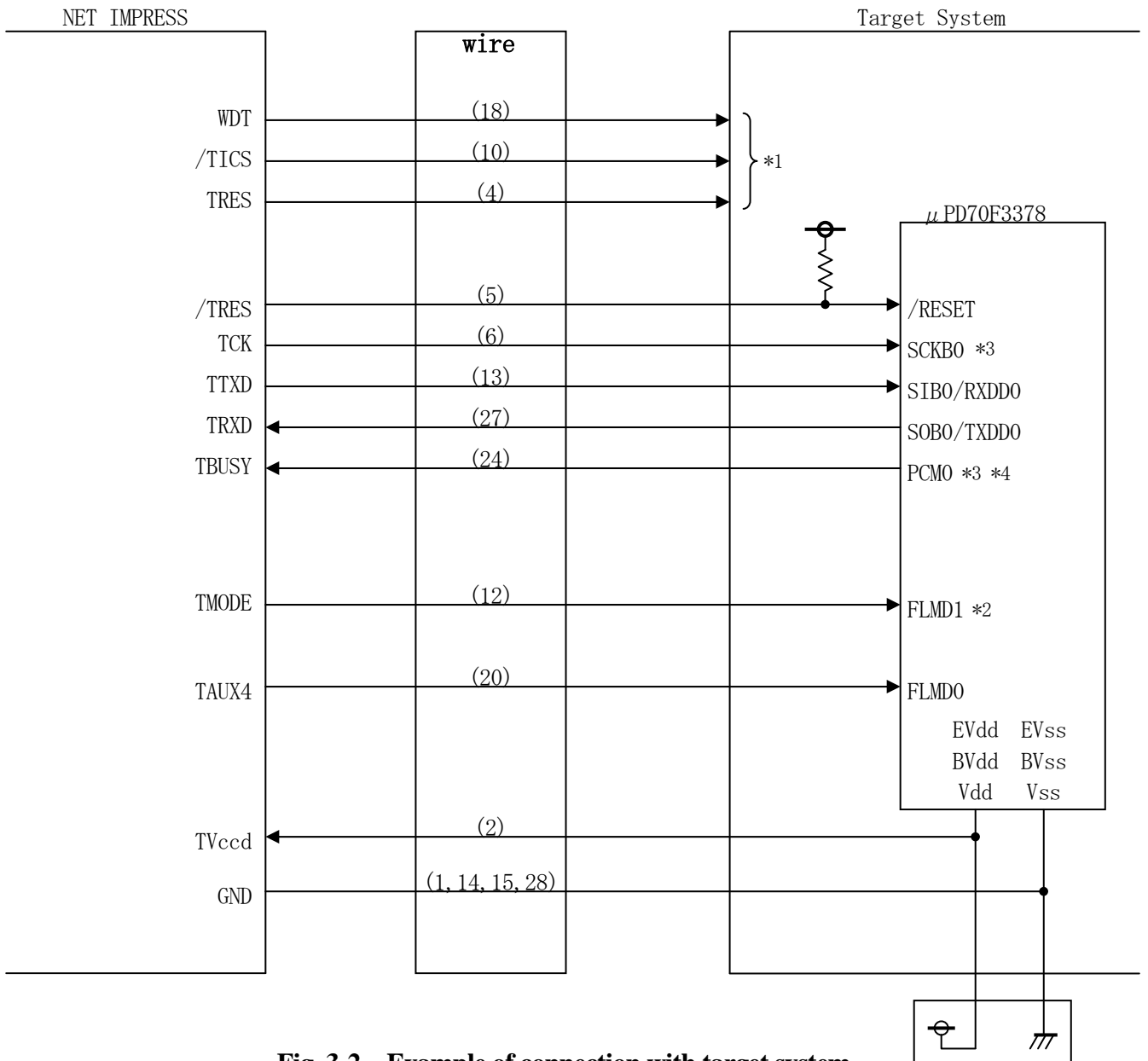
3-2. Typical Connection Example

Fig. 3-2   Example of connection with target system

*1   Optional function

*2   When the specified logic is set on the target system, the connection is not needed.

・Mode setting

Signal name	Value
FLMD1	EVss

*3   The connection is not needed when using with UART.

*4   The connection is not needed when using with UART or CSI (without handshake).

① When a part of the write signals, such as "write mode" is defined at the pin common to the user system, a multiplex circuit of such signals is mounted in the user system.

"/TICS" signal is asserted only when the device function of the NET IMPRESS is executed. The signal to be mounted at the common pin is changed by this signal.

The target system, in which such signals used for the write control are defined as signals dedicated to the control from the flash microcomputer, does not need any multiplex circuit.

As the multiplex circuit is put in the user target system, the same conditions as the NET IMPRESS non-connection conditions (connector is disconnected) are established when "/TICS" is negated (device function is not executed).

② The clock signal set in the WDT Period [FUNC D5] is output to the WDT signal pin from the NET IMPRESS. (Output only while "/TICS" is asserted.: Open collector output)   The specified clock signal is connected to the necessary user circuit while the data is written into the flash memory.

③ In the NET IMPRESS, "/TRES" signal is provided in the standard probe.

The "/TRES" signal takes wired OR in the target system and is used as open collector output signal so that it is connected to the "/RESET" pin of the microcomputer.

The "TRES" signal is used when the target system needs the positive logic reset signal. The "TRES" signal is a totem-pole output signal.

3-3. Control Signal Waveform
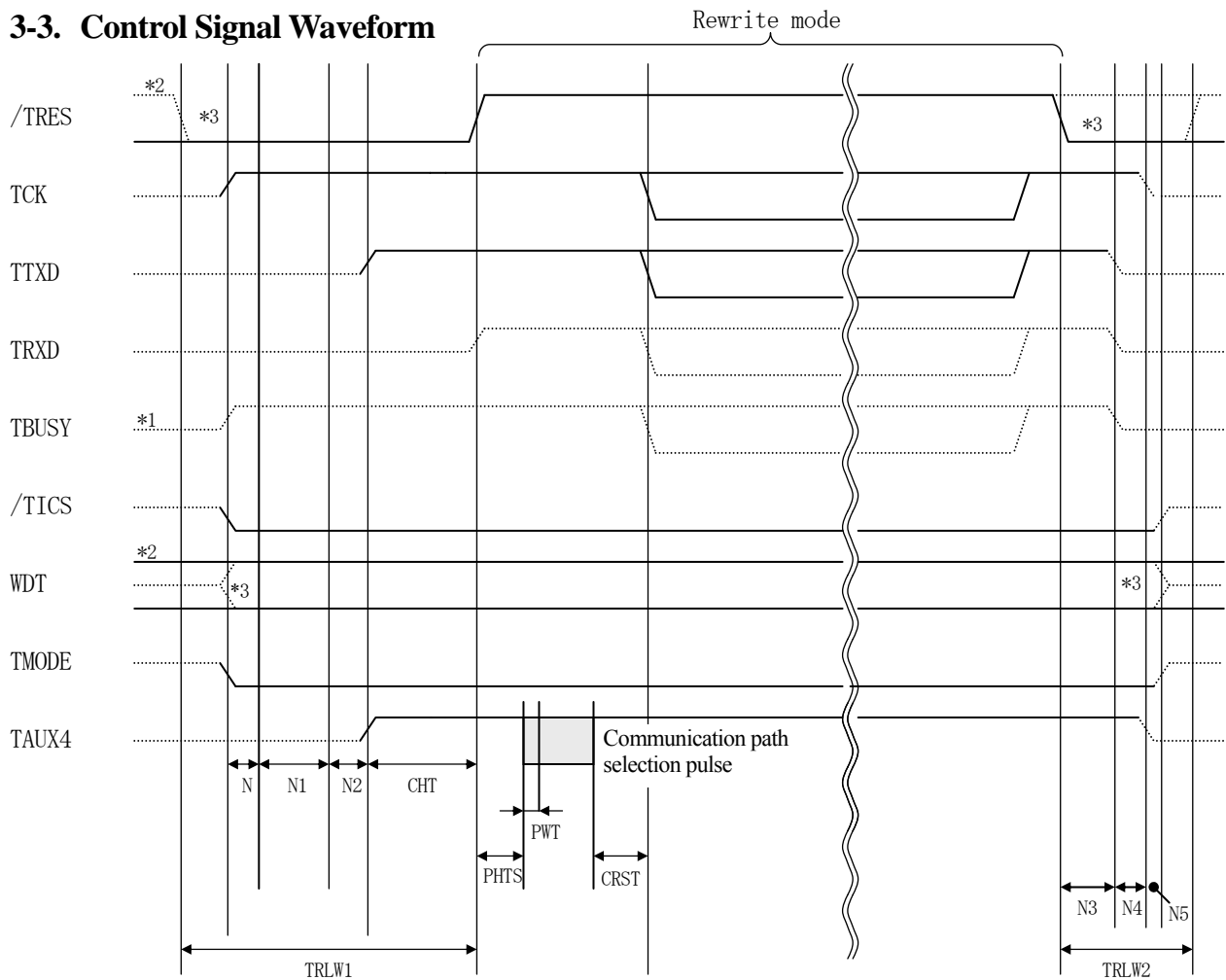
	Programmer specifications	
TRLW1	300ms	(min)
TRLW2	150ms	(min)
N	10ms	(min)
N1	100ms	(min)
N2	100ms	(min)
N3	60ms	(min)
N4	50ms	(min)
N5	10ms	(min)

	Parameter	MAX	MIN	Meaning
CHT	INI <PM2>	——	2ms	Reset draw-in timing
PHTS	INI <PM3>	——	4ms	Pulse draw-in timing
PWT	INI <PM4>	——	50μs	Pulse width
CRST	INI <PM5>	——	50ms	Communication start timing

* In the PHTS, the calculation is made with an oscillation frequency of 4.0 MHz.

*1: "………………." shows the HiZ.

*2: "/TRES" and "WDT" are open collector outputs.

*3: Option function

①　Power ON the target system after powering ON the Flash Programmer.

②　The Flash Programmer asserts the reset signal to draw the target microcomputer into the programming mode.

③　As the program command is started, "/TICS" is asserted to connect the communication channel for the flash program to the Flash Programmer on the target system.
(The system that is always monopolized by the Flash Programmer with communication channel for the Flash Programmer and related signals independent from other user circuit do not need to change the signals by this signal.)

④　TVpp is increased to the specified voltage.

⑤　The programming mode starts and the communication with the NET IMPRESS starts through the specified communication line. The communication is performed under preset communication conditions.

⑥　After the program has been terminated, the Vpp application is stopped automatically.

⑦　Additionally, "/TICS" is also negated.
(The cyclic pulse outputs continuously from the WDT signal (output) while "/TICS" is asserted.)

4. Loading the Micom Pack

4-1. File Structure

Before using this Micom Pack, the following files must be prepared beforehand.

Files to be provided by Yokogawa Digital Computer Corporation

File name	Contents
V1204N820.CM　*1	Definition Program file * This file is not supplied with the Micom Pack.
V1202M14N820_4M.PRM	Parameter table file for 4.0MHz containing the device information on μPD70F3378.　*2
V1202M14N820_8M.PRM	Parameter table file for 4.0MHz < fxtal <= 8.0MHz containing the device information on μPD70F3378.　*2
V1202M14N820_16M.PRM	Parameter table file for 8.0MHz < fxtal <= 16.0MHz containing the device information on μPD70F3378.　*2
YM14N820.YDD	File for security setup. Normally, place this file in the YIM Folder.
YM14N820.YPM	Parameter file for calculation of command waiting value. Normally, place this file in the YIM folder..

*1　The latest definition program version may differ from that described in this section.

　　("xxxx" of the file name "Vxxxx・・・.CM" shows the definition program version.)

　　For details, contact Yokogawa Digital Computer Corporation or a dealer.

*2　fxtal = Input clock

Files to be prepared by the customer

| File name	Contents
Object.xxx	Object file
Object.YSM	File for detection of buffer RAM illegal change. For details, see the Instruction Manual for NET IMPRESS.

4-2. Connecting the Remote Controller (AZ490)

The AZ490 runs on a personal computer (Windows environment).

The personal computer and NET IMPRESS are connected with the ETHERNET cable.

The control module for the target microcomputer is mounted on the NET IMPRESS.

The Micom Pack is loaded into the control module mounted on the NET IMPRESS.

ETHERNET

NET IMPRESS

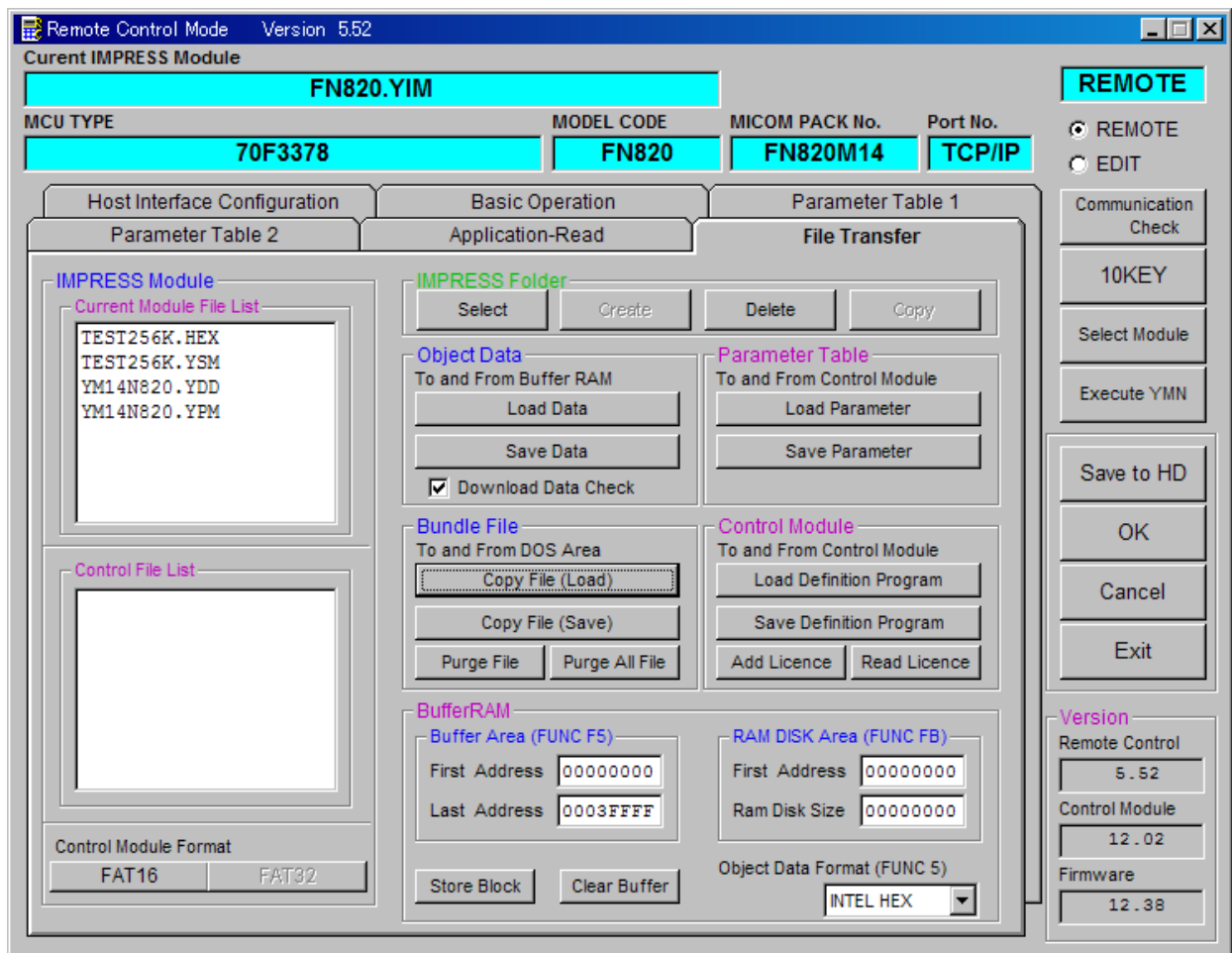Personal computer
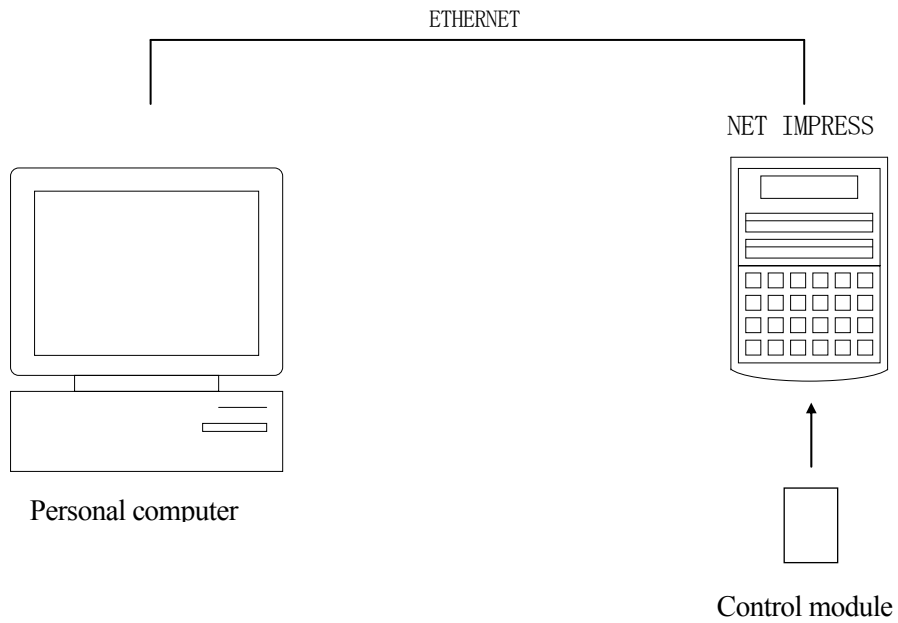
Control module

4-3. Loading the Micom Pack

The Micom Pack is loaded with an optional remote controller AZ490 (sold separately).

The [Load Parameter] function on the [File Transfer] screen is used to load a parameter file to the control module.

When selecting the [Load Parameter] function, the screen that allows you to select a parameter file appears.

5. Cautions on Use

① This control module is dedicated to our Flash Micom Programmer. Do not use this control module for a unit other than our Flash Micom Programmer.

② This control module is dedicated to the specified flash microcomputers.
To program to other microcomputers, use the control module dedicated to the microcomputer to be programmed. If the microcomputer and control module are used in an incorrect combination, this may cause the target system to break.

③ The NET IMPRESS consumes a current of several mA from the TVccd pin as power supply for the interface IC (internal IC of NET IMPRESS) with the target system.

④ Never initialize (format) the control module (compact flash card). If initialized, the definition program (control program) inside the control module is also erased.

⑤ Do not remove the control module while the device function or function is running.
If the control module is removed while accessing it, this may cause the control module to break.

⑥ The Flash Micom Programmer operates with the control module mounted.