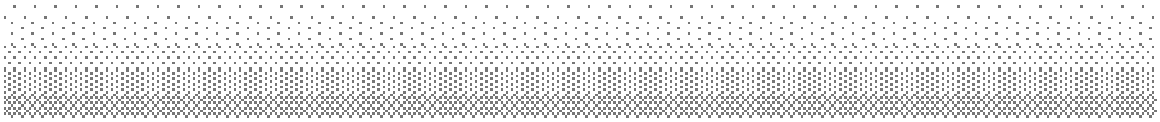
SERVIS IP-Serial

1p Converter



FX-3001SR
FX-3001SRF

User's Guide

Version 02

FUJITSU

Introduction

Thank you for purchasing *SERVIS IP-Serial* 1p Converter (hereafter referred to as "this product").

This product has the serial-LAN converter function.
This product is intended to operate UNIX servers or router devices that support serial consoles remotely over the network.
It is equipped with a serial port to connect a device that uses a serial console. It also contains a 10/100BASE-TX port to enable you to operate via Ethernet a remote device that uses a serial console.

This guide is common to both the standard version without a CompactFlash slot (FX-3001SR) and the advanced version with a CompactFlash slot (FX-3001SRF).
Unless otherwise specified, this guide describes the standard version FX-3001SR.
The features that only apply to the advanced version FX-3001SRF are indicated by Advanced version only.

About this Guide

This guide contains important information regarding the safe and proper use of this product.
Before using this product, please read carefully and understand the contents of this guide.
After reading, retain this guide in a safe place for future reference.
We have made every effort to ensure the safety of the users and other personnel, and to prevent property damage. When using this product, carefully follow the instructions described in this guide.

The contents of this guide are subject to change without prior notice for the purpose of improvement. If you have any questions or comments about this product and the contents of this guide, contact our maintenance service department.

CAUTION : HAZARDOUS VOLTAGE.
SERVICE ENGINEER ONLY TO OPEN COVER.

CAUTION : FOR CONTINUED PROTECTOIN
AGAINST RISK OF FIRE.
REPLACE ONLY WITH SAME TYPE AND RATING OF FUSE.

Precautions for Use

It is the customer's responsibility to use this product including this guide, the device, and firmware.
Fujitsu Component Limited bears no responsibility for damages or loss of data that may occur as a result of using this product. Also note that restitution for damages due to malfunctioning of this product shall not exceed the total cost of this product, regardless of the range of the damages covered by the warranty.
The firmware shipped with this product and update firmware for this product provided by Fujitsu Component Limited must not be used with systems other than this product, and must not be modified or disassembled.
Problems may occur with this product in the event of an instantaneous voltage drop of the power supply due to lightning, etc.
When turning off the power, first check that access to the ROM or recovery processes are not being performed using setup commands.
Alternatively, execute the shutdown command.

Notes on Maintenance

This product must not be dismantled, modified, or repaired by personnel other than our maintenance engineers. It contains dangerous, high voltage components. Contact our maintenance department for repairs.

Connection to Servers and Countermeasures against Static Electricity

When attaching/removing connectors to connect the target port of this product to an RS-232C port of a server, ensure that this product is turned off. In addition, be sure to discharge static electricity before connecting the cables.
Twisted pair cables (e.g. LAN cables) may be charged with static electricity depending on your operating environment. Connecting twisted pair cables charged with static electricity to devices including this product could cause a malfunction or failure of the devices or their LAN ports.
Use a static eliminator or any other tool immediately before connecting, and discharge static electricity in twisted pair cables to ground wires.
Note that if the cables remain unconnected for a long time after discharging static electricity, they may be charged with static electricity again.

High Safety Measures

This product was designed and manufactured for general use; for situations such as clerical, personal, home, and general industrial use. It was not designed or manufactured for uses that involve direct and serious risk to life such as nuclear control systems, aircraft auto-pilot control systems, air traffic control systems, mass transportation control systems, medical life support equipment, military missile launch control systems, or any other situations that require a high degree of safety or in which such a degree of safety cannot be ensured.
Do not use this product unless taking appropriate measures to ensure safety in such situations. Neither Fujitsu Component Limited nor its affiliates shall be responsible for any damages that occur to the user of this product or a third party due to the use of this product in a situation that requires advanced safety measures.

Green Products

This is a "Green Product" that has met the severe environment standards of the Fujitsu Group. It is an earth-friendly product with a low impact on the environment.

Major features

Compact and resource saving
Low power consumption
Lead free

For environmental efforts of the Fujitsu Group, visit the "Environmental Activities" page of the Fujitsu website (http://eco.fujitsu.com/).

Disposal of this Product

Dispose of this product must no be performed by the user.

When this product is no longer necessary, contact the dealer where you purchased this product.

Conventions

The following are conventions used throughout this guide.

Font or symbol	Definition
AaBbCc123	Indicates output from this product or connected devices, which is displayed on the screen.
AaBbCc123	Indicates characters that you enter in a command line or configuration file.
Enter↵	Indicates a key that you press.
Advanced version only	Indicates features for FX-3001SRF only.
🕮 Refer to.	Indicates a reference (chapter, section, and page number).
⚠CAUTION	Indicates points to note when using this product.

Contents

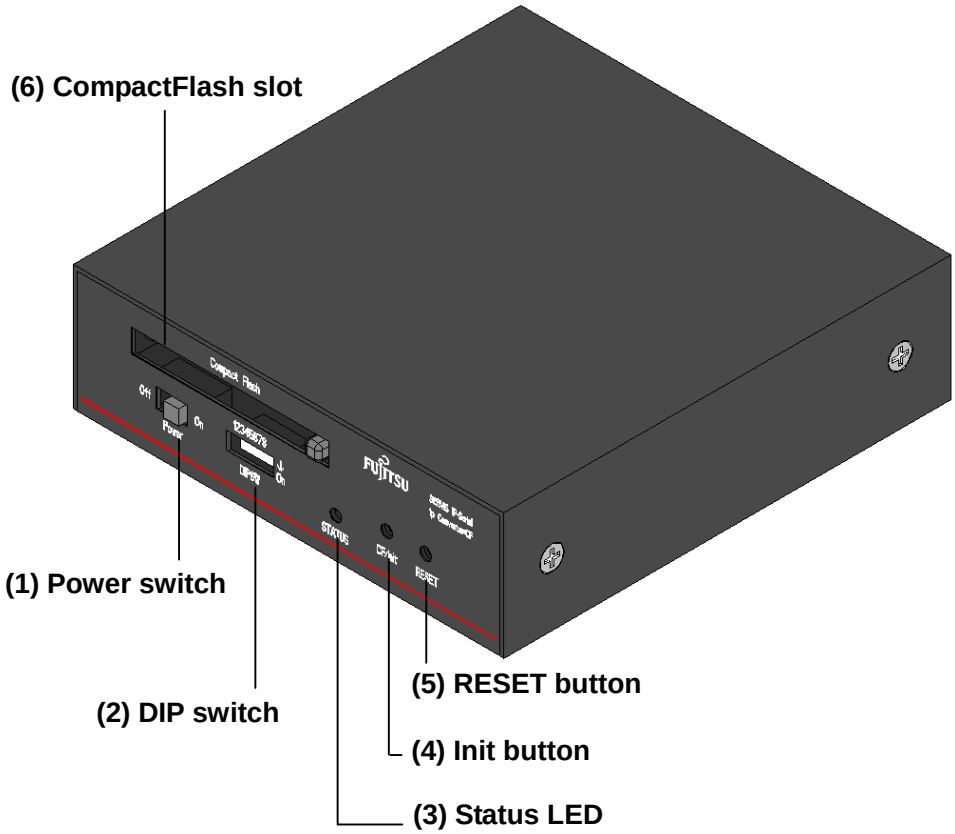
Chapter 1 - Setup

This chapter covers information required for setting up this product. Please read this chapter before performing the setup.

Contents of this chapter

1.1. External Component Names and Functions

1.1.1 Front (Shown: advanced version FX-3001SRF)



(1) Power switch

The switch for turning the device power ON and OFF.

(2) DIP switch

The following settings are available by flipping the switches to ON/OFF.

Dip switch	ON	OFF	Default
1: Boot Mode	Self-diagnostic mode	Normal startup mode	OFF
2: CF boot	CF boot mode	Normal startup mode	OFF
3: reserve	- (reserved)	- (reserved)	OFF
4: DHCP	DHCP or PNP enabled	Internal settings enabled	OFF
5: Duplex	Ethernet comm. mode: Full Duplex	Ethernet comm. mode: Half Duplex	OFF
6: 10/100M	Ethernet comm. speed 100M	Ethernet comm. speed 10M	OFF
7: Auto Nego	Auto-negotiation enabled (DIP switches 5 & 6 disabled when 7 enabled)	DIP switches 5 & 6 enabled	OFF
8: reserve	- (reserved)	- (reserved)	OFF

After changing the DIP switches, restart the product for the settings to take effect.

(3) Status LED

The status of the device is represented by the color and light status (on or blinking). The following explains in more detail.

LED	Green	Red	Orange
ON	Normal running	Error detected	-
Blinking	Booting CF mounting	At shift to boot from shutdown	Writing in ROM CF unmounting
OFF	The power is turned off		
Gradation	Recovery in progress (green/red/orange gradation)		

(4) Init button (displayed as CF/Init for advanced version)

Executing a recovery

By turning on the power or pressing the RESET button while pressing the Init button, the recovery process to restore the default settings is executed.
📖 Refer to 7.3 Recovery (Returning to Factory Settings) (page 182)

Advanced version only

CompactFlash control

This is used to control the insert/eject of the CompactFlash (hereafter, CF).

Mounting a CF card

(1) Insert the CF card into the CF slot.
(2) Press the Init button.
(3) When the LED changes from blinking green to solid green, the CF card is available.

Ejecting a CF card

(1) Ensuring that the CF card is not being accessed, press the CF/Init button.
(2) When the LED changes from blinking orange to solid green, the CF card can be pulled out.
(3) Pull the CF card out.

(5) RESET button

This restarts the device.
Pressing this while the product is running resets the CPU.

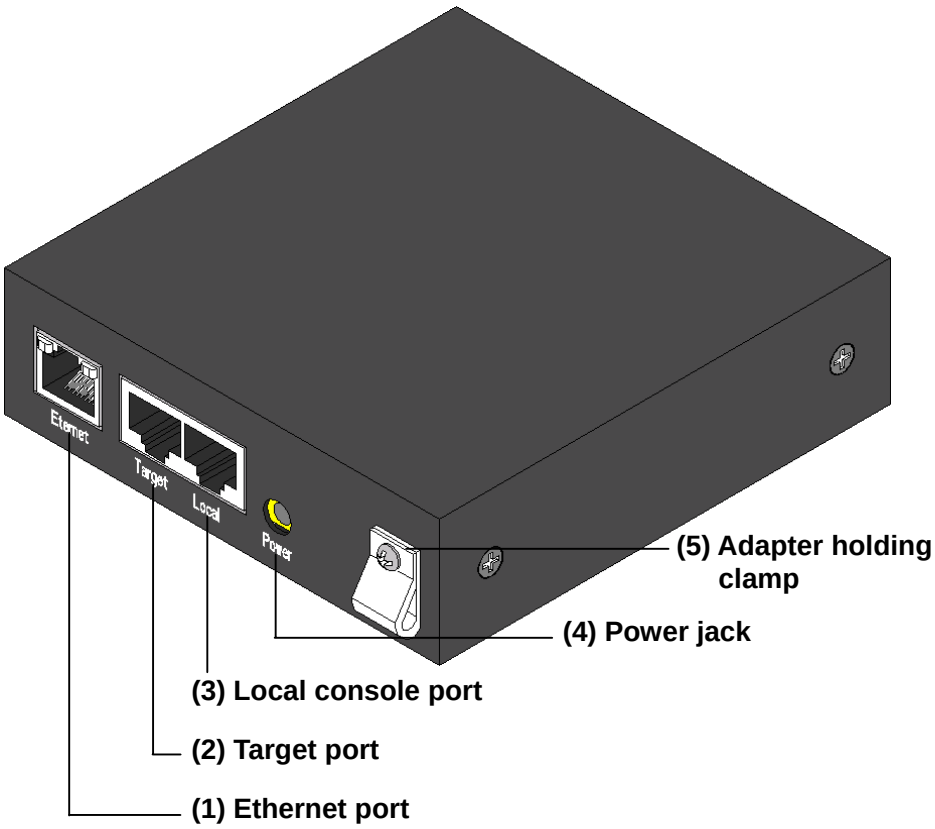
Advanced version only

(6) CompactFlash slot

The slot for the CF media, which is used for storing log files and configuration files.
Only Type-1 CF cards are supported; Type-2 CF cards such as HDD types are not supported. Any commercially available CF card of any size may be used.

We provide optional CF cards in various sizes.
📖 Refer to 6.3 Optional Accessories (page 153)

1.1.2 Rear

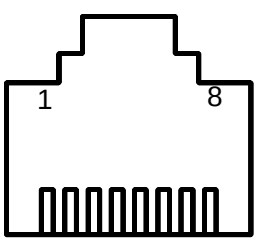


(1) Ethernet port

A socket for Ethernet connection supporting 10BASE-T/100BASE-TX.
Both UTP and STP cables may be used.
This product uses this port to connect to a network and to provide its various functions.

(2) Target port

Devices with serial consoles or serial controlled devices (e.g. measuring instruments) are connected to this port. The connector type is an RJ45 modular jack, and it uses a straight Cat5 UTP or STP cable used for Ethernet communications. This uses the RS-232C signal and is assigned six types of signal lines (RxD/TxD/CTS/RTS/DSR/DTR) and a ground wire. The following is the pin alignment:



1 : CTS
2 : DSR
3 : RxD
4 : GND
5 : GND
6 : TxD
7 : DTR
8 : RTS

Using an RJ45–D-Sub conversion adapter (9-pin or 25-pin), which is sold separately, it can be modified to a D-Sub connector via this port and a CAT straight cable.
Therefore, this product can be connected to types that have RJ45 sockets (Sun products and CISCO products) or types that have a D-Sub (most devices).

Available conversion adapters

FP-AD009RJ An adapter that establishes an RS-232C cross cable that combines the target port and a Cat5 straight cable. The D-Sub side has a 9-pin female.

☞ There may be cross wiring on the side of the device connected to the target port. If that is the case, use FP-AD009RJX.

FP-AD025RJ The same as the FP-AD009J, but with a 25-pin male on the D-Sub side.

FP-AD009RJX (one included with this product)
An adapter that establishes an RS-232C cross cable that combines the local console port and a Cat5 straight cable. The D-Sub side has a 9-pin female.

FP-AD025RJX (one included with this product)
The same as the FP-AD009RJX, but with a 25-pin male on the D-Sub side.

(3) Local console port

This port is connected to a console terminal to perform the boot check, settings, and shutdown check of the product.

This can be connected to a PC by combining FP-AD009RJ (optional) with a Cat5 cable. A PC can also be used as a console terminal by executing the console terminal emulator on the PC.

(4) Power jack

Connects the power adapter. Do not use any power adapter other than the one included with the product.

(5) Adapter holding clamp

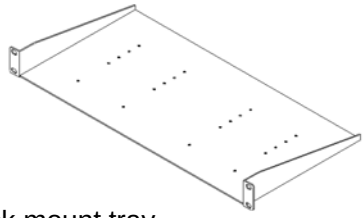
A clamp for holding in the power adapter cable. Use this to prevent the power adapter from unplugging.

1.2. Placement

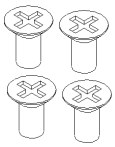
1.2.1 Rack Mount

With the optional rack mount kit, the product can be installed to an EIA standard 19" rack.
🕮 Refer to 6.3 Optional Accessories (page 153)

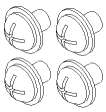
Rack mount kit



Rack mount tray

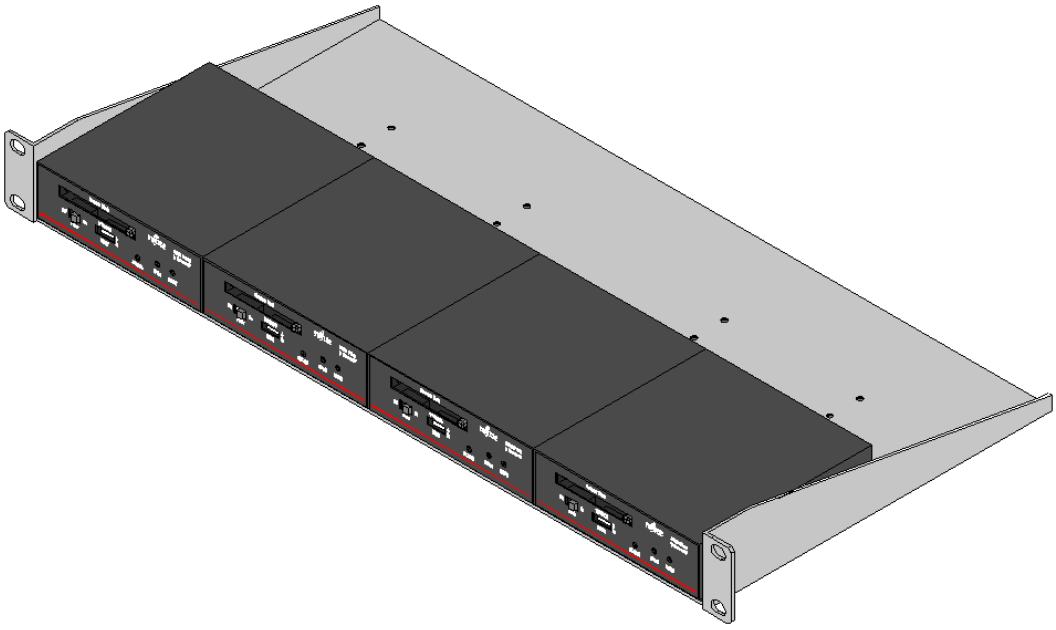


Unit/tray screw … 4



Tray/rack support screw … 4

Rack mount placement example



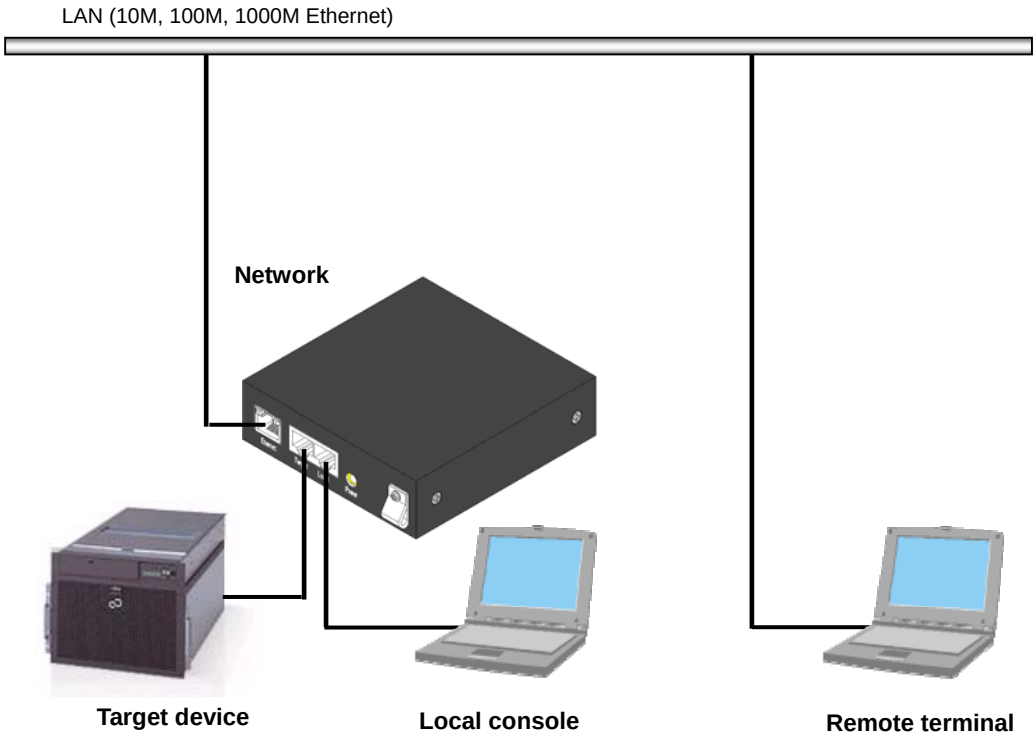
Up to four units of this product can be placed into an EIA standard 1U rack mount.

1.3. Cable Connection

In order to utilize each of the functions of this product, the following cable connections are required.

- Target device connection
- Local console connection
- Network connection

The following sections will discuss the cable connections required to achieve the configuration below.



1.3.1 Preparations

The following are required in order to use this product:

(1) Serial connection device

A device that has a serial console port.

(2) Conversion adapter (RJ45–D-Sub)
(Optional: FP-AD009RJ, FP-AD025RJ)

This is required to connect to a serial connection device that has a D-Sub 9-pin or 25-pin port. Using this adapter, it can be modified to a D-Sub connector via a Cat5 straight cable.

(3) Terminal device (local console)

Use a PC with an RS-232C interface (D-Sub 9-pin).
The PC may run on any OS.

(4) Terminal device (remote terminal)
Use a PC that can connect via Ethernet.
The PC may run on any OS.

(5) Cat5 cable

Use a Cat5 straight cable according to your environment.
Both UTP and STP are supported. The length must be within 20m.

(6) Switching hub

This is required when connecting this product to a terminal device via Ethernet.

(7) CF card adapter

In order for the above terminal device to read/write data from/to the CF card included with this product, a separate CF card adapter is required.

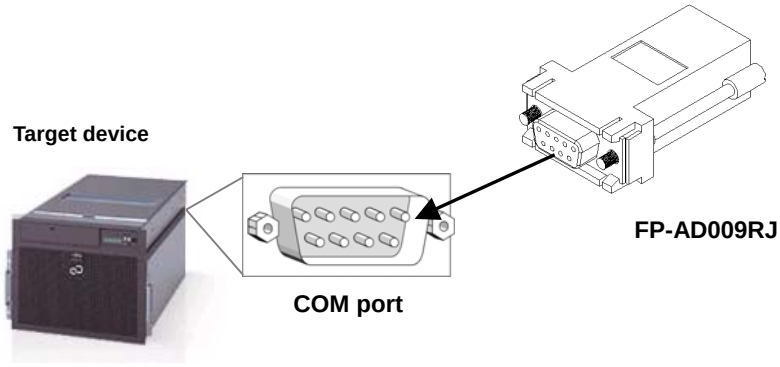
(8) Software

Install text editors and/or emulator applications (e.g. TeraTerm) that meet the needs of your environment.

1.3.2 Target Device Connection

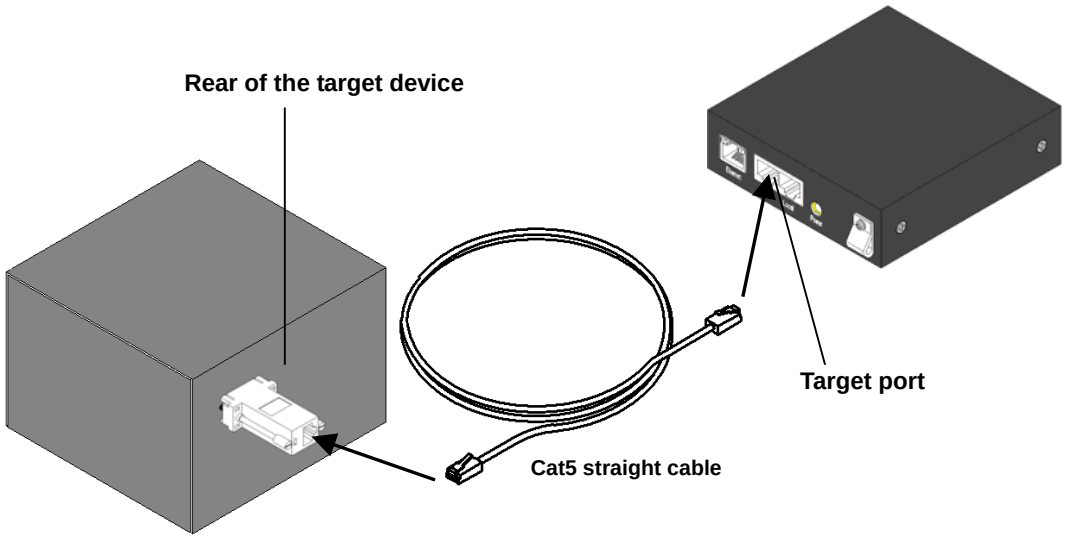
1. Connect the conversion adapter to the target device.

   Connect the adapter (optional: **FP-AD009RJ**) to the RS-232C connector of the device that is to be connected to this product.



2. Connect the target device to this product.

   Connect the adapter just connected to the target device to the target port of this product using a Cat5 straight cable.



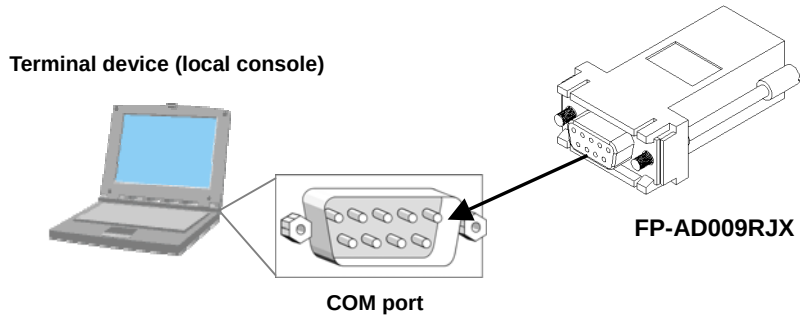
CAUTION

When attaching/removing connectors or cables to/from the target device, be sure that this product is turned off.

1.3.3 Local Console Connection

1. Connect the **FP-AD009RJX** adapter (accessory) to the terminal device (local console).

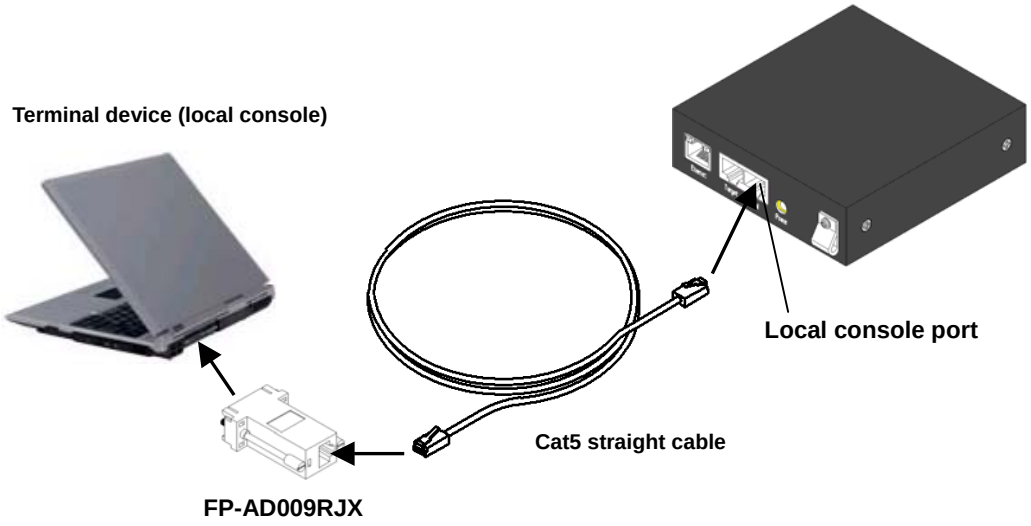
   Connect the adapter to the RS-232C connector of the terminal device (local console).



   Take a note of the PC serial port number (normally COM1). This will be required when setting up the emulator application.

2. Connect the terminal device (local console) to this product.

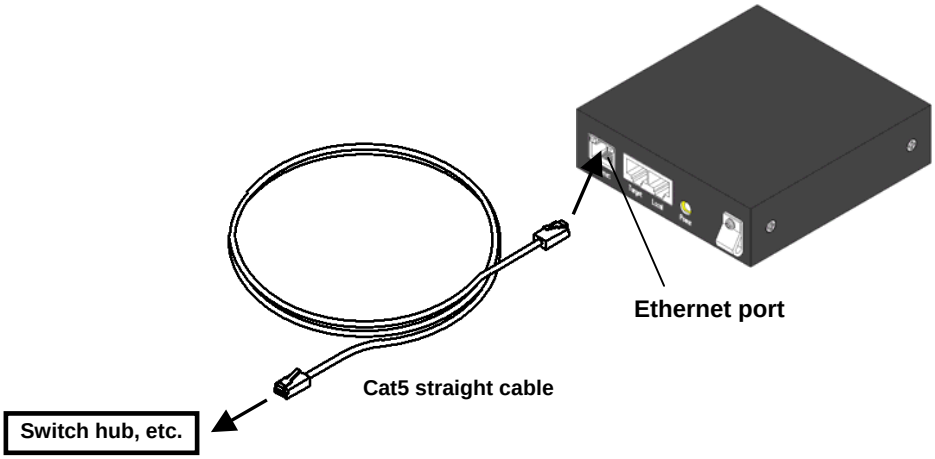
   Connect the adapter (FP-AD009RJX) just connected to the terminal device (local console) to the local console port of this product using a Cat5 straight cable.



1.3.4 Network Connection

1. Connect the product to a network.

   Using a Cat5 straight cable, connect the Ethernet port of this product to a hub or Ethernet switch. No cables are included.



MEMO

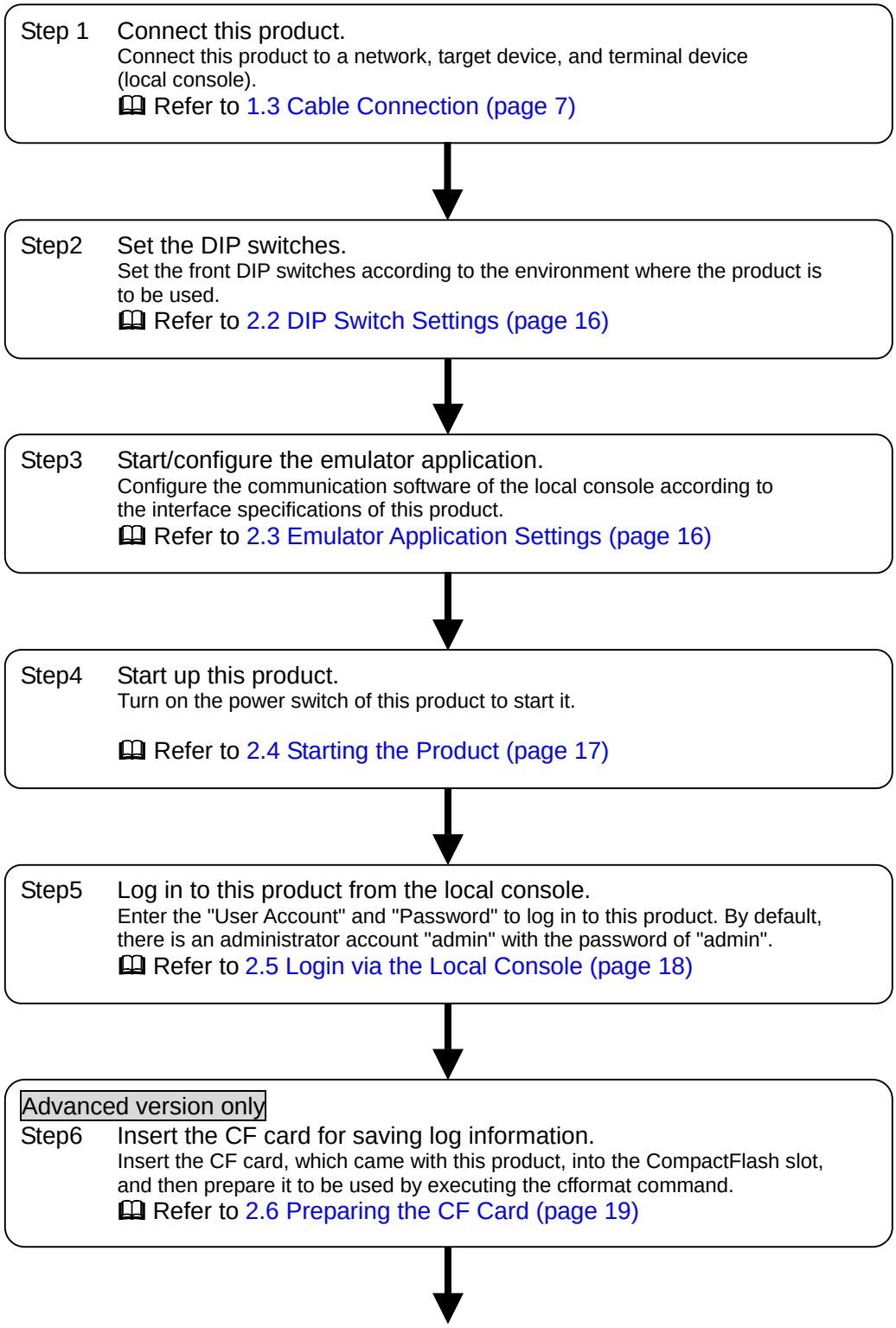
Chapter 2 - Basic Operations

This chapter describes the procedures and steps for basic operations using this product to control serial console devices from a remote terminal.

Contents of this chapter

2.1. Basic Operation Flow

This section shows the basic steps for using this product to operate a device connected to the serial port from a remote terminal.



Step7 Set the IP address of this product (default settings).
Set the IP address of this product and restart it.

📖 Refer to 2.7 Setting the IP Address (page 21)

Step8 Configure the target port.
Configure the target port of this product according to the serial device connected to it.

📖 Refer to 2.8 Setting the Target Port (page 22)

Step9 Connect to this product from a remote terminal.
From a terminal on the network, connect to this product and configure it.

📖 Refer to 2.9 Connecting from a Remote Terminal (page 23)

Step10 Control the device connected to the target port.
Start the terminal emulator (control application) from the shell console to monitor and control the device connected to the target port.

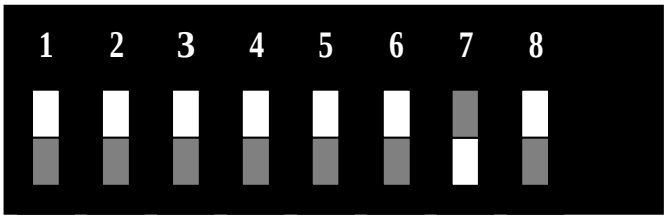
📖 Refer to 2.10 Controlling Target Devices via a Terminal Emulator (page 25)

2.2. DIP Switch Settings

Set the DIP switches in the front of the product according to your network environment, IP address setting method (manual/DHCP), and startup operation (internal flash ROM/CF).
🕮 Refer to 1.1.1 Front (page 2)

The following explanation uses the product setting scenario below as an example.

- Manual IP address setting → DIP switch 4 OFF
- Communication mode: Auto-negotiation → DIP switch 7 ON
- Normal startup with only IPv4 → DIP switches 1, 2, 8 OFF



indicates a switch.

CAUTION

After changing the DIP switches, press the RESET button of the product. Rebooting is required in order to apply the settings.

2.3. Emulator Application Settings

1. Power on the terminal device (local console), and then start the emulator application (e.g. TeraTerm).

2. Configure the parameters of the emulator application. The following shows the default parameters:

Protocol	Value
Baud rate	115200 bps
Data length	8 bits
Parity	None
Stop bit	1 bit
Flow control	None
Emulation	VT100 compatible terminal

2.4. Starting the Product

1. Turn on the power switch located on the front of the product.

2. This implements the startup sequence and performs a hardware check. Upon no errors, the system is operational and the "login:" prompt is displayed.
   (During startup, the STATUS LED turns from blinking green to blinking orange, and when the startup is complete, it becomes solid green.)

```
checking system memories...
.............................RAM ok
.............................ROM ok

...now system loading...
.
.........................done!
SERVIS IP-Serial 1p Converter/CF (FX-3001SRF)
Copyright (c) 2005-2006 FUJITSU COMPONENT LIMITED
Version 1.00 Build 387


Checking system hardware...
.
Real time clock    : ok
.................
Network controller : ok
.............
Compact Flash slot : 122MB media detected.

 8:46AM on Wednesday, 17 May 2006

login:
```

The startup takes approx. 1 minute.

2.5. Login via the Local Console

By default, only the administrative level user account "admin" is registered.
The following are the procedures for logging in as the admin user:

1. Once the system starts up and the "login:" prompt is displayed, enter the user name "admin".

```
login: admin Enter↵
```

2. When the "Password:" prompt is displayed, enter "admin", which is the default password. The password is not displayed to the screen.

```
Password:      Enter↵
```

3. Once logged in, the shell console, which is the user interface for system configuration, is launched. In the shell console environment, commands can be entered after the prompt shown below. These commands are used to configure various settings of this product.
   The name of the device being configured is displayed within the ().
   🕮 Refer to 4.1 Shell Console Commands (page 52)

```
$
```

4. If the user name or password is incorrect, the following message is displayed and you cannot log in. When the "login:" prompt is redisplayed, enter the user name and password.

```
Login incorrect
login:
```

CAUTION

At the time of purchase of this product, the default administrator password is enabled.
To ensure security, reset the administrator password before using the product.

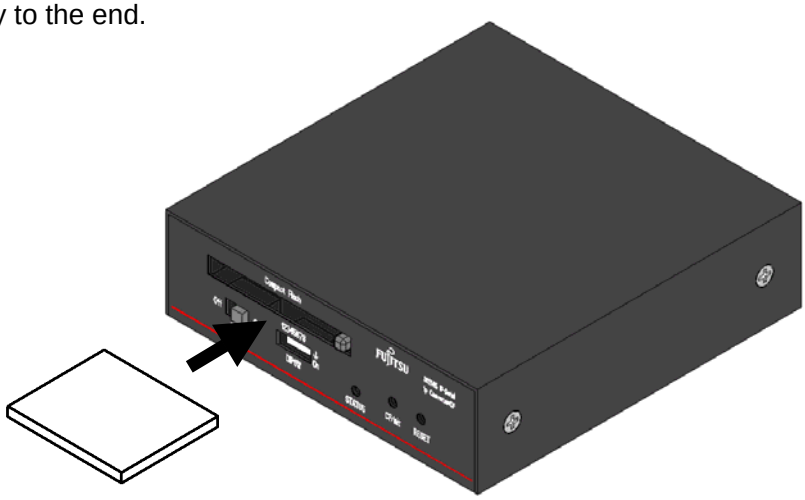
Advanced version only

2.6. Preparing the CF Card

Insert the accompanying CF card into the CompactFlash slot of this product to save log information and manage configuration files.
In order to utilize the CF related functions, insert the CF card into the CompactFlash slot and format it.

Initialization steps

1. Insert the CF card into the CompactFlash slot of this product. Push it in all the way to the end.



The following is displayed when the CF card is recognized.

```
$
Compact Flash slot : 122MB media detected. Enter↵

$
```

2. Execute the cfformat command to format the CF card.
When the following is displayed, enter the administrator password to execute format.
📖 Refer to 4.1.35 cfformat Command (page 93)

```
$ cfformat Enter↵
administrator password:       Enter↵
*** Don't eject CF card. ***
Format completed.
$
```

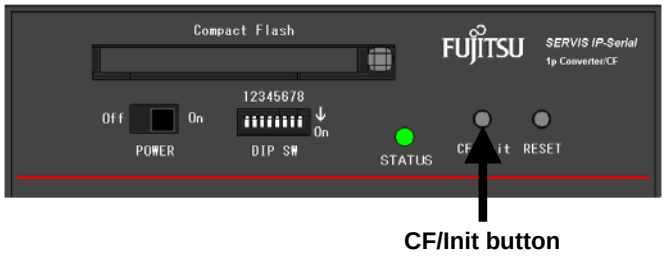
The card is now ready to be used for CF related functions.

For details on CF functions, refer to the following.
📖 Refer to 3.9 Logging Functions (page 42)
📖 Refer to 3.10 CF Management of Environment Settings (page 43)

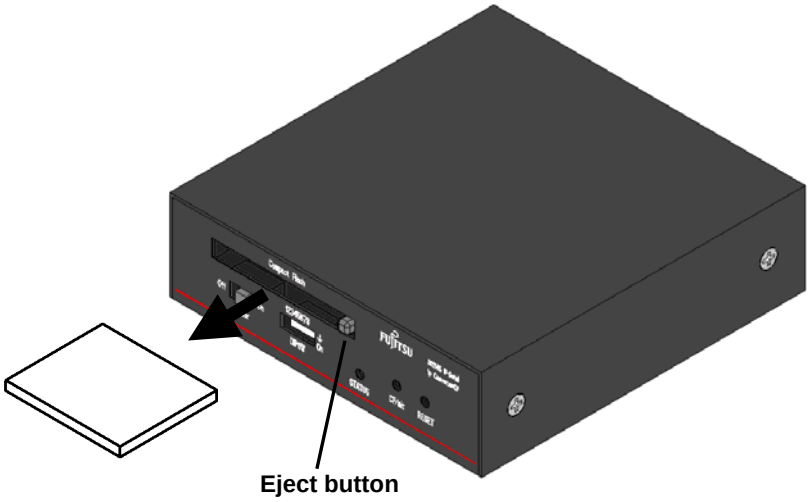
Ejecting the CF card

Perform the following steps to eject a CF card that has been recognized.

1. Press the CF/Init button using an object such as a pen.



2. Once the STATUS LED changes from orange to green, the CF card is ready to be ejected. Press the Eject button and remove the CF card.



Inserting a formatted CF card

Perform the following steps to insert and recognize a CF card that has already been formatted using the cfformat command.

1. Insert the CF card into the CompactFlash slot, and then press the CF/Init button using an object such as a pen.

2. When the STATUS LED blinks green and then becomes solid green, it has been recognized.

CAUTION

When inserting the CF card, be sure to push it in all the way.

2.7. Setting the IP Address

Part of the initial configuration requires that the IP address of the product be set. The IP address is set by executing the network command in the shell console.

network command

Syntax network <ipaddress> <subnetmask> <gateway>

🕮 Refer to 4.1.4 network Command (page56)

The following explanation uses the settings below as an example:

IP address:	192.168.0.50
Subnet mask:	255.255.255.0
Default gateway:	192.168.0.1

1. Execute the network command in the shell console.

```
$ network 192.168.0.50 255.255.255.0 192.168.0.1 Enter↵
```

2. In order for the setting to take effect, use the reboot command to restart the product.
   🕮 Refer to 4.1.2 reboot Command (page 54)

```
$ reboot Enter↵
administrator password:      Enter↵
Shutdown NOW!
$ Wed May 17 18:48:33 GMT 2006
syncing disks... done
rebooting...

checking system memories...
.............................RAM ok
.............................ROM ok

...now system loading...
.
.........................done!
SERVIS IP-Serial 1p Converter/CF (FX-3001SRF)
Copyright (c) 2005-2006 FUJITSU COMPONENT LIMITED
Version 1.00 Build 387


Checking system hardware...
.
Real time clock    : ok
.................
Network controller : ok
..............
Compact Flash slot : 122MB media detected.

 6:49PM on Wednesday, 17 May 2006

login:
```

The network settings take effect after rebooting.

2.8. Setting the Target Port

Configure the target port of this product according to the connected device.
The target port settings are configured using the port command in the shell console.

port command

Syntax port [-t | -l] [speed] [bit] [parity] [stop] [flow] [xon] [xoff]

🕮 Refer to 4.1.17 port Command (page 70)

The following explanation uses the target port settings below as an example:

Protocol	Value	Default settings
Baud rate	115200 bps	9600 bps
Data length	8 bits	8 bits
Parity	None	None
Stop bit	1 bit	1 bit
Flow control	None	None

Procedure

1. Execute the port command in the shell console.

```
$ port -t 115200 8 0 1 n Enter↵
target port setting completed.
$
```

Once the port command is executed, changes to the port settings immediately take effect.
This readies the target port for access.

To connect to the target port from a local console, refer to the following.
🕮 Refer to 2.10 Controlling Target Devices via a Terminal Emulator (page 25)

For instructions on connecting from a remote terminal over a network, refer to the following.
🕮 Refer to 2.9 Connecting from a Remote Terminal (page 23)

2.9. Connecting from a Remote Terminal

Function overview

This product can be accessed by telnet or ssh encrypted communication from a terminal on a network.
To configure the product from a terminal on a network, log in to the product using telnet or ssh, and then execute commands from the shell console.

Use the following syntax to connect from a network terminal.

Syntax telnet <host_name>
ssh <host_name>

Parameter(s) host_name = host name or IP address

Procedure

The following explanation uses a telnet connection to the product as an example.
The following shows the parameter set to the telnet client:

Protocol	Value
Emulation	VT100 compatible terminal

1. Power on the terminal PC on the network, and then execute the ping command to determine whether communication can be established with this product. Assume the IP address of "192.168.0.50" has been pre-assigned to this product.

```
C:\temp> ping 192.168.0.50 Enter↵
```

2. Execute the telnet connection from the emulator application.

```
telnet 192.168.0.50 Enter↵
```

3. Once a telnet session is established, the following "login:" prompt is displayed.

```
 10:54PM on Friday, 12 August 2005

login::
```

4. Enter a user account. (The following is an example of logging in with the admin user.)

```
11:58AM on Thursday, 25 May 2006

login: admin Enter↵
```

5. When the "Password:" prompt is displayed, enter the password. The password is not displayed to the screen.

```
Password:      Enter↵
```

6. Once logged in, the shell console launches.
   The shell console uses the same functions as in the case with the local console.

```
Last login: Thu May 25 10:36:00 2006 on console


$
```

Execute the desired command in the shell console to configure the product.

To connect to the target port, refer to the following.
🕮 Refer to 2.10 Controlling Target Devices via a Terminal Emulator (page 25)

⚠CAUTION

When connecting with ssh, prepare the corresponding client software.
(For a Windows PC, you can obtain freeware terminal applications such as TeraTerm or PuTTY for the connection.)

2.10. Controlling Target Devices via a Terminal Emulator

Function overview

Executing the terminal command from the shell console launches a control application called a "terminal emulator", which can control serial devices connected to the target port of this product.
The terminal emulator can be launched from either a local console or a remote terminal.
However, because it is launched exclusively, it cannot be started simultaneously by multiple users.
🕮 Refer to 3.2 Terminal Emulator (page 29)

Procedure

The following explanation uses an example scenario where the terminal emulator is launched and a Linux PC connected to the target port is accessed.

1. From a local console or a terminal PC on a network, log in to the product and execute the terminal command from the shell console.

```
 11:58AM on Thursday, 25 May 2006

login: admin Enter↵
Password:      Enter↵
Last login: Thu May 25 10:36:00 2006 on console

$ terminal port1 Enter↵
[launch Terminal-Emulator -- press `^Ec?' to help]
```

2. Hit Enter to connect to the target port. In this state, input and output data to and from the serial device can be monitored.

```
[launch Terminal-Emulator -- press `^Ec?' to help]
Enter↵
Red Hat Linux release 9 (Shrike)
Kernel 2.4.20-8 on an i686

localhost.localdomain login:
```

3. Once the operations of the connected device are completed, exit the terminal emulator.
   Enter the hotkey (default: Ctrl+E, C), ensure that the prompt progresses, and then enter the command ".", which exits the terminal emulator.
   The following is displayed and returns to the shell console.

```
[launch Terminal-Emulator -- press `^Ec?' to help]

Red Hat Linux release 9 (Shrike)
Kernel 2.4.20-8 on an i686

localhost.localdomain login:
[Terminal-Emulator disconnect]
$
```

2.11. Product Logout and Exit

Overview

After configuring this product or operating a target device, use the logout command to log out.
🕮 Refer to 4.1.3 logout Command (page 55)

When connecting from a remote terminal with telnet/ssh, logging out automatically terminates the session.
When connecting from a local console, the following login prompt is displayed again upon logging out.

```
$ logout Enter↵

 6:51PM on Wednesday, 17 May 2006

login:
```

To exit the product, turn off the power switch except when the product is writing to the ROM or when a recovery is in progress.

Alternatively, execute the shutdown command and check to verify whether the following is displayed, then turn off the power switch.
🕮 Refer to 4.1.1 shutdown Command (page 53)

```
$ shutdown Enter↵
administrator password:      Enter↵
Shutdown NOW!
$ Wed May 17 18:40:52 GMT 2006
syncing disks... done
The operating system has halted.
Please press any key to reboot.
```

⚠CAUTION

Turning off the power while a setup command is running in the shell console may result in unsaved settings. Confirm that the command has been executed and control has been restored to the shell console before turning off the power switch.

Chapter 3 - Function Details

This chapter describes each function of this product. The syntax of each command explained in this chapter will be discussed in Chapter 4.

Contents of this chapter

3.1. User Account Settings

Function overview

Depending on the privileges assigned, there are two user levels in this product: administrator user and general user.
The "admin" account, which is registered by default, is the only administrator user.

The admin user can perform the following controls against general users by executing commands in the shell console:

- Registering a general user
- Forcing a general user to log out
- Blocking a general user from logging in
- Deleting a general user

The following shows functions available to general users and administrator users:

General user functions	
Environment of use	- Terminal emulator
Permitted path	- Local console - Ethernet (telnet, SSH)
Executable functions	- Commands provided by the terminal emulator - FTP connection (only access to /CF/log/)
Administrator user functions	
Environment of use	- Shell console environment - Terminal emulator
Permitted path	- Local console - Ethernet (telnet, SSH)
Executable functions	- Commands provided in the shell console - Commands provided by the terminal emulator - FTP connection (access to /CF/)

For details on executable commands, refer to the following.
🕮 Refer to 4.1 Shell Console Commands (page 52)

3.2. Terminal Emulator

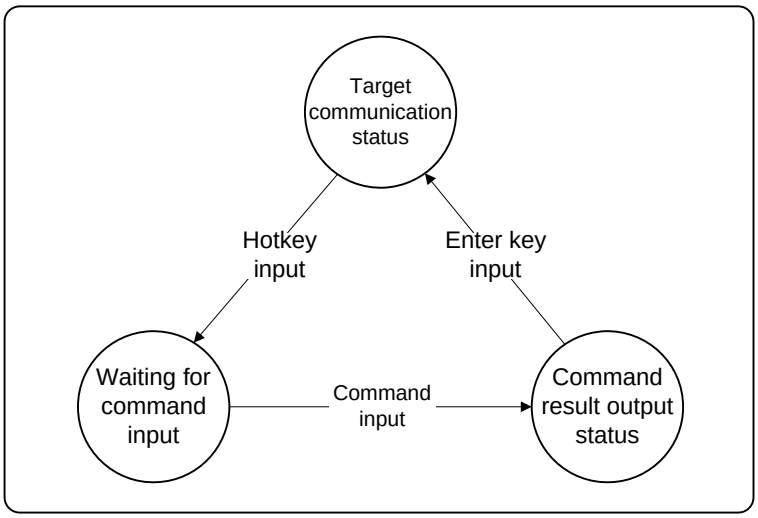
Function overview

A terminal emulator is the user interface used to control a serial device connected to the target port of this product.
The terminal emulator is launched by executing the terminal command from the shell console.
🕮 Refer to 4.1.22 terminal Command (page 76)

The terminal emulator can be executed via a local console or network.

Also, when a general user logs in to the product, the terminal emulator starts automatically.

Terminal emulator screen transition



Screen state

Target communication status: A state where data I/O with a connected device is enabled. The I/O content of the target port is displayed.

```
$ terminal port1 Enter↵
[launch Terminal-Emulator -- press `^Ec?' to help]

Red Hat Linux release 9 (Shrike)
Kernel 2.4.20-8 on an i686

localhost.localdomain login:
```

Data output from the target device

Waiting for command input: A state where a prompt was displayed after a hotkey was pressed from the target communication status, the communication with the target was suspended, and the system is currently waiting for input of a terminal emulator command key.

```
$ terminal port1
[launch Terminal-Emulator -- press `^Ec?' to help]

Red Hat Linux release 9 (Shrike)
Kernel 2.4.20-8 on an i686

localhost.localdomain login:









[
```

When pressing a hotkey, "[" is displayed below the terminal, and a prompt is displayed.
A terminal emulator command can be entered in this state.

Command result output status: A state where the results of a command key are output. Pressing Enter returns to the target communication status.

```
$ terminal port1
[launch Terminal-Emulator -- press `^Ec?' to help]

Red Hat Linux release 9 (Shrike)
Kernel 2.4.20-8 on an i686

localhost.localdomain login:









[port status]
 local: 115200 np 8 1 none
 port1: 115200 np 8 1 none
-- press Enter key to continue --
```

Entering the Display Port Status command "x" will display the above results.

Hotkey functions

Entering a hotkey combination causes, the terminal emulator to suspend communication via target port and enables the execution of a terminal emulator command.

Default hotkey setting: Ctrl + E, C

Terminal emulator commands

Terminal emulator commands are executed by entering one of the following command keys after pressing a hotkey combination to suspend communication with the target.
Pressing the Enter key after the command is completed restores the target communication status.

The following is a list of command keys:

Command key	Process
.	Exits the terminal emulator. Returns to the shell console.
e	Modifies hotkey setting (two alphanumeric chars). Restores the default setting after exiting the terminal emulator.
s	Modifies line count of the terminal (default: 24).
b	Sends break code to target device.
o	Redisplays the log file.
x	Displays port settings.
z	Temporarily goes to shell console. To return to the terminal emulator from the shell console, execute the "fg" command from the shell prompt.
?	Displays Help on terminal emulator commands.

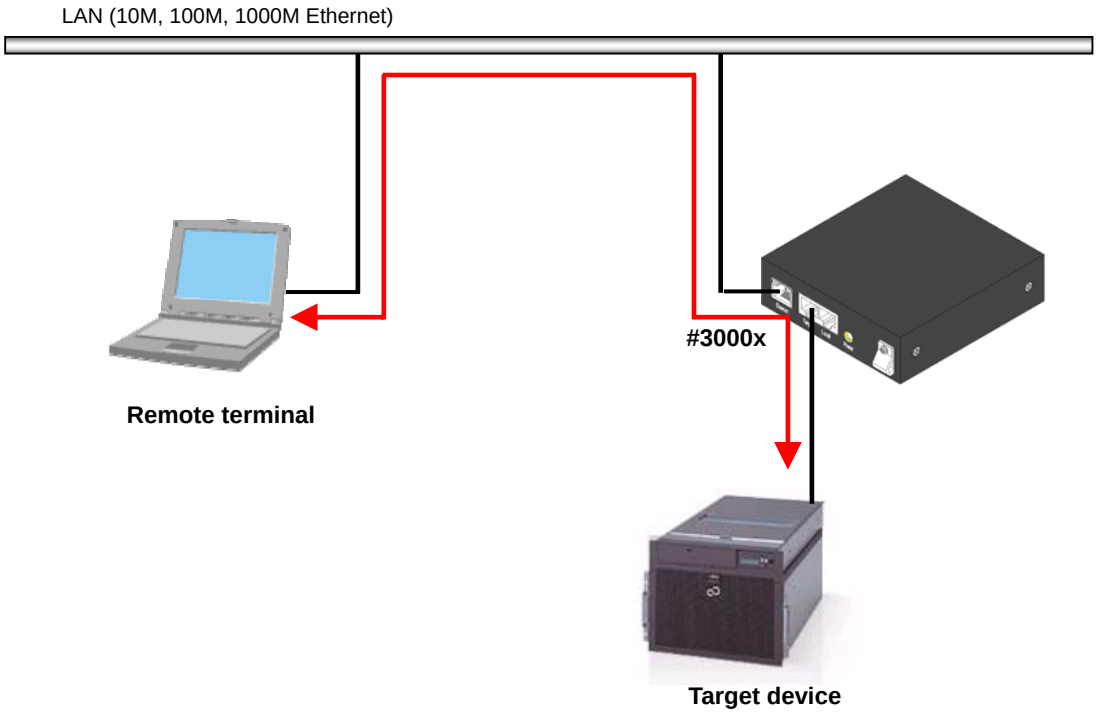
Changes to the hotkey settings are not saved. The next time the terminal emulator is started, the default settings are restored.

When temporarily going to the shell from the terminal emulator with the "z" command, execute the "fg" command from the shell prompt to return to the terminal emulator.

3.3. Ether-Direct Connection

Function overview

Ether-direct connection is a connection method that directly accesses the target port of the product by specifying the TCP port number via a network terminal without going through a terminal emulator, and then executing the telnet connection.
Use the following syntax to connect from a network terminal.



Syntax telnet <host_name> <TCP_port_number>

Parameter(s) host_name = host name or IP address
TCP_port_number = corresponding port number (default setting) that supports following connections

TCP port number	Connection
30003	Read/write port for the target port
30002	Write-only port for the target port
30001	Read-only port (1) for the target port
30000	Read-only port (2) for the target port

The TCP port number setting can be changed using the port command.
🕮 Refer to 4.1.17 port Command (page 70)

Procedure

The following explanation uses an example scenario when accessing the target port (read/write) with a telnet connection.

1. Power on the terminal PC on the network, and then execute the telnet connection from the emulator application. (Assume the IP address of "192.168.0.50" has been pre-assigned to this product.) Specify port number 30003 (read/write).

```
C:\temp> telnet 192.168.0.50 30003 Enter↵
```

2. This establishes a connection to the target port. In this state, input and output data to and from the serial device can be monitored.

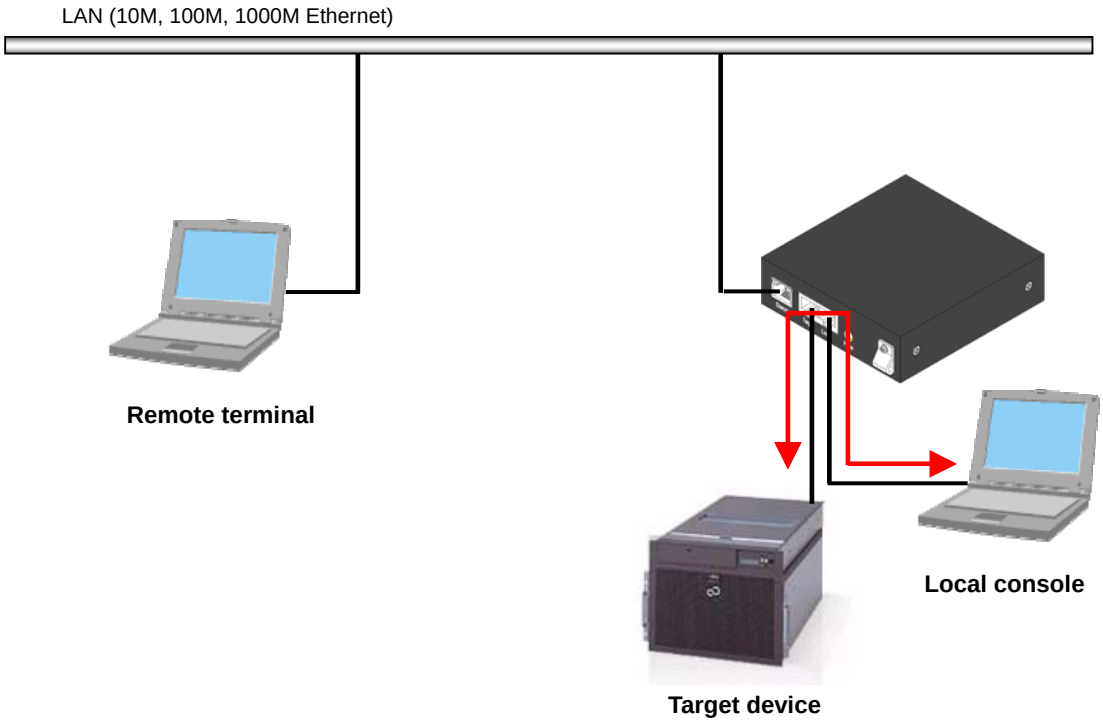
3. After finishing monitoring/configuring the connected device, disconnect the communication.
   When connecting using an emulator application such as TeraTerm, select "Disconnect" or "Exit" from the drop-down menu.
   When connecting via the command line from a UNIX host, etc., enter the telnet escape code "~]" and type "quit" to exit.

If a connection cannot be established, check the IP address and target port settings of this product.
Since a connection to the above TCP ports (30003, 30002, 30001, and 30000) is exclusive, simultaneous instances cannot exist.
Connection/disconnection information of Ether-direct is stored in the clog (connection log) file.
During an Ether-direct connection, target port logs are not stored.

3.4. COM Direct Connection

Function overview

COM direct connection is a connection method that directly controls the target port from a local console without going through a terminal emulator.
You can log in from a remote terminal and execute the redirect command to establish a COM direct connection.
🕮 Refer to 4.1.20 redirect Command (page 74)



First ensure that the serial port settings of the target port and local port match when establishing a COM direct connection.
Proper communication cannot be established if the serial port settings do not match.

Procedure

1. Log in to the product from a terminal PC on a network, and then match the settings of the target port and local port.

2. Execute the redirect command.

```
$ redirect on com Enter↵
$
```

3. The connection to the target device can be verified when connected to the local console. (The following is what is displayed when connecting a Linux PC to the target.)

```
Red Hat Linux release 9 (Shrike)
Kernel 2.4.20-8 on an i686

localhost.localdomain login:
```

4. To disconnect a COM direct connection, log in to the product from a terminal PC on the network, and then execute the following command.

```
$ redirect off Enter↵
$
```

5. The COM direct is disconnected at the local console, and the following login screen is displayed.

```
Red Hat Linux release 9 (Shrike)
Kernel 2.4.20-8 on an i686

localhost.localdomain login:
 5:24PM on Wednesday, 09 November 2005

login:
```

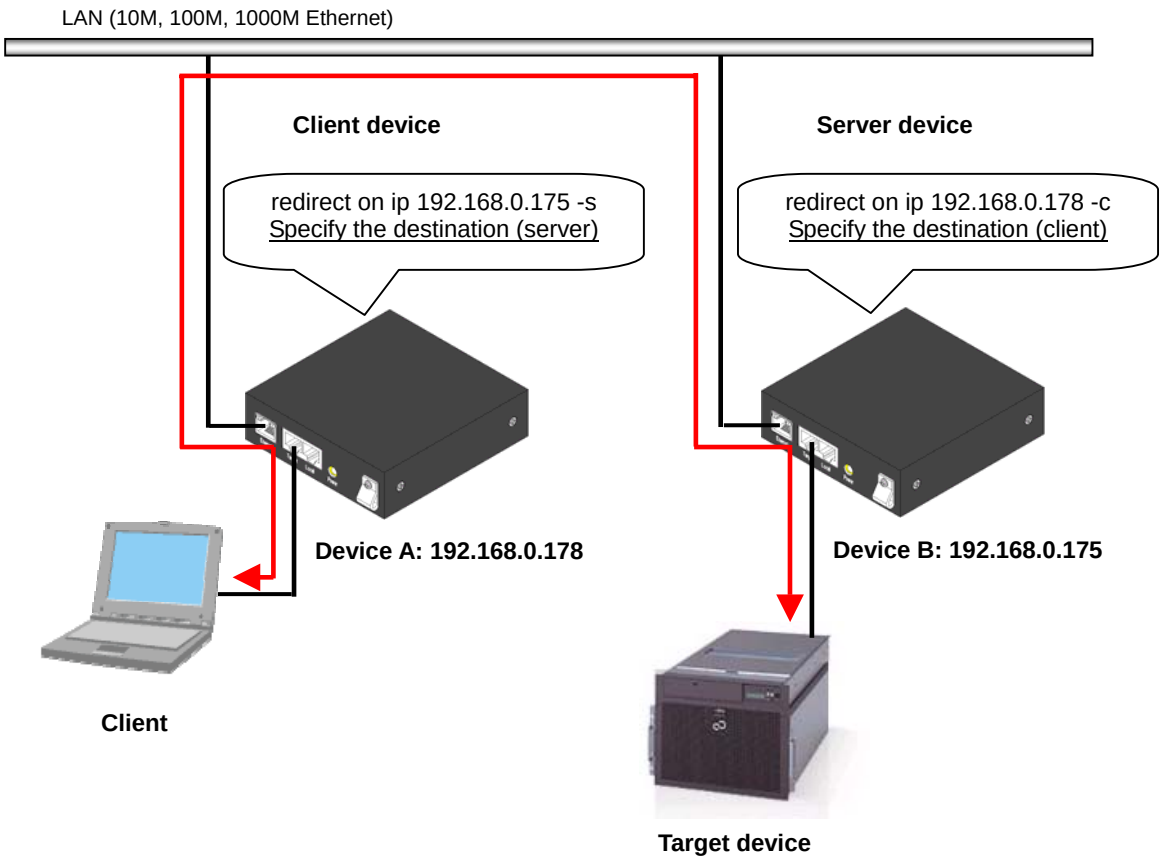
During a COM direct connection, other connections (terminal emulator or Ether-direct) cannot access the target port.

During a COM direct connection, target port logs are stored.

3.5. Dual Connection Mode

Function overview

Dual connection is a connection mode where two products are connected via the Internet and two target ports are simultaneously controlled.
SSL encrypted security is achieved for the network between the client device and the server device.



You can log in from a remote terminal and execute the redirect command from the shell console to establish a dual connection.
🕮 Refer to 4.1.20 redirect Command (page 74)

CAUTION

First ensure that the serial port settings of the client device and server device match when establishing a dual connection.
Proper communication cannot be established if the serial port settings do not match.

Procedure

The following explains how to establish and disconnect a dual connection.

1. Match the serial settings of the target ports of the client device (Device A) and the server device (Device B).

2. Log in to the client device (Device A), and then execute the redirect command using the IP address or server name of the dual connection destination.
   (It will take a moment for control to return to the shell once the command is executed.)

```
 2:26PM on Friday, 24 February 2006

login: admin Enter↵
Password:      Enter↵
Last login: Fri Feb 24 14:28:34 2006 on console


$ redirect on ip 192.168.0.175 -s Enter↵
$
```

3. Log in to the server device, and then execute the redirect command using the IP address and client name of the dual connection destination.
   (It will take a moment for control to return to the shell once the command is executed.)

```
 2:26PM on Friday, 24 February 2006

login: admin Enter↵
Password:      Enter↵
Last login: Fri Feb 24 14:28:34 2006 on console


$ redirect on ip 192.168.0.178 -c Enter↵
$
```

4. To disconnect a dual connection, log in to the product from a local console, and then execute the following command.
   (It will take a moment for control to return to the shell once the command is executed.)

```
$ redirect off Enter↵
$
```

CAUTION

During a dual connection, other connections (terminal emulator, Ether-direct, or COM direct) cannot access the target port.

During a dual connection, target port logs are stored.

3.6. Setting the IP Address with DHCP

Function overview

When turning on this product with DIP switch 4 ON, a DHCP server on the network can automatically set the IP address of the product.

indicates a switch.

To view the auto-set IP address, perform the following steps.

Procedure

1. From a local console, log in to the product as the administrator user "admin", and execute the network command without any parameters to display the following IP address when DHCP is enabled.

```
login: admin Enter↵
Password:      Enter↵
Last login: Fri Feb 24 14:28:34 2006 on console

$ network Enter↵
<ip address> 192.168.0.169
<subnet mask> 255.255.255.0
<default gateway> 192.168.0.1

<DHCP = YES>
 ip address  192.168.0.5
 subnet mask  255.255.255.0
 default gateway  192.168.0.1

$
```

For the above, the setting of 192.168.0.5 can be verified.

CAUTION

Note that the startup time is longer when DHCP is enabled.

3.7. Settings via the Menu

Function overview

The settings of this product can be configured by two interfaces: via the command line from the shell console environment and via a menu screen.

When logged in to the product, initially the command line interface is displayed; however, the menu screen can be displayed by executing the menu command.
🕮 Refer to 4.1.19 menu Command (page 73)

```
$ menu Enter↵


== MAIN MENU ========
 1. switch
 2. network
 3. time
 4. file
 5. user
 6. serial
 7. option
 8. ping
 0. exit
=====================
select >
```

Selecting a setting item from this menu configures the same settings as command line executions in an easier manner.

For details on the menu, refer to the following.
🕮 Refer to Chapter 5 - Menu Settings (page 95)

3.8. SNMP Functions

Function overview

This product supports SNMP; therefore, snmpd can be turned on/off by executing the snmp command.
🕮 Refer to 4.1.7 snmp Command (page 60)

Custom settings can be used by importing the /CF/conf/snmpd.conf file modified according to the environment and purpose of use.

In default setting all users are allowed to gain access via a read community called "public".

Setting procedure (example)

The following explanation uses an example scenario when allowing access by a network user using a read community called "public".

1. Insert the CF card and press the CF/Init button to ready the CF card. Execute the export command to export the current snmpd.conf settings to the /CF/conf directory.
   🕮 Refer to 4.1.32 export Command (page 89)

```
$ export Enter↵
exported /CF/conf/ntp.conf.
exported /CF/conf/localtime.
exported /CF/conf/portmng.cf.
exported /CF/conf/hosts.
exported /CF/conf/port.conf.
exported /CF/conf/ifconfig.sm0.
exported /CF/conf/users.
exported /CF/conf/rc.conf.
exported /CF/conf/passwd.
exported /CF/conf/master.passwd.
exported /CF/conf/group.
exported /CF/conf/services.
exported /CF/conf/snmpd.conf.
$
```

2. Eject the CF card, and edit the /CF/conf/snmpd.conf file.

* In FTP connection mode, you can "get" the above file and then "put" the edited file.
🕮 Refer to 3.12 FTP/SFTP Connection (page 47)

3. Inert the edited CF, press the CF/Init button to have it recognized, and then execute the import command.
📖 Refer to 4.1.31 import Command (page 87)

```
Compact Flash slot : 122MB media detected.

$ import Enter↵
imported /etc/ntp.conf.
imported /etc/localtime.
imported /etc/portmng.cf.
imported /etc/hosts.
imported /etc/port.conf.
imported /etc/ifconfig.sm0.
imported /etc/users.
imported /etc/rc.conf.
imported /etc/passwd.
imported /etc/master.passwd.
imported /etc/group.
imported /etc/services.
imported /usr/pkg/etc/snmpd.conf.

$
```

4. Turn snmpd off, and then turn it back on. The product will now run with the modified snmpd.conf settings.

```
$ snmp off Enter↵
administrator password:      Enter↵
snmp setting off.
$ snmp on Enter↵
administrator password:      Enter↵
snmp setting on.
$
```

With the above steps, the snmpd.conf contents are modified and reflected to the product.

Advanced version only

3.9. Logging Functions

Function overview

The product can log the following data, and if a CF card is inserted, logs can be stored to the CF card in text format.

Save directory	File name	Content
/CF/log	port1	Target port I/O log
	portmng	Operation log
/CF/sys	messages	syslog

If a CF card is mounted, the target port I/O log is stored to the CF card in real-time.

For other logs (i.e. clog, portmng, messages files), data accumulated to the flash ROM are saved to the CF card once every hour (at 00 minutes).
To immediately dump the clog, portmng, and messages log files to the CF card, execute the copy command (-s parameter).

```
$ copy -s all Enter↵
Do you copy all file? (y or n) y Enter↵
copy file completed.
$
```

📖 Refer to 4.1.28 copy Command (page83)

CAUTION

During an Ether-direct connection, target port logs are not stored.
Connection/disconnection information of Ether-direct is stored in the messages file.

Advanced version only

3.10. CF Management of Environment Settings

Function overview

This product can record in text format the various configuration files, which are required for running the product, to a CF card. Configuration files in the RAM disk/flash ROM are saved to the /CF/conf directory by executing the export command.
🕮 Refer to 4.1.32 export Command (page 89)

Settings can easily be modified by editing the configuration files on the CF card from a PC, inserting the CF card to the product, and then importing the files.
🕮 Refer to 4.1.31 import Command (page 87)

Also, to run the product with a desired setting, copy the setting on the CF card, insert the CF card, and import the files to achieve the same setting environment.

The following shows the configuration files that can be managed by the CF card.

List of configuration files

Directory	File name	Content
/CF/conf/	ntp.conf	NTP config file
	localtime	Time zone symbolic file
	portmng.cf	Configuration definition file
	hosts	Host name definition file
	port.conf	Serial port config file
	ifconfig.sm0	Network card config file
	users	User config file
	rc.conf	Network config file
	passwd	Password file
	master.passwd	Password master file
	group	Group config file
	services	Network service/port config file
	snmpd.conf	Snmpd config file

If there are no configuration files in the CF card (e.g. right after formatting it), executing the export command exports all of the configuration files to /CF/conf.

Also, /CF subdirectories can be accessed with FTP/SFTP, allowing configuration files to be "put" remotely, therefore modifying settings in that manner. For details, refer to the following.
🕮 Refer to 3.12 FTP/SFTP Connection (page 47)

Advanced version only

3.11. Encrypting/Decrypting a CF Card

Function overview

This product can encrypt and decrypt configuration files and log files on the CF card.

Item	Overview
Command	- Encryption encrypt command - Decryption decrypt command * To execute the command, an encryption key is required.
Encryption key	- Encryption key for configuration files Create/modify with the changekey command (parameter: -c) - Encryption key for log files Create/modify with the changekey command (parameter: -l)
File for encryption	- Log files under the /CF/log directory port1: Target port I/O log portmng: Operation log clog: Ether-direct conn/disconn log - Configuration files under the /CF/conf directory ntp.conf, localtime, portmng.cf, hosts, port.conf, ifconfig.sm0, users, rc.conf, passwd, master.passwd, group, services, snmpd.conf * Encryption/decryption can be performed on individual files.
Encryption algorithm	- Common key cryptography, AES (256 bits)

When encrypting, an encryption key is required. Execute the changekey command to set the encryption key.

Encryption procedure

The following explanation uses an example scenario where the configuration files under the /CF/conf directory are encrypted.

1. When encrypting, an encryption key must be set. Execute the changekey command to create/modify the encryption key.
   📖 Refer to 4.1.34 changekey Command (page 92)

```
$ changekey -c Enter↵
administrator password:      Enter↵
keycode:    Enter↵
$
```

2. Execute the encrypt command to perform the encryption.
   📖 Refer to 4.1.29 encrypt Command (page 85)

```
$ encrypt -c all Enter↵
Do you encode all file? (y or n) y Enter↵
encoded ntp.conf.
encoded portmng.cf.
encoded hosts.
encoded port.conf.
encoded ifconfig.sm0.
encoded users.
encoded rc.conf.
encoded passwd.
encoded master.passwd.
encoded group.
encoded services.
encoded snmpd.conf.
encoded localtime.
$
```

The configuration files under the /CF/conf directory are encrypted as shown below.

```
･ｮ｣ｲ･｡､･ｲ｣ｯ､･ｳｮヲ蛛･'･  o┴q ' O･捉{+ﾆｷｸﾗ信ﾗ&↑K
･ｰB+=Hz ﾐｭ･･3I{ｸﾗへ｡4ｳpｬ!  ! `v ﾃ NE･ﾐｹﾘ a ｷｧ\]･Vﾐ e ﾋﾄｻ<ｰ┼V ｷ 8」●"･ﾏ軽穿ﾒｮ｣V ｸﾗ･
^Zh=ｹ G 歯 Z<AVW ｲｵ\+;6 ｸﾗ v ｳ糧ｸﾗﾒ弃ｸﾗ@G ｺ･ﾋヲ･J 妓 B､E 典┬X@i ﾔｸﾗ L へ･鱶贏ｸﾗﾅｸﾗ･ｸﾗ･
Hiy 祀 0 ﾋ B>y ﾇへ q･be→
ﾊｲ_]u ｷ◀T ｸ R｣ 晟ｹﾁ 8･ﾗ弼=M ﾁ ｉ 覗･TL ﾄｷ tC 遥ﾋ･゜  ‼di ｺ x･さ X ｸﾗ｡a ﾘ^燹(8†夬ﾄ&K
┴~S          チ          -          停          AZk\          ﾆ
┴擢 U －蛹|ﾜ p 拊 4*ﾘ K|  ◀･8−V!･ﾔ&Kh
倭 6l| 吊{･ｾ b ﾋｰ*室  6゜T ﾎﾈﾌｭ築･
```

CAUTION

When configuration files are encrypted, the import command cannot be executed.
When configuration files are encrypted, executing the export command will prompt whether or not to overwrite with unencrypted configuration files. Entering "Y" performs the export.

Decryption procedure

The following explanation uses an example scenario where the encrypted configuration files under the /CF/conf directory are decrypted.

1. Execute the decrypt command to perform the encryption.
   🕮 Refer to 4.1.30 decrypt Command (page 86)

```
$ decrypt -c all Enter↵
Do you decode all file? (y or n) y Enter↵
decoded ntp.conf.
decoded portmng.cf.
decoded hosts.
decoded port.conf.
decoded ifconfig.sm0.
decoded users.
decoded rc.conf.
decoded passwd.
decoded master.passwd.
decoded group.
decoded services.
decoded snmpd.conf.
decoded localtime.
$
```

The configuration files under the /CF/conf directory are decrypted.

CAUTION

If the encryption key is modified with the changekey command after an encryption is performed, files encrypted with the original key cannot be decrypted.

Advanced version only

3.12. FTP/SFTP Connection

Function overview

This product can download/upload CF files with FTP/SFTP.
With this functionality, log files can be downloaded or configuration files can be uploaded to modify settings from a remote location.

FTP connections can be performed by admin users or general users.
When logged in as an admin user, the /CF directory is the top directory; everything under /CF can be accessed.
When logged in as a general user, the /CF/log directory is the top directory; only /CF/log and subdirectories can be accessed.

The following explanation uses an example scenario where target port log files are downloaded.
Assume the following are set:

- The IP address of the product is "192.168.0.101".
- The local host directory is "C:\temp".

Procedure

1. Turn on a PC with network functions, execute the FTP command and establish an FTP connection with this product.

```
C:\temp>ftp 192.168.0.101 Enter↵
```

2. When the following is displayed, log in with the admin user.

```
Connected to 192.168.0.101
220 STD FTP ready.
User (192.168.0.101:(none)): admin Enter↵
331
Password:      Enter↵
```

3. Authentication is performed and you are logged in to the product.

```
230
ftp>
```

4. Go to the directory where the files for upload/download are located.

```
ftp> cd /log Enter↵
250 CWD command successful.
ftp>
```

5. Execute "get" to download files (product to FTP client); execute "put" to upload files (FTP client to product). The target I/O log file is downloaded here.

```
ftp> get port1 Enter↵
```

6. The file is transferred.

```
200 PORT command successful.
150 Opening ASCII mode data connection for 'port1' (3747 bytes).
226 Transfer complete.
ftp: 3862 bytes received in 0.20Seconds 19.02Kbytes/sec.
```

7. Disconnect the local host from the FTP server.

```
ftp> bye Enter↵
221-
    Data traffic for this session was 3862 bytes in 1 file.
    Total traffic for this session was 4279 bytes in 1 transfer.
221 Thank you for using the FTP service on localhost.
```

Advanced version only

3.13. CF Boot Mode

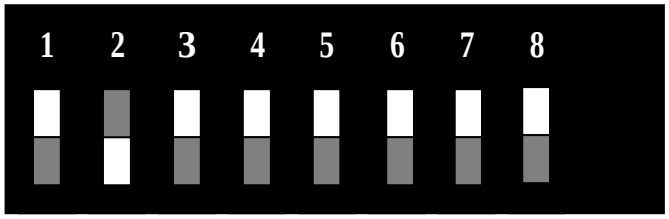
Function overview

In this mode, the file system is loaded, not from the internal flash ROM, but the CF card.

By placing the binary, which should be in the internal flash ROM, to the CF card, an entirely different system can be launched. An environment that executes auto-processing against the local console or target port is provided.
By executing a perl script, data on each target port can be checked and reported to the local console, or devices connected to the target ports can be auto-controlled.

Selecting boot media

Whether to use CF boot or normal boot is determined by the DIP switch on the front of the product.
To use CF boot, turn DIP switch 2 on, insert a bootable CF (FFS format) into the CF slot, and then turn the product on.



indicates a switch.

Operation	Dip SW 2	Dip SW 8	Detail
Normal startup (IPv4)	OFF	OFF	Starts the device with kernel on the flash ROM. Extracts the file system image on the flash ROM to the RAM. Uses the IPv4 configuration file. Uses IPv4 supported configuration files.
CF boot	ON	-	Starts the device with kernel on the CF. Uses the file system on the CF. *** A bootable CF (FFS format) must be inserted.**

CAUTION

When booting from the CF card, the CF card cannot be formatted.

MEMO

Chapter 4 - Command Descriptions

This chapter describes the syntax of various commands used to control this product.

Contents of this chapter

4.1. Shell Console Commands for admin user

The following is a list of commands that are executable in the shell console environment. Only admin user can execute the shell console commands.

Command list

No.	Command	Function	Note
1.	shutdown	Shuts down the device	**Password required**
2.	reboot	Reboots the device	**Password required**
3.	logout	Logs out	
4.	network	Sets own IP address, netmask, gateway	
5.	hostname	Sets the host name	
6.	ping	Sends ICMP packets to the host	
7.	snmp	Sets SNMP to ON/OFF	**Password required**
8.	time	Sets the date and time	
9.	timezone	Sets the time zone	
10.	ntp	Sets the NTP (turns on/off the client function, registers the server)	
11.	userlist	Displays the registered user list	
12.	useradd	Registers a user	**Password required**
13.	userdel	Deletes a user	**Password required**
14.	userkill	Forces a user to log out	**Password required**
15.	passwd	Changes the password	**Password required**
16.	userreject	Blocks a user from logging in	**Password required**
17.	port	Configures a port	
18.	version	Displays the firmware version	
19.	menu	Displays the menu screen	
20.	redirect	Configures redirect connection	
21.	vt100	Configures a VT100	
22.	terminal	Launches the terminal emulator	
23.	fmount	Mounts/Unmounts the NFS filesystem	
24.	readflash	Writes flash ROM files to CF or NFS	
25.	writeflash	Writes CF or NFS files to flash ROM	

Advanced version only

No.	Command	Function	Note
26.	display	Lists the log files in the CF card	
27.	delete	Deletes the configuration files and log files on the CF card	
28.	copy	Copies the configuration files and log files on the CF card	
29.	encrypt	Encrypts the configuration files and log files on the CF card	
30.	decrypt	Decrypts the configuration files and log files on the CF card	
31.	import	Imports configuration files	
32.	export	Exports configuration files	
33.	change	Changes the CF configuration files	**Password required**
34.	changekey	Changes the encryption key	**Password required**
35.	cfformat	Formats the CF card	**Password required**

The following sections explain the specifications of each of the above commands. Parameters in the < > cannot be omitted; [] parameters are optional.

4.1.1 shutdown Command

Overview — Shuts down the system.

Syntax — shutdown

Parameter(s) — None

Password required? — Yes (* same as the administrator password)

Example (from the local console)

- Shuts down this product. (The password is not displayed.)

```
$ shutdown Enter↵
administrator password:      Enter↵
Shutdown NOW!
$ Fri Feb 24 14:32:44 GMT+9 2006
syncing disks... done
The operating system has halted.
Please press any key to reboot.
```

Pressing any key in the above state reboots.

4.1.2 reboot Command

Overview — Reboots the system.

Syntax — reboot

Parameter(s) — None

Password required? — Yes (* same as the administrator password)

Example (from the local console)

- Reboots this product. (The password is not displayed.)

```
$ reboot Enter↵
administrator password:      Enter↵
Shutdown NOW!
$ Fri Feb 24 14:32:44 GMT+9 2006
syncing disks... done
The operating system has halted.
Please press any key to reboot.

rebooting...

checking system memories...
.............................RAM ok
.............................ROM ok

...now system loading...
.
.......................done!
SERVIS IP-Serial 1p Converter/CF (FX-3001SRF)
Copyright (c) 2005-2006 FUJITSU COMPONENT LIMITED.
Version 1.00 Build 387


Checking system hardware...
.
Real time clock   : ok
.................
Network controller : ok
..............
Compact Flash slot : 122MB media detected.

 2:35PM on Friday, 24 February 2006

login:
```

4.1.3 logout Command

Overview — Logs out of the product system and displays the login prompt.

Syntax — logout

Parameter(s) — None

Password required? — No

Example (from the local console)

- Logs out of the product system.

```
$ logout Enter↵

 2:36PM on Friday, 24 February 2006

login:
```

4.1.4 network Command

Overview — Displays/sets the current network information of product.

Syntax — network <ipaddress> <subnetmask> <gateway>
network [-I | -m | -g] [name]

Parameter(s) — None = Displays current network settings.
ipaddress = Specifies the IP address.
subnetmask = Specifies the subnet mask.
gateway = Specifies the default gateway.
-I = Only sets the IP address. Specify the IP addres to Name.
-m = Only sets the subnet mask. Specify the subnet mask to Name
-g = Only sets the default gateway. Specify the default gateway to Name.

Password required? — No

Notes

(1) Unless the system is restarted, the changes made by the network command are not reflected.

Example (from the local console)

➢ The following example sets the IP address to "192.168.0.50", the subnet mask to "255.255.255.0", and the default gateway to "192.168.0.1".

1. Enter the network command.

```
$ network 192.168.0.50 255.255.255.0 192.168.0.1 Enter↵
ip address setting completed.
subnet mask setting completed.
default gateway setting completed.
$
```

2. Execute the reboot command to restart the product. Rebooting is required in order to apply the settings.
🕮 Refer to 4.1.2 reboot Command (page 54)

If the Dip switch is set to use a DHCP server and the network command is executed without any parameters, the IP address, subnet mask, and default gateway assigned by the DHCP server are also displayed.

4.1.5 hostname Command

Overview — Displays/sets the current host name.

Syntax — hostname [name-of-host]

Parameter(s) — None = Displays the current host name.
name-of-host = Sets the specified host name.

Password required? — No

Notes

(1) The host name has a limit of 63 characters. If it is 64 or more characters long, only the first 63 are set.

Example (from the local console)

- Sets the host name to "LL1".

```
$ hostname LL1 Enter↵
host name setting completed.
$
```

- Displays the current host name.

```
$ hostname Enter↵
<hostname> LL1
$
```

4.1.6 ping Command

Overview — Sends an ICMP ECHO_REQUEST packet to a host on the network.

Syntax — ping [-dfnoqrvDPQRL] [-c count] [-g gateway] [-I interval] [-I ifaddr] [-l preload] [-p pattern] [-s packetsize] [-t tos] [-T ttl] [-w maxwait] <host>

Parameter(s)

-c count = Stops sending ECHO_RESPONSE packets after sending out the packet for as many times as specified by the count parameter (and after waiting for the specified delay for a response).
-d = Sets the SO_DEBUG option when using socket.
-D = Sets the Don't Fragment bit of the IP header. This can be used to limit the MTU of that path.
-f = Flood ping. Sends the output out immediately after a packet returns or 100 times within a second; the faster of the two. The "." character is displayed for every ECHO_REQUEST packet sent, whereas a backspace is output for every ECHO_REPLY packet received. Therefore, you can quickly see how many packets have been lost. Since this puts a heavy load on the network, use this with caution.
-g gateway = Sends ECHO_REQUEST packets through the gateway using Loose Source Routing.
-I interval = Sends packets in intervals of the specified seconds. By default, packets are sent in intervals of 1 second; however, the -f option is an exception where packets are sent every 0.01 seconds.
-I ifaddr = Sends multicast datagrams to the network interface specified by the host name or IP address.
-h host = An alternative method of specifying the target host name for the last argument.
-l preload = Before going into normal operation mode, this sends a certain number of packets specified by preload as fast as possible.
-L = Disables loop back for multicast interface destinations so that the source host cannot receive ICMP requests.
-n = Only outputs numeric values. This does not look up the symbol name of the host address.
-o = Exits upon receiving one response packet.
-p pattern = Specifies up to 16 bytes to send out for the "pad" part of the outgoing packet. This is effective when diagnosing a data-dependent problem on the network. For example, "-p ff" fills the packets with 1's.
-P = By default, the data part uses an incremented sequence of 8-bit integers, but this uses a pseudo-random sequence for the data part. This is effective when disabling compression for PPP and other links.
-q = Controls the output. Other than the few lines content displayed at startup and finish, nothing is displayed.
-Q = Does not display ICMP responses such as

"Network Unreachable" for the sent ECHO_REQUEST.

-R = Records the path. This includes the RECORD_ROUTE option to the ECHO_REQUEST packet, and displays the path buffer of the packet that is returned. Note that due to the size of the IP header, it can only contain eight paths. Most hosts ignore or discard this option.

r = Bypasses the normal routing table and directly sends packets to the host on the network. An error is returned if the specified host does not exist on the immediate network. This option is recommended when there is no path information for a specific interface and when pinging a local host through that interface (e.g. when an interface is dropped by routed(8)).

-s packetsize = Specifies the byte size of the outgoing data. The default is 56 bytes, and when combined with the 8-byte ICMP header data, the ICMP data becomes 64 bytes. The max value is 65468 bytes.

-T ttl = This uses the specified time-to-live.

-t tos = This uses the type of service specified in hexadecimal.

-v = Enables verbose mode. This displays other information in addition to the ECHO_RESPONSE of the received ICMP packet.

-w maxwait = Specifies the wait time (seconds) for a packet response before sending out the next packet. The default is 10.0.

Password required? No

Notes

(1) There is no output if there is no response.

Example (from the local console)

- Specifies the host and performs a ping.

```
$ ping 192.168.0.4 Enter↵
PING 192.168.0.4 (192.168.0.4): 56 data bytes
64 bytes from 192.168.0.4: icmp_seq=0 ttl=128 time=7.621 ms
64 bytes from 192.168.0.4: icmp_seq=1 ttl=128 time=10.415 ms
^C
----192.168.0.4 PING Statistics----
2 packets transmitted, 2 packets received, 0.0% packet loss
round-trip min/avg/max/stddev = 7.621/9.018/10.415/1.976 ms
$
```

4.1.7 snmp Command

Overview — Sets SNMP to ON/OFF.
When SNMP is enabled, all users are allowed to gain access via a read community called "public".

This setting can also be changed by editing the /CF/conf/snmpd.conf file (Advanced version only).

Syntax — snmp [on | off]

Parameter(s) — None = Displays the current SNMP setting.
on = Enables SNMP.
off = Disables SNMP.

Password required? — Yes (* same as the administrator password)

Example (from the local console)

- Enables SNMP. (The password is not displayed.)

```
$ snmp on Enter↵
administrator password:      Enter↵
snmp setting on.
$
```

- Displays the current SNMP setting.

```
$ snmp Enter↵
<snmp> on
$
```

- Disables SNMP. (The password is not displayed.)

```
$ snmp off Enter↵
administrator password:      Enter↵
snmp setting off.
$
```

4.1.8 time Command

Overview — Sets the date and time.
Specifying the date/time parameters sets the date/time settings.
Specifying the time zone parameter displays the date/time of that time zone.

Syntax — time [ccyymmddhhmm.ss | zone]

Parameter(s) — None = Displays the current date and time.
cc = The first two decimal digits (century) of the year.
yy = The second two decimal digits of the year.
If "yy" is specified but "cc" is not, the value of "cc" is 19 for "yy" values between 69 and 99, and "20" for the other values.
mm = Month (numeric value: 1-12).
dd = Days (numeric value: 1-31).
hh = Hour (numeric value: 0-23).
mm = Minutes (numeric value: 0-59).
.ss = Seconds (numeric value: 0-61).
zone = Time zone name.

Password required? — No

Notes

(1) Before executing the time command, specify the time zone using the timezone command. After executing the timezone command, set the date/time with the time command.
(2) Time adjustments for daylight savings, standard times, leap seconds and leap years are performed automatically.

Example (from the local console)

- Displays the current date/time setting.

```
$ time 200602241515.00 Enter↵
time setting completed.
$
```

- Displays the current date/time.

```
$ time Enter↵

Fri Feb 24 15:15:43 2006 GMT+9
$
```

4.1.9 timezone Command

Overview — Sets the time zone.
Without any parameters, this displays the current time zone.

Syntax — timezone [zone]

Parameter(s) — zone = Time zone

zone setting	Time zone	Region
JST	Japan	Japan
PST	Pacific	US (Pacific)
MST	Mountain	US (Mountain)
CST	Central	US (Central)
EST	Eastern	US (Eastern)
UTC	UTC	Coordinated universal time
GMT-12 to +12	GMT	Greenwich mean time

Password required? — No

Notes

(1) For "GMT" only, the time zone is set at "GMT+0".
(2) Enter the zone using upper case letters.

Example (from the local console)

- Sets the time zone.

```
$ timezone GMT+9 Enter↵
time setting completed.
$
```

- Displays the current time zone setting.

```
$ timezone Enter↵

<timezone> GMT+9
$
```

4.1.10 ntp Command

Overview — Sets the start/stop of ntpd and specifies the NTP server.

Syntax — ntp [-o | -f] [server name]

Parameter(s) — None = Displays the current settings.
-o = Starts the ntpd.
-f = Stops the ntpd.
server name = Specifies the NTP sever.

Password required? — No

Notes

(1) When executing ntpd, set the date and time in advance using the time command. When the configured date and time vary greatly from the time on the time server, the time cannot be obtained.
(2) Rebooting is required in order to apply the settings. Use the reboot command to restart the system after changing the settings. By default, ntpd is set to OFF.
(3) If ntpd is not specified, the current ntpd setting is used.
(4) The server name has a limit of 63 characters.

Example (from the local console)

- Starts ntpd.

```
$ ntp -o 192.168.0.100 Enter↵
ntp setting on.
$
```

- Displays the current NTP setting.

```
$ ntp Enter↵
<ntp> on
 192.168.0.100
$
```

- Stops ntpd.

```
$ ntp -f Enter↵
ntp setting off.
$
```

4.1.11 userlist Command

Overview — Displays the registered users and the user's reject status, login status.

Syntax — userlist

Parameter(s) — None

Password required? — No

Example (from the local console)

➢ Displays a list of registered users.

```
$ userlist Enter↵
 user          reject       login
-----------------------------------------------
 admin          -           o (shell)
 test1          -           o (terminal)
 test2          x           -
 test3          -           -
$
```

The content of the marks is shown as follows.

Item	Mark	Content
reject	—	The user can log in.
	×	The user cannot log in.
login	—	The user is not logging in.
	○（shell）	The user is logging in. (The shell console is starting.)
	○（terminal）	The user is logging in. (Terminal-Emulator is starting.)

The user's reject setting is executed by the userreject command.
🕮 Refer to 4.1.16 userreject Command (page 69)

4.1.12 useradd Command

Overview — Registers a user with the specified user name.

Syntax — useradd <username>

Parameter(s) — username = The user name to be registered.

Password required? — No

Notes

(1) Up to four users can be added. If more than four users are specified, an error occurs when registering.
(2) The user name has a limit of 63 characters.
(3) Pressing the Enter key without entering anything when setting the password during a user registration will register the user without a password. Afterwards, the passwd command can be used to set a password.

Example (from the local console)

- Registers a general user called "tester1".

```
$ useradd tester1 Enter↵
administrator password:      Enter↵
Changing local password for tester1.
New password:      Enter↵
Retype new password:      Enter↵
useradd completed.
$
```

- If more than four users are specified, the following is displayed during registration and the users are not registered.

```
$ useradd tester5 Enter↵
can not add user. entry over.
$
```

4.1.13 userdel Command

Overview — Deletes the specified user.

Syntax — userdel <username>

Parameter(s) — username = The user name to be deleted.

Password required? — Yes (* same as the administrator password)

Example (from the local console)

- Deletes the registered general user "tester1".

```
$ userdel tester1 Enter↵
administrator password:      Enter↵
userdel completed.
$
```

- If a user name that was not registered is specified, the following is displayed and no user is deleted.

```
$ userdel user1 Enter↵
No such user `user1'
$
```

4.1.14 userkill Command

Overview — Forces the specified user to log out.

Syntax — userkill <username>

Parameter(s) — username = The user to be forced to log out.

Password required? — Yes (* same as the administrator password)

Example (from the local console)

- Forces "user1" who is logged in to log out. (The password is not displayed.)

```
$ userkill tester1 Enter↵
administrator password:      Enter↵
userkill completed.
$
```

4.1.15 passwd Command

Overview — Modifies the password of the specified user.

Syntax — passwd [username]

Parameter(s) — None = Changes the password of the currently logged in user.
username = Specifies the user name of the password to be changed.

Password required? — Yes (* same as the user password)

Notes

(1) Only the logged in user or admin can change a password.
(2) Pressing the Enter key without entering anything during the "New password:" prompt does not modify the password.

Example (from the local console)

- Changes the password of "tester1" (the password is not displayed).

```
$ passwd tester1 Enter↵
Changing local password for tester1.
New password:      Enter↵
Retype new password:      Enter↵
$
```

- If a user name that was not registered is specified, the following is displayed and no password is changed.

```
$ passwd user1 Enter↵
not found username
$
```

4.1.16 userreject Command

Overview — Blocks the specified user from logging in.
Specifying a user that is already blocked from logging in and then executing the userreject command will release the blocked user.
The status of the blocked user can be confirmed by the userlist command.

Syntax — userreject <username>

Parameter(s) — username = The user name to be blocked from logging in.

Password required? — Yes (* same as the administrator password)

Notes

(1) This command only sets a user to be blocked from logging in; it does not force users to log out.

Example (from the local console)

- Blocks "tester1" from logging in.

```
$ userreject tester1 Enter↵
administrator password:      Enter↵
user rejected.
$
```

- Specifying a user that is already blocked from logging in releases the block.

```
$ userreject tester1 Enter↵
administrator password:      Enter↵
user un-rejected.
$
```

- If a user name that was not registered is specified, the following is displayed.

```
$ userreject user1 Enter↵
No such user `user1'
$
```

- When a user that is blocked from logging in attempts to log in, the following is displayed and the user is not logged in.

```
login: tester1 Enter↵
Password:      Enter↵
Last login: Thu Aug  4 09:20:28 2005 on console


Can not login.
Permission denied.
```

4.1.17 port Command

Overview

Sets the target port or local console port (when the terminal emulator is running).
The port settings are saved to the port file.

Syntax

port [-t | -l] [speed] [bit] [parity] [stop] [flow] [xon] [xoff]
port [-r1 | -r2 | rw] [port-no]
port [-n]

Parameter(s)

-t = Sets the target port
-l = Sets the local console port **when the terminal emulator is running**
speed = Sets the baud rate
300, 1200, 1800, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200
bit = Bit length 7 - 8
parity = Parity bit (0 = none, 1 = odd, 2 = even)
stop = Stop bit (1 or 2)
flow = Flow control (n = none, h = hardware flow, x = xon/xoff flow)
xon = xon character code 0x?? (hexadecimal setting)
xoff = xoff character code 0x?? (hexadecimal setting)
-r1, -r2 = Sets the read-only port number
-wo = Sets the write-only port number
-rw = Sets the read/write port number
port-no = Port number
-n = Displays the currently set TCP port number and the current connecting status
(o: connecting, -: unconnection)

Password required? No

Notes

(1) If the target port is connected by the terminal emulator or direct connection, port changes cannot be performed using the port command.
(2) If flow control is set to n or h, an error occurs when entering xon or xoff.
(3) Specify the port number within the range of 5000 - 65535.

Example (from the local console)

- The current serial port settings is displayed.

```
$ port Enter↵
 port name     baud   d  p  s  f  xon  xoff
-----------------------------------------------
 Local port    115200  8  0  1  n  0x00 0x00
 Target port   115200  8  0  1  n  0x00 0x00
$
```

- Sets the target port with the settings of
  baud rate: 115200 bps, bit length: 8, parity bit: none, stop bit: 1, flow control: none.

```
$ port –t 115200 8 0 1 n Enter↵
target port setting completed.
$
```

- If the parameters are invalid, the following is displayed and the setting changes fail.

```
$ port –t 115200 Enter↵
usage: port [-t|-l] [baudrate] [size] [parity] [stop] [flow] [xon] [xoff]
       port [-r1|-r2|-wo|-rw] [port-number] | [-n]
$
```

- When specifying parameter -n, the current TCP port number settings of the Ether-direct connection and the status of current Ether-Direct connection are displayed as shown below.

```
$ port –n Enter↵
Ether-Direct    no.    status
-----------------------------------------------
 <read only1>   30000    -
 <read only2>   30001    -
 <write only>   30002    -
 <read write>   30003    -
$
```

- Sets the read-write port number for the Ether-direct connection to "30008".

```
$ port -rw 30008 Enter↵
$
```

4.1.18 version Command

Overview — Displays the version number.

Syntax — version

Parameter(s) — None

Password required? — No

Example (from the local console)

- Displays the version number.

```
$ version Enter↵

Version 1.00 387
$
```

4.1.19 menu Command

Overview — Displays the menu screen.

Syntax — menu

Parameter(s) — None

Password required? — No

Example (from the local console)

➢ Displays the menu screen.

```
$ menu Enter↵

== MAIN MENU ========
 1. switch
 2. network
 3. time
 4. file
 5. user
 6. serial
 7. option
 8. ping
 0. exit
=====================
select >
```

For details on settings in the menu screen, refer to the following.
🕮 Refer to Chapter 5 - Menu Settings (page 95)

4.1.20 redirect Command

Overview — Configures redirect connection.

Syntax — redirect [on | off] [com | ip xx.xx.xx.xx [-s | -c]]

Parameter(s) —
None = Displays the current settings of the redirect connection.
on = Establishes a redirect connection.
off = Disconnects the redirect connection.
com = Specifies the direct connection of the target port and local console port.
ip xx.xx.xx.xx = The destination IP address when establishing direct connections between two target ports.
-s = The server setting when establishing direct connections between two target ports.
-c = The client setting when establishing direct connections between two target ports.

Password required? — No

Notes

(1) If nothing either -s or -c is specified, then this defaults to the client setting. Also, the IP address must be specified when specifying this.
(2) If the parameter is "on" and no following arguments are specified, the settings will default to the settings of the /etc/rc.conf and /etc/portmng.cf files.
(3) If the parameter is "on" and following arguments are specified, settings are based on those arguments.
(4) If the parameter is "off", then following arguments cannot be specified.
(5) First ensure that the serial port settings of the client device and server device match when establishing a dual connection.

Example (from the local console)

- With an Ethernet connection, executing the following command enables the COM direct connection.

```
$ redirect on com Enter↵
$
```

4.1.21 vt100 Command

Overview — Configures the VT100. The specified number of lines determines where the command line is displayed.

Syntax — vt100 [line]

Parameter(s) — None = Displays the current number of lines.
line = Specifies the number of lines.

Password required? — No

Notes

(1) Specify the number of lines within the range of 1 - 9999.

Example (from the local console)

- Sets the number of lines to 30.

```
$ vt100 30 Enter↵

vt100 line setting completed.
$
```

- Displays the current number of lines.

```
$ vt100 Enter↵

<vt100> 30 lines
$
```

4.1.22 terminal Command

Overview — Launches the terminal emulator.

Syntax — terminal port1

Parameter(s) — port1 = Indicates the target port.

Password required? — No

Example (from the local console)

➢ Starts the terminal emulator and connects to the target port.

```
$ terminal port1 Enter↵
[launch Terminal-Emulator -- press `^Ec?' to help]
```

📖 Refer to 3.2 Terminal Emulator (page 29)

4.1.23 fmount Command

Overview — Mounts or unmounts NFS filesystem.
The mount point is /mnt (fixation).

Syntax — fmount <device>
fmount -u

Parameter(s) — device = Specifies the full path of the mount directory
-u = unmount option

Password required? — No

Example (from the local console)

- Mounts NFS filesystem.

```
$ fmount 192.168.0.175:/home/user1/develop Enter↵
$
```

- Unmounts the mounted NFS filesystem.

```
$ fmount -u Enter↵
$
```

4.1.24 readflash Command

Overview — Writes flash ROM files to CF or NFS.

Syntax — readflash <filepath>

Parameter(s) — filepath = Specifies the full path (destination + filename). The following are the files that can be saved.

List of files

File name	Content
ntp.conf	NTP config file
localtime	Time zone symbolic file
portmng.cf	Configuration definition file
hosts	Host name definition file
port.conf	Serial port config file
ifconfig.sm0	Network card config file
users	User config file
rc.conf	Network config file
passwd	Password file
master.passwd	Password master file
group	Group config file
services	Network service/port config file
snmpd.conf	Snmpd config file

Password required? — No

Example (from the local console)

- Saves the ntp.conf file to /CF/conf1.

```
$ readflash /CF/conf1/ntp.conf Enter↵
$
```

4.1.25 writeflash Command

Overview — Writes CF or NFS files to flash ROM.
The firmware can be updated by specifying the path of the binary image file supplied by Fujitsu Component Limited.
The LED blinks orange when writing the files.

Syntax — writeflash <filepath>

Parameter(s) — filepath = Specifies the full path (location + filename).
The following are the files that can be saved.

List of files

File name	Content
ntp.conf	NTP config file
localtime	Time zone symbolic file
portmng.cf	Configuration definition file
hosts	Host name definition file
port.conf	Serial port config file
ifconfig.sm0	Network card config file
users	User config file
rc.conf	Network config file
passwd	Password file
master.passwd	Password master file
group	Group config file
services	Network service/port config file
snmpd.conf	Snmpd config file

Binary image	Content
ipl	IPL
spl	SPL
maptbl	Map information
self	Self-diagnostics
kernel4	Kernel that supports
fs4	File system that supports
recover4	Recovery kernel that supports

Password required? — No

Example (from the local console)

- Writes the NFS file.

```
$ writeflash /mnt/conf1/ntp.conf Enter↵
$
```

Restart the system after writing the file to reflect the changes.

Advanced version only

4.1.26 display Command

Overview — Displays a list of the log files and their contents. This lists the filename, time stamp, size, and free space of the files under the /CF/log and /CF/sys directories.

Syntax — display [-l | -s] [filename]

Parameter(s) — None = Lists the log files.
-l = Displays the contents of the files under /CF/log.
-s = Displays the contents of the files under /CF/sys.
filename = Specifies the file of which contents are to be displayed.

List of log files

/CF/log directory

File name	Content
port1	Target port I/O log
portmng	Portmng system log

/CF/sys directory

File name	Content
messages	syslog

Password required? — No

Notes

(1) If the file content does not fit within the screen, a scrollbar will appear.
(2) To end the file contents display, enter ":q".

Example (from the local console)

- Displays a list of log files.

```
$ display Enter↵
/CF/log:
 name                        size  date
-------------------------------------------------------
 port1                       5239 Feb 24 13:44
 portmng                      130 Feb 24 14:04

/CF/sys:
 name                        size  date
-------------------------------------------------------
 messages                    2537 Feb 24 14:04

disk space:      121 M bytes
$
```

- When displaying the contents of the file name "/CF/log/port1", the following file contents are displayed in the editor.

```
$ display -l port1 Enter↵

Red Hat Linux release 9 (Shrike)
Kernel 2.4.20-8 on an i686

localhost.localdomain login: root
Password:
Last login: Mon Mar 15 23:56:00 on ttyS0
You have new mail.
[root@localhost root]# ls
ESC[00mESC[00mXF86Config.newESC[00m      ESC[00manaconda-ks.cfgESC[00m
ESC[00minsta
ll.logESC[00m  ESC[00minstall.log.syslogESC[00m
ESC[m[root@localhost root]# exit
logout
ESC[HESC[J
Red Hat Linux release 9 (Shrike)
Kernel 2.4.20-8 on an i686

localhost.localdomain login:
/CF/log/port1 (END)
```

To exit the editor, enter ":q".

Advanced version only

4.1.27 delete Command

Overview — Deletes log files and configuration files.

Syntax — delete <-l | -c> [filename]

Parameter(s) —
-l = Deletes log files.
-c = Deletes configuration files.
filename = Specifies the filename to be deleted. If omitted or when "all" is specified, all files are deleted.

Password required? — No

Notes

(1) When deleting all files, the delete confirmation message is displayed, and pressing "y" proceeds with the process.
(2) -l and -c cannot be specified together.

Example (from the local console)

- Deletes the configuration file "file1".

```
$ delete -c file1 Enter↵
delete file completed.
$
```

- Delete all the configuration files.

```
$ delete -c Enter↵
Do you delete all file? (y or n) y Enter↵
delete file completed.
$
```

- When the CF card is not mounted, the following is displayed.

```
$ delete -c Enter↵
can not CF mount.
$
```

Advanced version only

4.1.28 copy Command

Overview — Copies log files and configuration files.

Syntax — copy <-l | -c | -s> <source filename> <destination filename>

Parameter(s) —
-l = Copies log files.
-c = Copies configuration files.
-s = Copies system log files.
source filename = Specifies the file to be copied.
destination filename = Specifies the destination of the copy.

Password required? — No

Notes

(1) -l, -c, and -s cannot be specified together.
(2) If no filename is specified, all files are copied.
(3) When the CF card is not mounted, an error is thrown.

Example (from the local console)

- copy -l [source filename] [none]
  The destination filename inherits the source filename with a three-digit number appended to it.

- copy -l all [destination filename]
  The destination filename is the destination filename with a three-digit number appended to it.
  Destination filenames are numbered from 001 in sequence.

- copy -l all [none]
  The destination filename inherits the source filename with a three-digit number appended to it.

If a destination file with a three-digit number already exists, the file is saved with the next number in sequence.

- Saves the configuration file "users" as "file1".

```
$ copy -c users file1 Enter↵
copy file completed.
$
```

- Saves all of the configuration files as "fileset1".

```
$ copy -c all fileset1 Enter↵
Do you copy all file? (y or n) y Enter↵
copy file completed.
$
```

- When the CF card is not mounted, the following is displayed.

```
$ copy -c all fileset1 Enter↵
can not CF mount.
$
```

- Copies the system log files currently archived in the flash ROM to the CF card.

```
$ copy -s all Enter↵
Do you copy all file? (y or n) y
copy file completed.
$
```

Advanced version only

4.1.29 encrypt Command

Overview — Encrypts log files and configuration files.
This uses the common key cryptography AES (256 bits).

Syntax — encrypt <-l | -c> [filename]

Parameter(s) — -l = Encrypts log files.
-c = Encrypts configuration files.
filename = Specifies the filename to be encrypted.
If no filename is specified or when "all" is specified, all files are encrypted.

Password required? — No

Notes

(1) -l and -c cannot be specified together.
(2) When the CF card is not mounted, an error is thrown.
(3) When a key has not been set using the changekey command, an error is thrown.

Example (from the local console)

- Encrypts the configuration file "file1".

```
$ encrypt -c file1 Enter↵
encoded file1.
$
```

- When no key is set, the following is displayed.
  Execute the changekey command to set an encryption key.

```
$ encrypt -c file1 Enter↵
An encode key no set up.
$
```

- Encrypts all configuration files.

```
$ encrypt -c Enter↵
Do you encode all file? (y or n) y Enter↵
encoded ntp.conf.
encoded portmng.cf.
encoded hosts.
encoded port.conf.
encoded ifconfig.sm0.
encoded users.
encoded rc.conf.
encoded passwd.
encoded master.passwd.
encoded group.
encoded services.
encoded snmpd.conf.
encoded localtime.
$
```

Advanced version only

4.1.30 decrypt Command

Overview — Decrypts log files and configuration files.

Syntax — decrypt <-l | -c> [filename]

Parameter(s) —
-l = Decrypts log files.
-c = Decrypts configuration files.
filename = Specifies the filename to be decrypted.
If no filename is specified or when "all" is specified, all files are decrypted.

Password required? — No

Notes

(1) -l and -c cannot be specified together.
(2) When the CF card is not mounted, an error is thrown.
(3) When a key has not been set using the changekey command, an error is thrown.

Example (from the local console)

- Decrypts the configuration file "file1".

```
$ decrypt -c file1 Enter↵
encoded file1.
$
```

- Decrypts all configuration files.

```
$ decrypt -c Enter↵
Do you decode all file? (y or n) y Enter↵
decoded ntp.conf.
decoded portmng.cf.
decoded hosts.
decoded port.conf.
decoded ifconfig.sm0.
decoded users.
decoded rc.conf.
decoded passwd.
decoded master.passwd.
decoded group.
decoded services.
decoded snmpd.conf.
decoded localtime.
$
```

- When the CF card is not mounted, the following is displayed.

```
$ copy -c all fileset1 Enter↵
can not CF mount.
$
```

Advanced version only

4.1.31 import Command

Overview — Imports the configuration files in the /CF/conf directory to the RAM disk or flash ROM.

List of configuration files

File name	Content
ntp.conf	NTP config file
localtime	Time zone symbolic file
portmng.cf	Configuration definition file
hosts	Host name definition file
port.conf	Serial port config file
ifconfig.sm0	Network card config file
users	User config file
rc.conf	Network config file
passwd	Password file
master.passwd	Password master file
group	Group config file
services	Network service/port config file
snmpd.conf	Snmpd config file

Syntax — import

Parameter(s) — None

Password required? — No

Notes

(1) Do not remove the CF card while the command is being executed.
(2) When the CF card is not mounted, an error is thrown.
(3) When configuration files are encrypted, the import command cannot be executed.

Example (from the local console)

- Imports the configuration files in the /CF/conf directory to the RAM disk or flash ROM.

```
$ import Enter↵
imported /etc/ntp.conf.
imported /etc/localtime.
imported /etc/portmng.cf.
imported /etc/hosts.
imported /etc/port.conf.
imported /etc/ifconfig.sm0.
imported /etc/users.
imported /etc/rc.conf.
imported /etc/passwd.
imported /etc/master.passwd.
imported /etc/group.
imported /etc/services.
imported /usr/pkg/etc/snmpd.conf.

$
```

- When configuration files are encrypted, the following is displayed and import is not performed.

```
$ import Enter↵
This file is being enciphered.[ntp.conf]
This file can't be imported.
$
```

- When the CF card is not mounted, the following error is displayed.

```
$ import Enter↵
Can not CF mount.
$
```

Advanced version only

4.1.32 export Command

Overview — Exports the configuration files from the RAM disk/flash ROM to the /CF/conf directory.

List of configuration files

File name	Content
ntp.conf	NTP config file
localtime	Time zone symbolic file
portmng.cf	Configuration definition file
hosts	Host name definition file
port.conf	Serial port config file
ifconfig.sm0	Network card config file
users	User config file
rc.conf	Network config file
passwd	Password file
master.passwd	Password file
group	Group config file
services	Network service/port config file
snmpd.conf	Snmpd config file

Syntax — export

Parameter(s) — None

Password required? — No

Notes

(1) Do not remove the CF card while the command is being executed.
(2) If the file already exists, it will be overwritten.
(3) When the CF card is not mounted, an error is thrown.

Example (from the local console)

- Exports the configuration files from the flash ROM/RAM disk to the /CF/conf directory.

```
$ export Enter↵
exported /CF/conf/ntp.conf.
exported /CF/conf/localtime.
exported /CF/conf/portmng.cf.
exported /CF/conf/hosts.
exported /CF/conf/port.conf.
exported /CF/conf/ifconfig.sm0.
exported /CF/conf/users.
exported /CF/conf/rc.conf.
exported /CF/conf/passwd.
exported /CF/conf/master.passwd.
exported /CF/conf/group.
exported /CF/conf/services.
exported /CF/conf/snmpd.conf.
$
```

- When configuration files in the /CF/conf directory are encrypted, executing the export command will prompt whether or not to overwrite with unencrypted configuration files. Entering "Y" performs the export.

```
$ export Enter↵
A file on CF is being enciphered.
Do you overwrite it?(y or n)  y Enter↵
exported /CF/conf/ntp.conf.
exported /CF/conf/localtime.
exported /CF/conf/portmng.cf.
exported /CF/conf/hosts.
exported /CF/conf/port.conf.
exported /CF/conf/ifconfig.sm0.
exported /CF/conf/users.
exported /CF/conf/rc.conf.
exported /CF/conf/passwd.
exported /CF/conf/master.passwd.
exported /CF/conf/group.
exported /CF/conf/services.
exported /CF/conf/snmpd.conf.
$
```

Advanced version only

4.1.33 change Command

Overview — Copies a set of configuration files under a specified directory path, which was prepared under the /CF directory, to the /CF/conf directory.
This comes in handy when toggling between different sets of settings.

Syntax — change <directory path>

Parameter(s) — directory path = Specifies the directory under /CF to be copied.

Password required? — Yes (* same as the administrator password)

Notes

(1) When the CF card is not mounted, an error is thrown.
(2) /CF is the root directory of the specified directory.

Example (from the local console)

- Copies the configuration files under the "/CF/confset1" directory to the /CF/conf directory.

```
$ change /confset1 Enter↵
administrator password:     Enter↵
change command is completed.
$
```

Advanced version only

4.1.34 changekey Command

Overview — Changes the encryption key of the log files and/or configuration files.

Syntax — changekey <-l | -c>

Parameter(s) — -l = Changes the encryption key of log files.
-c = Changes the encryption key of configuration files.

Password required? — Yes (* same as the administrator password)

Example (from the local console)

- Changes the encryption key for log files (the keycode is not displayed).

```
$ changekey -l Enter↵
administrator password:      Enter↵
keycode:     Enter↵
$
```

- Pressing the Enter key without entering a keycode displays the following error.

```
$ changekey -l Enter↵
administrator password:      Enter↵
keycode: Enter↵
keycode error.
$
```

Advanced version only

4.1.35 cfformat Command

Overview — Formats the CF card in FAT16 (MS-DOS).

Syntax — cfformat

Parameter(s) — None

Password required? — Yes (* same as the administrator password)

Notes

(1) Do not remove the CF card while the command is being executed.

Example (from the local console)

- Formats the CF card.

```
$ cfformat Enter↵
administrator password:      Enter↵
*** Don't eject CF card. ***
Format completed.
$
```

Do not remove the CF card while it is being formatted.

- When the CF card is not mounted, the following is displayed.

```
$ cfformat Enter↵
administrator password:      Enter↵
can not CF mount.
$
```

MEMO

Chapter 5 - Menu Settings

This chapter describes how to use this product via the menu.

Contents of this chapter

5.1. MAIN MENU

The MAIN MENU contains the following nine sub-menus.

1. switch : Sub-menu for settings related to starting up this product.
2. network : Sub-menu for settings related to the network.
3. time : Sub-menu for settings related to the time.
4. file : Sub-menu for performing operations on the log file and configuration file.
5. user : Sub-menu for settings related to the user.
6. serial : Sub-menu for settings related to communication.
7. option : Sub-menu for performing operations related to the CF card, changing the encryption key, and version information.
8. ping : Sub-menu for executing the ping command.
0. exit : Sub-menu for ending the menu command.

The options for each sub-menu are described in the following table.
In addition, detailed descriptions can be found in the following sections.

Level 1	Level 2	Level 3	Function	Note
1. switch	1. shutdown	-	Shuts down the device	**Enter password**
	2. reboot	-	Reboots the device	**Enter password**
	3. logout	-	Logs out	
	0. return to MAIN MENU	-	Returns to the MAIN MENU	
2. network	1. set host name	-	Sets the host name	
	2. set ip address	-	Sets the IP address	
	3. set subnet mask	-	Sets the subnet mask	
	4. set default gateway	-	Sets the default gateway	
	s. save	-	Saves the network settings	
	0. return to MAIN MENU	-	Returns to the MAIN MENU	
3. time	1. display time	-	Displays the configured date, time, and time zone	
	2. set time	-	Sets the date and time	
	3. set timezone	-	Sets the time zone	
	4. set ntp server	-	Sets the NTP (turns on/off the client function, registers the server)	
	s. save	-	Saves the date and time settings	
	0. return to MAIN MENU	-	Returns to the MAIN MENU	

Level 1	Level 2	Level 3	Function	Note
4. file	1. display	1. list	Lists the log files	
		2. log file	Displays the contents of the specified log file	
		0. return to FILE MENU	Returns to the FILE MENU	
	2. delete	1. log	Deletes the specified log file	
		2. conf	Deletes the specified configuration file	
		0. return to FILE MENU	Returns to the FILE MENU	
	3. copy	1. log	Copies the specified log file	
		2. conf	Copies the specified configuration file	
		3. syslog	Copies the system log file	
		0. return to FILE MENU	Returns to the FILE MENU	
	4. encrypt	1. log	Encrypts the specified log file	
		2. conf	Encrypts the specified configuration file	
		0. return to FILE MENU	Returns to the FILE MENU	
	5. decrypt	1. log	Decrypts the specified log file	
		2. conf	Decrypts the specified configuration file	
		0. return to FILE MENU	Returns to the FILE MENU	
	6. import	-	Imports the configuration file to the RAM disk or flash ROM	
	7. export	-	Exports the configuration file from the RAM disk to the CF card	
	8. change	-	Copies the file from the specified directory to /CF/conf	
	0. return to MAIN MENU	-	Returns to the MAIN MENU	
5. user	1. list	-	Displays the registered user list	
	2. add	-	Registers a user	**Enter password**
	3. delete	-	Deletes a user	**Enter password**
	4. kill	-	Forces a user to log out	**Enter password**
	5. reject	-	Blocks a user from logging in	**Enter password**
	6. change password	-	Changes the password	**Enter password**
	0. return to MAIN MENU	-	Returns to the MAIN MENU	
6. serial	1. set target port	-	Sets the target port	
	2. set redirect	-	Establishes or terminates redirect connection	
	3. set local console	-	Sets the local console port	
	4. set VT100	-	Sets the number of lines to display on the VT100	
	0. return to MAIN MENU	-	Returns to the MAIN MENU	
7. option	1. cf format	-	Formats the CF card	**Enter password**
	2. change encode of log	-	Changes the log file encryption key	**Enter password**
	3. change encode of conf	-	Changes the configuration file encryption key	**Enter password**
	4. version	-	Displays the firmware version	
	0. return to MAIN MENU	-	Returns to the MAIN MENU	
8. ping	-	-	Sends ICMP packets to the host	
0. exit	-	-	Exits the menu screen	

5.1.1 SWITCH MENU

When 1. switch is selected in the MAIN MENU, the following SWITCH MENU is displayed.

```
--- 1. SWITCH MENU -----
 1. shutdown
 2. reboot
 3. logout
 0. return to MAIN MENU
------------------------
select >
```

The SWITCH MENU contains the following four options.

1. shutdown	🕮 Refer to 5.1.1.1 shutdown (page 98)
2. reboot	🕮 Refer to 5.1.1.2 reboot (page 99)
3. logout	🕮 Refer to 5.1.1.3 logout (page 100)
0. return to MAIN MENU	🕮 Refer to 5.1.1.4 return to MAIN MENU (page 100)

5.1.1.1 shutdown

Overview — Shuts down this product.

Menu location — MAIN MENU → 1. switch → 1. shutdown

Command — shutdown
🕮 Refer to 4.1.1 shutdown Command (page 53)

Output

```
--- 1. SWITCH MENU -----
 1. shutdown
 2. reboot
 3. logout
 0. return to MAIN MENU
------------------------
select > 1 Enter↵
administrator password:      Enter↵
Shutdown NOW!
$ Thu Jun 22 11:17:47 GMT 2006
syncing disks... done
The operating system has halted.
Please press any key to reboot.
```

Notes

(1) A password is required (admin user password)

5.1.1.2 reboot

Overview — Reboots this product.

Menu location — MAIN MENU → 1. switch → 2. reboot

Command — reboot
🕮 Refer to 4.1.2 reboot Command (page 54)

Output

```
--- 1. SWITCH MENU -----
 1. shutdown
 2. reboot
 3. logout
 0. return to MAIN MENU
------------------------
select > 2 Enter↵
administrator password:      Enter↵
Shutdown NOW!
$ Thu Jun 22 11:14:06 GMT 2006
syncing disks... done
rebooting...

checking system memories...
.............................RAM ok
.............................ROM ok

...now system loading...
.
.........................done!
SERVIS IP-Serial 1p Converter/CF (FX-3001SRF)
Copyright (c) 2005-2006 FUJITSU COMPONENT LIMITED
Version 1.00 Build 387


Checking system hardware...
.
Real time clock    : ok
.................
Network controller : ok
.................
Compact Flash slot : 31MB media detected.

11:15AM on Thursday, 22 June 2006

login:
```

Notes

(1) A password is required (admin user password)

5.1.1.3 logout

Overview — Logs out of this product.

Menu location — MAIN MENU → 1. switch → 3. logout

Command — logout
🕮 Refer to 4.1.3 logout Command (page 55)

Output

```
--- 1. SWITCH MENU -----
 1. shutdown
 2. reboot
 3. logout
 0. return to MAIN MENU
------------------------
select > 3 Enter↵

 3:25PM on Friday, 24 February 2006

login:
```

Notes

None

5.1.1.4 return to MAIN MENU

Overview — Returns to the MAIN MENU.

Output

```
--- 1. SWITCH MENU -----
 1. shutdown
 2. reboot
 3. logout
 0. return to MAIN MENU
------------------------
select > 0 Enter↵


== MAIN MENU ========
 1. switch
 2. network
 3. time
 4. file
 5. user
 6. serial
 7. option
 8. ping
 0. exit
=====================
select >
```

5.1.2 NETWORK MENU

When 2. network is selected in the MAIN MENU, the following NETWORK MENU is displayed.

```
--- 2. NETWORK MENU -----
 1. set host name
       ->LL-1
 2. set ip address
       ->192.168.0.101
 3. set subnet mask
       ->255.255.255.0
 4. set default gateway
       ->192.168.0.1
 5. set snmp [ON]
 s. save
 0. return to MAIN MENU
-------------------------
select >
```

The NETWORK MENU contains the following seven options.

1. set host name	📖 Refer to 5.1.2.1 set host name (page 102)
2. set ip address	📖 Refer to 5.1.2.2 set ip address (page 103)
3. set subnet mask	📖 Refer to 5.1.2.3 set subnet mask (page 104)
4. set default gateway	📖 Refer to 5.1.2.4 set default gateway (page 105)
5. set snmp	📖 Refer to 5.1.2.5 set snmp (page 106)
s. save	📖 Refer to 5.1.2.6 save (NETWORK MENU) (page 107)
0. return to MAIN MENU	📖 Refer to 5.1.2.7 return to MAIN MENU (page 107)

5.1.2.1 set host name

Overview — Sets the host name.

Menu location — MAIN MENU → 2. network → 1. set host name

Command — None
When "s. save" is performed after setting this option, the hostname command is executed and the setting is reflected.
🕮 Refer to 4.1.5 hostname Command (page 57)

Output — The host name is being set to "TEST".

```
--- 2. NETWORK MENU -----
 1. set host name
       ->LL-1
 2. set ip address
       ->192.168.0.169
 3. set subnet mask
       ->255.255.255.0
 4. set default gateway
       ->192.168.0.1
 5. set snmp [ON]
 s. save
 0. return to MAIN MENU
--------------------------
select > 1 Enter↵

<set hostname>
change [LL-1] to : TEST Enter↵


--- 2. NETWORK MENU -----<changed, not saved>
 1. set host name
       ->TEST
 2. set ip address
       ->192.168.0.169
 3. set subnet mask
       ->255.255.255.0
 4. set default gateway
       ->192.168.0.1
 5. set snmp [ON]
 s. save
 0. return to MAIN MENU
--------------------------
select >
```

Notes

(1) The host name has a limit of 63 characters. Entering 64 or more characters will result in an error.
(2) After setting this option, save using "s. save". This setting will not be enabled if it is not saved.
(3) If Enter is pressed in a blank space, the current host name will be set.

5.1.2.2 set ip address

Overview — Sets the IP address.

Menu location — MAIN MENU → 2. network → 2. set ip address

Command — None
When "s. save" is performed after setting this option, the network command is executed and the setting is reflected.
📖 Refer to 4.1.4 network Command (page 56)

Output — The IP address is being set to "192.168.0.169".

```
--- 2. NETWORK MENU -----
 1. set host name
       ->LL-1
 2. set ip address
       ->192.168.0.101
 3. set subnet mask
       ->255.255.255.0
 4. set default gateway
       ->192.168.0.1
 5. set snmp [ON]
 s. save
 0. return to MAIN MENU
--------------------------
select > 2 Enter↵

<set ip address>
change [192.168.0.101] to : 192.168.0.169 Enter↵


--- 2. NETWORK MENU -----<changed, not saved>
 1. set host name
       ->LL-1
 2. set ip address
       ->192.168.0.169
 3. set subnet mask
       ->255.255.255.0
 4. set default gateway
       ->192.168.0.1
 5. set snmp [ON]
 s. save
 0. return to MAIN MENU
--------------------------
select >
```

Notes

(1) After setting this option, save using "s. save". This setting will not be enabled if it is not saved.
(2) If Enter is pressed in a blank space, the current IP address will be set.

5.1.2.3 set subnet mask

Overview — Sets the subnet mask.

Menu location — MAIN MENU → 2. network → 3. set subnet mask

Command — None
When "s. save" is performed after setting this option, the network command is executed and the setting is reflected.
🕮 Refer to 4.1.4 network Command (page 56)

Output — The subnet mask is being set to "255.255.252.0".

```
--- 2. NETWORK MENU -----
 1. set host name
       ->LL-1
 2. set ip address
       ->192.168.0.101
 3. set subnet mask
       ->255.255.255.0
 4. set default gateway
       ->192.168.0.1
 5. set snmp [ON]
 s. save
 0. return to MAIN MENU
--------------------------
select > 3 Enter↵

<set subnet mask>
change [255.255.255.0] to : 255.255.252.0 Enter↵


--- 2. NETWORK MENU -----<changed, not saved>
 1. set host name
       ->LL-1
 2. set ip address
       ->192.168.0.101
 3. set subnet mask
       ->255.255.252.0
 4. set default gateway
       ->192.168.0.1
 5. set snmp [ON]
 s. save
 0. return to MAIN MENU
--------------------------
select >
```

Notes

(1) After setting this option, save using "s. save". This setting will not be enabled if it is not saved.
(2) If Enter is pressed in a blank space, the current subnet mask will be set.

5.1.2.4 set default gateway

Overview — Sets the default gateway.

Menu location — MAIN MENU → 2. network → 4. set default gateway

Command — None
When "s. save" is performed after setting this option, the network command is executed and the setting is reflected.
📖 Refer to 4.1.4 network Command (page 56)

Output — The default gateway is being set to "10.74.106.1".

```
--- 2. NETWORK MENU -----
 1. set host name
       ->LL-1
 2. set ip address
       ->192.168.0.101
 3. set subnet mask
       ->255.255.255.0
 4. set default gateway
       ->192.168.0.1
 5. set snmp [ON]
 s. save
 0. return to MAIN MENU
--------------------------
select > 4 Enter↵

<set default gateway>
change [192.168.0.1] to : 10.74.106.1 Enter↵


--- 2. NETWORK MENU -----<changed, not saved>
 1. set host name
       ->LL-1
 2. set ip address
       ->192.168.0.101
 3. set subnet mask
       ->255.255.255.0
 4. set default gateway
       ->10.74.106.1
 5. set snmp [ON]
 s. save
 0. return to MAIN MENU
--------------------------
select >
```

Notes

(1) After setting this option, save using "s. save". This setting will not be enabled if it is not saved.
(2) If Enter is pressed in a blank space, the current default gateway will be set.

5.1.2.5 set snmp

Overview — Sets snmpd to ON/OFF. When the current state is ON, it is set to OFF. When the current state is OFF, it is set to ON.

Menu location — MAIN MENU → 2. network → 5. set snmp [ON/OFF]

Command — None

Output

SNMP is being set from ON to OFF.

```
--- 2. NETWORK MENU -----
 1. set host name
       ->LL-1
 2. set ip address
       ->192.168.0.101
 3. set subnet mask
       ->255.255.255.0
 4. set default gateway
       ->192.168.0.1
 5. set snmp [ON]
 s. save
 0. return to MAIN MENU
--------------------------
select > 5 Enter↵

set SNMP [on -> off]


--- 2. NETWORK MENU -----<changed, not saved>
 1. set host name
       ->LL-1
 2. set ip address
       ->192.168.0.101
 3. set subnet mask
       ->255.255.255.0
 4. set default gateway
       ->192.168.0.1
 5. set snmp [OFF]
 s. save
 0. return to MAIN MENU
--------------------------
select >
```

Notes

(1) After setting this option, save using "s. save". This setting will not be enabled if it is not saved. A password is required (admin user password)

5.1.2.6 save (NETWORK MENU)

Overview — Saves the values set in the NETWORK MENU.

Menu location — MAIN MENU → 2. network → s. save

Command — hostname, network, snmp

🕮 Refer to 4.1.5 hostname Command (page 57)
🕮 Refer to 4.1.4 network Command (page 56)
🕮 Refer to 4.1.7 snmp Command (page 60)

Output

```
--- 2. NETWORK MENU -----<changed, not saved>
 1. set host name
       ->LL-1
 2. set ip address
       ->192.168.0.101
 3. set subnet mask
       ->255.255.255.0
 4. set default gateway
       ->192.168.0.1
 5. set snmp [OFF]
 s. save
 0. return to MAIN MENU
--------------------------
select > s Enter↵
ip address setting completed.
subnet mask setting completed.
default gateway setting completed.
administrator password:      Enter↵
snmp setting off.


--- 2. NETWORK MENU -----
 1. set host name
       ->LL-1
 2. set ip address
       ->192.168.0.101
 3. set subnet mask
       ->255.255.255.0
 4. set default gateway
       ->192.168.0.1
 5. set snmp [OFF]
 s. save
 0. return to MAIN MENU
--------------------------
select >
```

Notes

(1) An administrator password is required when the SNMP setting is changed.
(2) Rebooting is required in order to reflect the settings.

5.1.2.7 return to MAIN MENU

Overview — Returns to the MAIN MENU.

5.1.3 TIME MENU

When 3. time is selected in the MAIN MENU, the following TIME MENU is displayed.

```
--- 3. TIME MENU --------
 1. display time
 2. set time
 3. set timezone
 4. set ntp server [OFF]
 s. save
 0. return to MAIN MENU
------------------------
select >
```

The TIME MENU contains the following six options.

1. display time	🕮 Refer to 5.1.3.1 display time (page 109)
2. set time	🕮 Refer to 5.1.3.2 set time (page 110)
3. set timezone	🕮 Refer to 5.1.3.3 set timezone (page 111)
4. set ntp server	🕮 Refer to 5.1.3.4 set ntp server (page 112)
s. save	🕮 Refer to 5.1.3.5 save (TIME MENU) (page 113)
0. return to MAIN MENU	🕮 Refer to 5.1.3.6 return to MAIN MENU (page 113)

5.1.3.1 display time

Overview — Displays the configured date, time, and time zone.

Menu location — MAIN MENU → 3. time → 1. display time

Command — time

🕮 Refer to 4.1.8 time Command (page 61)

Output

```
--- 3. TIME MENU --------
 1. display time
 2. set time
 3. set timezone
 4. set ntp server [OFF]
 s. save
 0. return to MAIN MENU
-------------------------
select > 1 Enter↵

Tue Dec 13 01:31:05 2005 GMT


--- 3. TIME MENU --------
 1. display time
 2. set time
 3. set timezone
 4. set ntp server [OFF]
 s. save
 0. return to MAIN MENU
-------------------------
select >
```

Notes

None

5.1.3.2 set time

Overview — Sets the date and time.

Menu location — MAIN MENU → 3. time → 2. set time

Command — None
When "s. save" is performed after setting this option, the time command is executed and the setting is reflected.
📖 Refer to 4.1.8 time Command (page 61)

Output

```
--- 3. TIME MENU --------
 1. display time
 2. set time
 3. set timezone
 4. set ntp server [OFF]
 s. save
 0. return to MAIN MENU
-------------------------
select > 2

set time [yyyymmddhhmm.ss] : 200602241526.00 Enter↵


--- 3. TIME MENU --------<changed, not saved>
 1. display time
 2. set time
 3. set timezone
 4. set ntp server [OFF]
 s. save
 0. return to MAIN MENU
-------------------------
select >
```

Notes

(1) The date and time settings are configured when the Enter key is pressed after entering the date and time, not when settings are saved.
(2) After setting this option, save using "s. save". This setting will not be enabled if it is not saved.

5.1.3.3 set timezone

Overview — Sets the time zone.

Menu location — MAIN MENU → 3. time → 3. set timezone

Command — None
When "s. save" is performed after setting this option, the timezone command is executed and the setting is reflected.
📖 Refer to 4.1.9 timezone Command (page 62)

Output

```
--- 3. TIME MENU --------
 1. display time
 2. set time
 3. set timezone
 4. set ntp server [OFF]
 s. save
 0. return to MAIN MENU
-------------------------
select > 3 Enter↵

select timezone [JST, PST, MST, CST, EST, UTC, GMT -12 to +12] : GMT+9 Enter↵


--- 3. TIME MENU --------<changed, not saved>
 1. display time
 2. set time
 3. set timezone
 4. set ntp server [OFF]
 s. save
 0. return to MAIN MENU
-------------------------
select >
```

Notes

(1) Enter the time zone using upper case letters.
(2) When setting the time zone in relation to GMT, include the number of hours difference, such as "GMT+9" (for Japan). For "GMT" only, the time zone is set at "GMT+0".
(3) After setting this option, save using "s. save". This setting will not be enabled if it is not saved.

5.1.3.4 set ntp server

Overview — Sets the NTP server.
When ntpd is set to ON, the configured NTP server name and [ON] are displayed.
When ntpd is set to OFF, [OFF] is displayed.

Menu location — MAIN MENU → 3. time → 4. set ntp server [ON/OFF]

Command — None
When "s. save" is performed after setting this option, the ntp command is executed and the setting is reflected.
📖 Refer to 4.1.10 ntp Command (page 63)

Output

NTP Server is being set from OFF to ON.

```
--- 3. TIME MENU --------
 1. display time
 2. set time
 3. set timezone
 4. set ntp server [OFF]
 s. save
 0. return to MAIN MENU
------------------------
select > 4

set NTP Server [off -> on]
change [] to : 10.74.106.100 Enter↵


--- 3. TIME MENU --------<changed, not saved>
 1. display time
 2. set time
 3. set timezone
 4. set ntp server [ON]
   ->10.74.106.100
 s. save
 0. return to MAIN MENU
------------------------
select >
```

When NTP Server is set to ON

```
set NTP Server [on -> off]
```

Notes

(1) After setting this option, save using "s. save". This setting will not be enabled if it is not saved.
(2) When executing ntpd, set the date and time in advance using set time. When the configured date and time vary greatly from the time on the time server, the time cannot be obtained.

5.1.3.5 save (TIME MENU)

Overview — Saves the values set in the TIME MENU.

Menu location — MAIN MENU → 3. time → s. save

Command — time, timezone, ntp

🕮 Refer to 4.1.8 time Command (page 61)
🕮 Refer to 4.1.9 timezone Command (page 62)
🕮 Refer to 4.1.10 ntp Command (page 63)

Output

```
--- 3. TIME MENU --------<changed, not saved>
 1. display time
 2. set time
 3. set timezone
 4. set ntp server [ON]
   ->10.74.106.100
 s. save
 0. return to MAIN MENU
-------------------------
select > s Enter↵
timezone setting completed.
ntp setting on.


--- 3. TIME MENU --------
 1. display time
 2. set time
 3. set timezone
 4. set ntp server [ON]
   ->10.74.106.100
 s. save
 0. return to MAIN MENU
-------------------------
select >
```

Notes

(1) When both the time and time zone are set and saved, the time zone is set after the time.
(2) Rebooting is required in order to reflect the settings.

5.1.3.6 return to MAIN MENU

Overview — Returns to the MAIN MENU.

Advanced version only

5.1.4 FILE MENU

When 4. file is selected in the MAIN MENU, the following FILE MENU is displayed.

```
--- 4. FILE MENU --------
 1. display
 2. delete
 3. copy
 4. encrypt
 5. decrypt
 6. import
 7. export
 8. change
 0. return to MAIN MENU
------------------------
select >
```

The FILE MENU contains the following nine options.

1. display
   1. list — 🕮 Refer to 5.1.4.1 display - list (page 115)
   2. log file — 🕮 Refer to 5.1.4.2 display - log file (page 116)
   3. syslog file — 🕮 Refer to 5.1.4.3 display - syslog file (page 117)
   0. return to FILE MENU
2. delete
   1. log — 🕮 Refer to 5.1.4.4 delete - log (page 118)
   2. conf — 🕮 Refer to 5.1.4.5 delete - conf (page 119)
   0. return to FILE MENU
3. copy
   1. log — 🕮 Refer to 5.1.4.6 copy - log (page 120)
   2. conf — 🕮 Refer to 5.1.4.7 copy - conf (page 121)
   3. syslog — 🕮 Refer to 5.1.4.8 copy - syslog (page 122)
   0. return to FILE MENU
4. encrypt
   1. log — 🕮 Refer to 5.1.4.9 encrypt - log (page 123)
   2. conf — 🕮 Refer to 5.1.4.10 encrypt – conf (page 124)
   0. return to FILE MENU
5. decrypt
   1. log — 🕮 Refer to 5.1.4.11 decrypt - log (page 125)
   2. conf — 🕮 Refer to 5.1.4.12 decrypt - conf (page 126)
   0. return to FILE MENU
6. import — 🕮 Refer to 5.1.4.13 import (page 127)
7. export — 🕮 Refer to 5.1.4.14 export (page 128)
8. change — 🕮 Refer to 5.1.4.15 change (page 129)
0. return to MAIN MENU — 🕮 Refer to 5.1.4.16 return to MAIN MENU (page 129)

Advanced version only

5.1.4.1 display - list

Overview — Lists the log files in the /CF/log and /CF/sys directories.

Menu location — MAIN MENU → 4. file → 1. display → 1. list

Command — display

📖 Refer to 4.1.26 display Command (page 80)

Output

```
--- 4.1 display --------
 1. list
 2. log file
 3. syslog file
 0. return to FILE MENU
------------------------
select > 1 Enter↵
/CF/log:
 name                        size  date
-------------------------------------------------------
 port1                       5239 Feb 24 13:44
 portmng                      130 Feb 24 14:04

/CF/sys:
 name                        size  date
-------------------------------------------------------
 messages                     2537 Feb 24 14:04

disk space:      121 M bytes


--- 4.1 display --------
 1. list
 2. log file
 3. syslog file
 0. return to FILE MENU
------------------------
select >
```

Notes

None

Advanced version only

5.1.4.2 display - log file

Overview — Displays the contents of the specified log file in the /CF/log directory.

Menu location — MAIN MENU → 4. file → 1. display → 2. log file

Command — display
🕮 Refer to 4.1.26 display Command (page 80)

Output — The contents of the file /CF/log/port1 are being displayed.

```
--- 4.1 display --------
 1. list
 2. log file
 3. syslog file
 0. return to FILE MENU
------------------------
select > 2 Enter↵

display file : port1 Enter↵

Red Hat Linux release 9 (Shrike)
Kernel 2.4.20-8 on an i686

localhost.localdomain login:
/CF/log/port1 (END)
```

Notes

(1) To end file display, enter ":q".

Advanced version only

5.1.4.3 display - syslog file

Overview — Displays the contents of the specified log file in the /CF/sys directory.

Menu location — MAIN MENU → 4. file → 1. display → 3. syslog file

Command — display

🕮 Refer to 4.1.26 display Command (page 80)

Output — The contents of the file /CF/sys/messages are being displayed.

```
--- 4.1 display --------
 1. list
 2. log file
 3. syslog file
 0. return to FILE MENU
------------------------
select > 3 Enter↵

display file : messages Enter↵
syslog start
Dec 13 00:39:31 LL-1 sudo:    root : TTY=console ; PWD=/ ; USER=root ;
COMMAND=
/sbin/sysctl -w machdep.ledctl=6
Dec 13 00:39:32 LL-1 sudo:    root : TTY=console ; PWD=/ ; USER=root ;
COMMAND=
/sbin/sysctl -w machdep.ledctl=2
Dec 13 00:39:32 LL-1 sudo:    root : TTY=console ; PWD=/ ; USER=root ;
COMMAND=
/sbin/sysctl -w machdep.ledctl=6
Dec 13 00:39:32 LL-1 sudo:    root : TTY=console ; PWD=/ ; USER=root ;
COMMAND=
/sbin/sysctl -w machdep.ledctl=2
Dec 13 00:39:32 LL-1 sudo:    root : TTY=console ; PWD=/ ; USER=root ;
COMMAND=
/sbin/sysctl -w machdep.ledctl=6
Dec 13 00:39:32 LL-1 sudo:    root : TTY=console ; PWD=/ ; USER=root ;
COMMAND=
/sbin/sysctl -w machdep.ledctl=2
Dec 13 00:39:33 LL-1 sudo:    root : TTY=console ; PWD=/ ; USER=root ;
COMMAND=
/sbin/sysctl -w machdep.ledctl=6
Dec 13 00:39:33 LL-1 sudo:    root : TTY=console ; PWD=/ ; USER=root ;
COMMAND=
/sbin/sysctl -w machdep.ledctl=2
Dec 13 00:39:33 LL-1 sudo:    root : TTY=console ; PWD=/ ; USER=root ;
COMMAND=
/sbin/sysctl -w machdep.ledctl=6
Dec 13 00:39:33 LL-1 sudo:    root : TTY=console ; PWD=/ ; USER=root ;
COMMAND=
/sbin/sysctl -w machdep.ledctl=2
Dec 13 00:39:33 LL-1 sudo:    root : TTY=console ; PWD=/ ; USER=root ;
COMMAND=
/sbin/sysctl -w machdep.ledctl=6
/CF/sys/messages
```

Notes

(1) To end file display, enter ":q".

Advanced version only

5.1.4.4 delete - log

Overview — Deletes the specified log file in the /CF/log directory. When no file name is specified, all the files in the /CF/log directory are deleted.

Menu location — MAIN MENU → 4. file → 2. delete → 1. log

Command — delete

📖 Refer to 4.1.27 delete Command (page 82)

Output — The file /CF/log/port1 is being deleted.

```
--- 4. FILE MENU --------
 1. display
 2. delete
 3. copy
 4. encrypt
 5. decrypt
 6. import
 7. export
 8. change
 0. return to MAIN MENU
-------------------------
select > 2 Enter↵


--- 4.2 delete ---------
 1. log
 2. conf
 0. return to FILE MENU
-----------------------
select > 1 Enter↵

delete file : port1 Enter↵
delete file completed.


--- 4.2 delete ---------
 1. log
 2. conf
 0. return to FILE MENU
-----------------------
select >
```

Notes

None

Advanced version only

5.1.4.5 delete - conf

Overview — Deletes the specified configuration file in the /CF/conf directory.

Menu location — MAIN MENU → 4. file → 2. delete → 2. conf

Command — delete

🕮 Refer to 4.1.27 delete Command (page 82)

Output — The file file1 in the /CF/conf directory is being deleted.

```
--- 4. FILE MENU --------
 1. display
 2. delete
 3. copy
 4. encrypt
 5. decrypt
 6. import
 7. export
 8. change
 0. return to MAIN MENU
-------------------------
select > 2 Enter↵


--- 4.2 delete ---------
 1. log
 2. conf
 0. return to FILE MENU
-------------------------
select > 2 Enter↵

delete file : file1 Enter↵
delete file completed.


--- 4.2 delete ---------
 1. log
 2. conf
 0. return to FILE MENU
-------------------------
select >
```

Notes

None

Advanced version only

5.1.4.6 copy - log

Overview — Copies the specified port log file in the /CF/log directory using a different file name.

Menu location — MAIN MENU → 4. file → 3. copy → 1. log

Command — copy
📖 Refer to 4.1.28 copy Command (page83)

Output — The file /CF/log/port1 is being copied using the file name "log1".

```
--- 4. FILE MENU --------
 1. display
 2. delete
 3. copy
 4. encrypt
 5. decrypt
 6. import
 7. export
 8. change
 0. return to MAIN MENU
-------------------------
select > 3 Enter↵


--- 4.3 copy -----------
 1. log
 2. conf
 3. syslog
 0. return to FILE MENU
-----------------------
select > 1 Enter↵

copy file : port1 Enter↵
new file : log1 Enter↵
copy file completed.


--- 4.3 copy -----------
 1. log
 2. conf
 3. syslog
 0. return to FILE MENU
-----------------------
select >
```

Notes

None

Advanced version only

5.1.4.7 copy - conf

Overview — Copies the specified configuration file in the /CF/conf directory using a different file name.

Menu location — MAIN MENU → 4. file → 3. copy → 2. conf

Command — copy
🕮 Refer to 4.1.28 copy Command (page 83)

Output — The file /CF/conf/rc.conf is being copied using the file name “conf1".

```
--- 4. FILE MENU --------
 1. display
 2. delete
 3. copy
 4. encrypt
 5. decrypt
 6. import
 7. export
 8. change
 0. return to MAIN MENU
-------------------------
select > 3 Enter↵


--- 4.3 copy -----------
 1. log
 2. conf
 3. syslog
 0. return to FILE MENU
------------------------
select > 2 Enter↵

copy file : rc.conf Enter↵
new file : conf1 Enter↵
copy file completed.


--- 4.3 copy -----------
 1. log
 2. conf
 3. syslog
 0. return to FILE MENU
------------------------
select >
```

Notes

None

Advanced version only

5.1.4.8 copy - syslog

Overview — Copies the log file stored in the flash ROM to each directory on the CF card.

Menu location — MAIN MENU → 4. file → 3. copy → 3. syslog

Command — copy

📖 Refer to 4.1.28 copy Command (page 83)

Output

```
--- 4. FILE MENU --------
 1. display
 2. delete
 3. copy
 4. encrypt
 5. decrypt
 6. import
 7. export
 8. change
 0. return to MAIN MENU
-------------------------
select > 3 Enter↵


--- 4.3 copy -----------
 1. log
 2. conf
 3. syslog
 0. return to FILE MENU
-------------------------
select > 3 Enter↵
Do you copy all file? (y or n) y Enter↵
copy file completed.


--- 4.3 copy -----------
 1. log
 2. conf
 3. syslog
 0. return to FILE MENU
-------------------------
select >
```

Notes

None

Advanced version only

5.1.4.9 encrypt - log

Overview — Encrypts the specified port log file in the /CF/log directory. Specify "all" to encrypt all the files in the /CF/log directory.

Menu location — MAIN MENU → 4. file → 4. encrypt → 1. log

Command — encrypt

📖 Refer to 4.1.29 encrypt Command (page 85)

Output — The file /CF/log/port1 is being encrypted.

```
--- 4. FILE MENU --------
 1. display
 2. delete
 3. copy
 4. encrypt
 5. decrypt
 6. import
 7. export
 8. change
 0. return to MAIN MENU
-------------------------
select > 4 Enter↵


--- 4.4 encrypt --------
 1. log
 2. conf
 0. return to FILE MENU
-------------------------
select > 1 Enter↵

encrypt file : port1 Enter↵
encoded port1.


--- 4.4 encrypt --------
 1. log
 2. conf
 0. return to FILE MENU
-------------------------
select >
```

Notes

(1) If the encryption key setting is not performed, files cannot be encrypted.

📖 Refer to 5.1.7.2 change encrypt of log (page 146)

Advanced version only

5.1.4.10 encrypt – conf

Overview — Encrypts the specified configuration file in the /CF/conf dirctory. Specify "all" to encrypt all the files in the /CF/conf directory.

Command — encrypt
🕮 Refer to 4.1.29 encrypt Command (page 85)

Output — All of the configuration files in the /CF/conf directory are being encrypted.

```
--- 4. FILE MENU --------
 1. display
 2. delete
 3. copy
 4. encrypt
 5. decrypt
 6. import
 7. export
 8. change
 0. return to MAIN MENU
-------------------------
select > 4 Enter↵


--- 4.4 encrypt --------
 1. log
 2. conf
 0. return to FILE MENU
-------------------------
select > 2 Enter↵

encrypt file : all Enter↵
Do you encode all file? (y or n) y Enter↵
encoded ntp.conf.
encoded localtime.
encoded portmng.cf.
encoded hosts.
encoded port.conf.
encoded ifconfig.sm0.
encoded users.
encoded rc.conf.
encoded passwd.
encoded master.passwd.
encoded group.
encoded services.
encoded snmpd.conf.


--- 4.4 encrypt --------
 1. log
 2. conf
 0. return to FILE MENU
-------------------------
select >
```

Notes

(1) If the encryption key setting is not performed, files cannot be encrypted.
🕮 Refer to 5.1.7.3 change encrypt of conf (page 147)

Advanced version only

5.1.4.11 decrypt - log

Overview — Decrypts the encrypted port log file in the /CF/log directory. Specify "all" to decrypt all the files in the /CF/log directory.

Menu location — MAIN MENU → 4. file → 5. decrypt → 1. log

Command — decrypt
📖 Refer to 4.1.30 decrypt Command (page 86)

Output — The file /CF/log/port1 is being decrypted.

```
--- 4. FILE MENU --------
 1. display
 2. delete
 3. copy
 4. encrypt
 5. decrypt
 6. import
 7. export
 8. change
 0. return to MAIN MENU
-------------------------
select > 5 Enter↵


--- 4.5 decrypt --------
 1. log
 2. conf
 0. return to FILE MENU
------------------------
select > 1 Enter↵

decrypt file : port1 Enter↵
decoded port1.


--- 4.5 decrypt --------
 1. log
 2. conf
 0. return to FILE MENU
------------------------
select >
```

Notes

(1) If the encryption key setting is not performed, files cannot be decrypted.
📖 Refer to 5.1.7.2 change encrypt of log (page 146)

Advanced version only

5.1.4.12 decrypt - conf

Overview — Decrypts the encrypted configuration file in the /CF/conf directory. Specify "all" to decrypt all the configuration files in the /CF/conf directory.

Menu location — MAIN MENU → 4. file → 5. decrypt → 2. conf

Command — decrypt
📖 Refer to 4.1.30 decrypt Command (page 86)

Output — All of the configuration files in the /CF/conf directory are being decrypted.

```
--- 4. FILE MENU --------
 1. display
 2. delete
 3. copy
 4. encrypt
 5. decrypt
 6. import
 7. export
 8. change
 0. return to MAIN MENU
-------------------------
select > 5 Enter↵


--- 4.5 decrypt --------
 1. log
 2. conf
 0. return to FILE MENU
-------------------------
select > 2 Enter↵

decrypt file : all
Do you decode all file? (y or n) y Enter↵
decoded ntp.conf.
decoded localtime.
decoded portmng.cf.
decoded hosts.
decoded port.conf.
decoded ifconfig.sm0.
decoded users.
decoded rc.conf.
decoded passwd.
decoded master.passwd.
decoded group.
decoded services.
decoded snmpd.conf.


--- 4.5 decrypt --------
 1. log
 2. conf
 0. return to FILE MENU
-------------------------
select >
```

Notes

(1) If the encryption key setting is not performed, files cannot be decrypted.
📖 Refer to 5.1.7.3 change encrypt of conf (page 147)

Advanced version only

5.1.4.13 import

Overview — Imports the configuration files in the /CF/conf directory to the RAM disk or flash ROM.

Menu location — MAIN MENU → 4. file → 6. import

Command — import

🕮 Refer to 4.1.31 import Command (page 87)

Output

```
--- 4. FILE MENU --------
 1. display
 2. delete
 3. copy
 4. encrypt
 5. decrypt
 6. import
 7. export
 8. change
 0. return to MAIN MENU
-------------------------
select > 6 Enter↵
imported /etc/ntp.conf.
imported /etc/localtime.
imported /etc/portmng.cf.
imported /etc/hosts.
imported /etc/port.conf.
imported /etc/ifconfig.sm0.
imported /etc/users.
imported /etc/rc.conf.
imported /etc/passwd.
imported /etc/master.passwd.
imported /etc/group.
imported /etc/services.
imported /usr/pkg/etc/snmpd.conf.



--- 4. FILE MENU --------
 1. display
 2. delete
 3. copy
 4. encrypt
 5. decrypt
 6. import
 7. export
 8. change
 0. return to MAIN MENU
-------------------------
select >
```

Notes

(1) Do not press the CF/Init button until the import command has finished processing. The device may unmount and configuration files may not be completely imported.
(2) Rebooting is required in order to reflect the settings.

Advanced version only

5.1.4.14 export

Overview — Exports the configuration files from the RAM disk to the /CF/conf directory. When the configuration files are already in the /CF/conf directory, the files will be overwritten.

Menu location — MAIN MENU → 4. file → 7. export

Command — export
📖 Refer to 4.1.32 export Command (page 89)

Output

```
--- 4. FILE MENU --------
 1. display
 2. delete
 3. copy
 4. encrypt
 5. decrypt
 6. import
 7. export
 8. change
 0. return to MAIN MENU
------------------------
select > 7 Enter↵
exported /CF/conf/ntp.conf.
exported /CF/conf/localtime.
exported /CF/conf/portmng.cf.
exported /CF/conf/hosts.
exported /CF/conf/port.conf.
exported /CF/conf/ifconfig.sm0.
exported /CF/conf/users.
exported /CF/conf/rc.conf.
exported /CF/conf/passwd.
exported /CF/conf/master.passwd.
exported /CF/conf/group.
exported /CF/conf/services.
exported /CF/conf/snmpd.conf.


--- 4. FILE MENU --------
 1. display
 2. delete
 3. copy
 4. encrypt
 5. decrypt
 6. import
 7. export
 8. change
 0. return to MAIN MENU
------------------------
select >
```

Notes

(1) Do not press the CF/Init button until the export command has finished processing. The device may unmount and configuration files may not be completely exported.

Advanced version only

5.1.4.15 change

Overview — Copies a set of configuration files under a specified directory path (relative path in /CF), which was prepared under the /CF directory, to the /CF/conf directory.

Menu location — MAIN MENU → 4. file → 8. change

Command — change
📖 Refer to 4.1.33 change Command (page 91)

Output

```
--- 4. FILE MENU --------
 1. display
 2. delete
 3. copy
 4. encrypt
 5. decrypt
 6. import
 7. export
 8. change
 0. return to MAIN MENU
-------------------------
select > 8 Enter↵

change directory : conf1 Enter↵
administrator password:      Enter↵
change command is completed.


--- 4. FILE MENU --------
 1. display
 2. delete
 3. copy
 4. encrypt
 5. decrypt
 6. import
 7. export
 8. change
 0. return to MAIN MENU
-------------------------
select >
```

Notes

None

5.1.4.16 return to MAIN MENU

Overview — Returns to the MAIN MENU.

5.1.5 USER MENU

When 5. user is selected in the MAIN MENU, the following USER MENU is displayed.

```
--- 5. USER MENU --------
 1. list
 2. add
 3. delete
 4. kill
 5. reject
 6. change password
 0. return to MAIN MENU
------------------------
select >
```

The USER MENU contains the following seven options.

1. list	🕮 Refer to 5.1.5.1 list (page 131)
2. add	🕮 Refer to 5.1.5.2 add (page 132)
3. delete	🕮 Refer to 5.1.5.3 delete (page 133)
4. kill	🕮 Refer to 5.1.5.4 kill (page 134)
5. reject	🕮 Refer to 5.1.5.5 reject (page 135)
6. change password	🕮 Refer to 5.1.5.6 change password (page 136)
0. return to MAIN MENU	🕮 Refer to 5.1.5.7 return to MAIN MENU (page 136)

5.1.5.1 list

Overview — Displays the registered users and the user's reject status, login status.

Menu location — MAIN MENU → 5. user → 1. list

Command — userlist
🕮 Refer to 4.1.11 userlist Command (page 64)

Output

```
--- 5. USER MENU --------
 1. list
 2. add
 3. delete
 4. kill
 5. reject
 6. change password
 0. return to MAIN MENU
-------------------------
select > 1 Enter↵
user           reject        login
-----------------------------------------------
 admin           -             o (shell)
 test1           -             -
 test2           -             -


--- 5. USER MENU --------
 1. list
 2. add
 3. delete
 4. kill
 5. reject
 6. change password
 0. return to MAIN MENU
-------------------------
select >
```

Notes

None

5.1.5.2 add

Overview — Registers the specified user account.

Menu location — MAIN MENU → 5. user → 2. add

Command — useradd
🕮 Refer to 4.1.12 useradd Command (page 65)

Output — A user called "tester1" is being registered.

```
--- 5. USER MENU --------
 1. list
 2. add
 3. delete
 4. kill
 5. reject
 6. change password
 0. return to MAIN MENU
-------------------------
select > 2 Enter↵

add user name: tester1 Enter↵
administrator password:      Enter↵
Changing local password for tester1.
New password:      Enter↵
Retype new password:      Enter↵
useradd completed.


--- 5. USER MENU --------
 1. list
 2. add
 3. delete
 4. kill
 5. reject
 6. change password
 0. return to MAIN MENU
-------------------------
select >
```

Notes

(1) The registered user name must start with a letter and consist of 63 alphanumeric characters or less.
(2) Up to four user accounts can be registered.
(3) A password will be requested (admin password).

5.1.5.3 delete

Overview — Deletes the specified user account.

Menu location — MAIN MENU → 5. user → 3. delete

Command — userdel
📖 Refer to 4.1.13 userdel Command (page 66)

Output — The registered user "tester1" is being deleted.

```
--- 5. USER MENU --------
 1. list
 2. add
 3. delete
 4. kill
 5. reject
 6. change password
 0. return to MAIN MENU
-------------------------
select > 3 Enter↵

delete user name: tester1 Enter↵
administrator password:      Enter↵
userdel completed.


--- 5. USER MENU --------
 1. list
 2. add
 3. delete
 4. kill
 5. reject
 6. change password
 0. return to MAIN MENU
-------------------------
select >
```

Notes

(1) The admin account cannot be deleted.
(2) A password will be requested (admin password).

5.1.5.4 kill

Overview — Forces the specified user who is logged in to log out.
If the specified user is logged in from multiple terminals, all of the connections are terminated.

Menu location — MAIN MENU → 5. user → 4. kill

Command — userkill
🕮 Refer to 4.1.14 userkill Command (page 67)

Output — The connection for user "tester1" is being terminated.

```
--- 5. USER MENU --------
 1. list
 2. add
 3. delete
 4. kill
 5. reject
 6. change password
 0. return to MAIN MENU
-------------------------
select > 4 Enter↵

kill user name: tester1 Enter↵
administrator password:       Enter↵
userkill completed.


--- 5. USER MENU --------
 1. list
 2. add
 3. delete
 4. kill
 5. reject
 6. change password
 0. return to MAIN MENU
-------------------------
select >
```

Notes

(1) The admin user cannot be forced to log out.
(2) A password will be requested (admin password).

5.1.5.5 reject

Overview — Blocks the specified user from logging in.

Menu location — MAIN MENU → 5. user → 5. reject

Command — userreject
🕮 Refer to 4.1.16 userreject Command (page 69)

Output

```
--- 5. USER MENU --------
 1. list
 2. add
 3. delete
 4. kill
 5. reject
 6. change password
 0. return to MAIN MENU
-------------------------
select > 5 Enter↵

reject user name: tester1 Enter↵
administrator password:      Enter↵
user rejected.


--- 5. USER MENU --------
 1. list
 2. add
 3. delete
 4. kill
 5. reject
 6. change password
 0. return to MAIN MENU
-------------------------
select >
```

Notes

(1) The admin user cannot be blocked from logging in.
(2) A password will be requested (admin password).

5.1.5.6 change password

Overview — Changes the password.
The new password must be entered twice for confirmation.

Menu location — MAIN MENU → 5. user → 6. change password

Command — passwd
📖 Refer to 4.1.15 passwd Command (page 68)

Output — The password for user "tester1" is being changed.

```
--- 5. USER MENU --------
 1. list
 2. add
 3. delete
 4. kill
 5. reject
 6. change password
 0. return to MAIN MENU
------------------------
select > 6 Enter↵

user name : tester1 Enter↵
Changing local password for tester1.
New password:       Enter↵
Retype new password:       Enter↵
password setting completed.


--- 5. USER MENU --------
 1. list
 2. add
 3. delete
 4. kill
 5. reject
 6. change password
 0. return to MAIN MENU
------------------------
select >
```

Notes

(1) If the user account name is not entered, the admin user's password will be changed.
(2) Set passwords to be six or more characters and to include upper case letters or numbers.
The password must be entered again if it is five or fewer characters or only lower case letters.

5.1.5.7 return to MAIN MENU

Overview — Returns to the MAIN MENU.

5.1.6 SERIAL MENU

When 6. serial is selected in the MAIN MENU, the following SERIAL MENU is displayed.

```
--- 6. SERIAL MENU --------
 1. set target port
 2. set redirect [OFF]
 3. set local console
 4. set VT100
 5. set port number
 0. return to MAIN MENU
---------------------------
select >
```

The SERIAL MENU contains the following six options.

1. set target port	🕮 Refer to 5.1.6.1 set target port (page 138)
2. set redirect	🕮 Refer to 5.1.6.2 set redirect (page 139)
3. set local console	🕮 Refer to 5.1.6.3 set local console (page 141)
4. set VT100	🕮 Refer to 5.1.6.4 set VT100 (page 142)
5. set port number	🕮 Refer to 5.1.6.5 set port number (page 143)
0. return to MAIN MENU	🕮 Refer to 5.1.6.6 return to MAIN MENU (page 143)

5.1.6.1 set target port

Overview — Sets the serial port. If no value is entered and the Enter key is pressed, the current setting remains.

Menu location — MAIN MENU → 6. serial → 1. set target port

Command — port
🕮 Refer to 4.1.17 port Command (page 70)

Output

```
--- 6. SERIAL MENU --------
 1. set target port
 2. set redirect [OFF]
 3. set local console
 4. set VT100
 5. set port number
 0. return to MAIN MENU
---------------------------
select > 1 Enter↵

<set target port>
baud rate [300,1200,1800,2400,4800,9600,14400,
               19200,28800,38400,57600,115200]
change [9600] to : 115200 Enter↵

<set character size>
size [7:7bit, 8:8bit]
change [8] to : Enter↵

<set parity bit>
parity [0:none, 1:odd, 2:even]
change [0] to : Enter↵

<set stop bit>
stop [1:1bit, 2:2bit]
change [1] to : Enter↵

<set flow>
flow [n:none, h:hardware, x:xon/xoff]
change [n] to : Enter↵
target port setting completed.


--- 6. SERIAL MENU --------
 1. set target port
 2. set redirect [OFF]
 3. set local console
 4. set VT100
 5. set port number
 0. return to MAIN MENU
---------------------------
select >
```

Notes

(1) Settings for xon and xoff are from "00" to "ff".
(2) If the entered value does not match one of the choices, an error message will be displayed for that option.
(3) If Enter is pressed in a blank space, the current setting remains.

5.1.6.2 set redirect

Overview — Connects (direct connection) or terminates the connection between two specified serial ports.

Menu location — MAIN MENU → 6. serial → 2. redirect

Command — redirect
📖 Refer to 4.1.20 redirect Command (page 74)

Output

COM port connection is being set from OFF to ON (performed by a telnet user on the network)

```
--- 6. SERIAL MENU --------
 1. set target port
 2. set redirect [OFF]
 3. set local console
 4. set VT100
 5. set port number
 0. return to MAIN MENU
---------------------------
select > 2 Enter↵

set Redirect [off -> on]
select [com, ip] :com Enter↵


--- 6. SERIAL MENU --------
 1. set target port
 2. set redirect [ON]
 3. set local console
 4. set VT100
 5. set port number
 0. return to MAIN MENU
---------------------------
select >
```

Direct connection is being set from ON to OFF (performed by a telnet user on the network)

```
--- 6. SERIAL MENU --------
 1. set target port
 2. set redirect [ON]
 3. set local console
 4. set VT100
 5. set port number
 0. return to MAIN MENU
---------------------------
select > 2 Enter↵

set Redirect [on -> off]


--- 6. SERIAL MENU --------
 1. set target port
 2. set redirect [OFF]
 3. set local console
 4. set VT100
 5. set port number
 0. return to MAIN MENU
---------------------------
select >
```

Dual connection is being set from ON to OFF

```
--- 6. SERIAL MENU --------
 1. set target port
 2. set redirect [OFF]
 3. set local console
 4. set VT100
 5. set port number
 0. return to MAIN MENU
---------------------------
select > 2 Enter↵

set Redirect [off -> on]
select [com, ip] :ip Enter↵

ip address :192.168.0.175 Enter↵

select [s:server, c:cliant] :s Enter↵


--- 6. SERIAL MENU --------
 1. set target port
 2. set redirect [ON]
 3. set local console
 4. set VT100
 5. set port number
 0. return to MAIN MENU
---------------------------
select >
```

Notes

(1) Connection to the port being redirected specified with the redirect command cannot be performed with a terminal emulator.
(2) When the target port and local port are connected directly (COM port connection), settings can only be performed from non-local access.

5.1.6.3 set local console

Overview — Sets the local console. If no value is entered and the Enter key is pressed, the current setting remains.

Menu location — MAIN MENU → 6. serial → 3. set local console

Command — port
🕮 Refer to 4.1.17 port Command (page 70)

Output

```
--- 6. SERIAL MENU --------
 1. set target port
 2. set redirect [OFF]
 3. set local console
 4. set VT100
 5. set port number
 0. return to MAIN MENU
---------------------------
select > 3 Enter↵

<set local console>
baud rate [300,1200,1800,2400,4800,9600,14400,
               19200,28800,38400,57600,115200]
change [115200] to : Enter↵

<set character size>
size [7:7bit, 8:8bit]
change [8] to : Enter↵

<set parity bit>
parity [0:none, 1:odd, 2:even]
change [0] to : Enter↵

<set stop bit>
stop [1:1bit, 2:2bit]
change [1] to : Enter↵

<set flow>
flow [n:none, h:hardware, x:xon/xoff]
change [n] to : Enter↵
local port setting completed.


--- 6. SERIAL MENU --------
 1. set target port
 2. set redirect [OFF]
 3. set local console
 4. set VT100
 5. set port number
 0. return to MAIN MENU
---------------------------
select >
```

Notes

(1) Settings for xon and xoff are from "00" to "ff".
(2) If the entered value does not match one of the choices, an error message will be displayed for that option.
(3) If Enter is pressed in a blank space, the current setting remains.

5.1.6.4 set VT100

Overview — Sets the number of lines to display on the VT100.

Menu location — MAIN MENU → 6. serial → 4. set VT100

Command — vt100
🕮 Refer to 4.1.21 vt100 Command (page 75)

Output — The terminal line size is being set to 36.

```
--- 6. SERIAL MENU --------
 1. set target port
 2. set redirect [OFF]
 3. set local console
 4. set VT100
 5. set port number
 0. return to MAIN MENU
---------------------------
select > 4 Enter↵

set line : 36 Enter↵

vt100 line setting completed.


--- 6. SERIAL MENU --------
 1. set target port
 2. set redirect [OFF]
 3. set local console
 4. set VT100
 5. set port number
 0. return to MAIN MENU
---------------------------
select >
```

Notes

(1) The value can be set from 1 to 9999999.

5.1.6.5 set port number

Overview — Sets the TCP port number during an Ether-direct connection (read only 1, read only 2, write only and read-write).

Menu location — MAIN MENU → 6. serial → 5. set port number

Command — port
🕮 Refer to 4.1.17 port Command (page 70)

Output — The TCP port number is being set to an arbitrary value.

```
--- 6. SERIAL MENU --------
 1. set target port
 2. set redirect [OFF]
 3. set local console
 4. set VT100
 5. set port number
 0. return to MAIN MENU
---------------------------
select > 5 Enter↵

<set read only 1>
change [30000] to : 30005 Enter↵

<set read only 2>
change [30001] to : 30006 Enter↵

<set write only>
change [30002] to : 30007 Enter↵

<set read write>
change [30003] to : 30008 Enter↵


--- 6. SERIAL MENU --------
 1. set target port
 2. set redirect [OFF]
 3. set local console
 4. set VT100
 5. set port number
 0. return to MAIN MENU
---------------------------
select >
```

Notes

(1) The value can be set from 5000 to 65535.
(2) If Enter is pressed in a blank space, the current setting remains.
(3) If a five-digit port number 65536 or over is set, an error will occur and the number will not be set but the next option can be set.
(4) If six or more digits are entered, the screen will return to the SERIAL MENU.

5.1.6.6 return to MAIN MENU

Overview — Returns to the MAIN MENU.

5.1.7 OPTION MENU

When 7. option is selected in the MAIN MENU, the following OPTION MENU is displayed.

```
--- 7. OPTION MENU --------
 1. cf format
 2. change encrypt of log
 3. change encrypt of conf
 4. version
 0. return to MAIN MENU
---------------------------
select >
```


The OPTION MENU contains the following five options.

1. cf format 📖 Refer to 5.1.7.1 cf format (page 145)
2. change encrypt of log 📖 Refer to 5.1.7.2 change encrypt of log (page 146)
3. change encrypt of conf 📖 Refer to 5.1.7.3 change encrypt of conf (page 147)
4. version 📖 Refer to 5.1.7.4 version (page 148)
0. return to MAIN MENU 📖 Refer to 5.1.7.5 return to MAIN MENU (page 148)

Advanced version only

5.1.7.1 cf format

Overview — Formats the CF card in FAT16 (MS-DOS).

Menu location — MAIN MENU → 7. option → 1. cf format

Command — cfformat

📖 Refer to 4.1.35 cfformat Command (page 93)

Output

```
--- 7. OPTION MENU --------
 1. cf format
 2. change encrypt of log
 3. change encrypt of conf
 4. version
 0. return to MAIN MENU
---------------------------
select > 1 Enter↵
administrator password:      Enter↵
*** Don't eject CF card. ***
Format completed.


--- 7. OPTION MENU --------
 1. cf format
 2. change encrypt of log
 3. change encrypt of conf
 4. version
 0. return to MAIN MENU
---------------------------
select >
```

Notes

(1) An administrator password is required.
(2) While "*** Don't eject CF card. ***" is displayed, do not remove the CF card because it is being formatted.

Advanced version only

5.1.7.2 change encrypt of log

Overview — Sets or changes the encryption key of the log file.

Menu location — MAIN MENU → 7. option → 2. change encrypt of log

Command — changekey
📖 Refer to 4.1.34 changekey Command (page 92)

Output

```
--- 7. OPTION MENU --------
 1. cf format
 2. change encrypt of log
 3. change encrypt of conf
 4. version
 0. return to MAIN MENU
---------------------------
select > 2 Enter↵
administrator password:      Enter↵
keycode:    Enter↵


--- 7. OPTION MENU --------
 1. cf format
 2. change encrypt of log
 3. change encrypt of conf
 4. version
 0. return to MAIN MENU
---------------------------
select >
```

Notes

(1) An administrator password is required.
(2) The encryption key is not displayed as it is being entered.

Advanced version only

5.1.7.3 change encrypt of conf

Overview — Sets/changes the encryption key of the configuration file.

Menu location — MAIN MENU → 7. option → 3. change encrypt of conf

Command — changekey

📖 Refer to 4.1.34 changekey Command (page 92)

Output

```
--- 7. OPTION MENU --------
 1. cf format
 2. change encrypt of log
 3. change encrypt of conf
 4. version
 0. return to MAIN MENU
---------------------------
select > 3 Enter↵
administrator password:      Enter↵
keycode:    Enter↵


--- 7. OPTION MENU --------
 1. cf format
 2. change encrypt of log
 3. change encrypt of conf
 4. version
 0. return to MAIN MENU
---------------------------
select >
```

Notes

(1) An administrator password is required.
(2) The encryption key is not displayed as it is being entered.

5.1.7.4 version

Overview — Displays the firmware version.

Menu location — MAIN MENU → 7. option → 4. version

Command — version
🕮 Refer to 4.1.18 version Command (page 72)

Output

```
--- 7. OPTION MENU --------
 1. cf format
 2. change encrypt of log
 3. change encrypt of conf
 4. version
 0. return to MAIN MENU
---------------------------
select > 4 Enter↵

Version 1.00 387


--- 7. OPTION MENU --------
 1. cf format
 2. change encrypt of log
 3. change encrypt of conf
 4. version
 0. return to MAIN MENU
---------------------------
select >
```

Notes

None

5.1.7.5 return to MAIN MENU

Overview — Returns to the MAIN MENU.

5.1.8 ping

Overview — Pings the entered IP address.
Executes ping -c 4 ipaddress.

Menu location — MAIN MENU → 8. ping

Command — ping
📖 Refer to 4.1.6 ping Command (page 58)

Output — The IP address "192.168.0.175" is being pinged.

```
== MAIN MENU ========
 1. switch
 2. network
 3. time
 4. file
 5. user
 6. serial
 7. option
 8. ping
 0. exit
=====================
select > 8 Enter↵

host : 192.168.0.175 Enter↵
PING 192.168.0.175 (192.168.0.175): 56 data bytes
64 bytes from 192.168.0.175: icmp_seq=0 ttl=128 time=14.566 ms
64 bytes from 192.168.0.175: icmp_seq=1 ttl=128 time=10.884 ms
64 bytes from 192.168.0.175: icmp_seq=2 ttl=128 time=10.400 ms
64 bytes from 192.168.0.175: icmp_seq=3 ttl=128 time=10.500 ms

----192.168.0.175 PING Statistics----
4 packets transmitted, 4 packets received, 0.0% packet loss
round-trip min/avg/max/stddev = 10.400/11.588/14.566/1.997 ms


== MAIN MENU ========
 1. switch
 2. network
 3. time
 4. file
 5. user
 6. serial
 7. option
 8. ping
 0. exit
=====================
select >
```

Notes

None

5.1.9 exit

Overview — Exits the menu screen and returns to the shell prompt.

Menu location — MAIN MENU → 0. exit

Command — None

Output

```
== MAIN MENU ========
 1. switch
 2. network
 3. time
 4. file
 5. user
 6. serial
 7. option
 8. ping
 0. exit
=====================
select > 0 Enter↵

exit

$
```

Notes

None

Chapter 6 - Specifications

This chapter describes this product's technical specifications and operating conditions for users who require this data.

Contents of this chapter

6.1. Product Specifications

Item		Advanced	Standard
Model Number		FX-3001SRF	FX-3001SR
Connecting Port	Single unit	1	
CPU	Type	32-bit CPU	
	Clock	180 MHz	
Memory	Main	64 MB	
Boot method		- On-board flash ROM - CF card	
Network	Type	10BASE-T, 100BASE-TX	
	Auto-negotiation	Supported	
	Manual Setting (Dip switch)	Switching auto-negotiation ON/OFF If auto-negotiation is OFF, the following can be set: - Switching DHCP or PnP ON/OFF - Switching between half-duplex and full-duplex - Switching between 10BASE and 100BASE	
	Supported Protocol	Telnet, SSH 1/2/3, FTP, SFTP, NTP, SNMP	
	File Encryption	AES	
Serial communication	Type	Signal: RS-232C	
	Supported Speed	300 bps to 115.2 kbps	
	Transmission Buffer	8 MB (on memory), cyclic	
		External CF	-
Connector	RJ45	Network port x 1 Local console port x 1 Target port x 1	
	CF slot	1	-
Power Supply	Input Rating	5V DC	
	Power Consumption	1A	
Dimensions	W x D x H (mm)	110 x 114 x 32	
Weight	(g)	450	420

6.2. Operational Environment

Item	
Ambient Temperature	While operating: 0 to 40°C While being stored: -20 to 60°C
Ambient Humidity	While operating: 10 to 80% RH (no condensation) While being stored: 5 to 90% RH (no condensation) Temperature conditions: For 40°C or under, maximum 90% RH : For 40 to 60°C, inversely proportional until 50% RH
Vibration Resistance	JIS C 0040 (10 to 55 to 10 Hz/min, 1.5 mm)
Shock Resistance	JIS C 0041 (10 G, 11 ms)
Conformance	FCC Class B, cULus, CE
Electrostatic Resistance	Testing Standard : IEC61000-4-2 Body : Contact - ±8 kV : Indirect - ±8 kV : Air - ±12 kV

6.3. Optional Accessories

Name	Model Number	Remarks
Conversion adapter (RJ45–D-sub 9-p)	FP-AD009RJ	
Conversion adapter (RJ45–D-sub 9-p cross)	FP-AD009RJX	One is included with this product
Conversion adapter (RJ45–D-sub 25-p)	FP-AD025RJ	
Conversion adapter (RJ45–D-sub 25-p cross)	FP-AD025RJX	One is included with this product
CompactFlash card 128 MB	FP-MD128CF	One is included with this product
CompactFlash card 256 MB	FP-MD256CF	
CompactFlash card 512 MB	FP-MD512CF	
CompactFlash card 1 GB	FP-MD1GCF	
AC Cable for USA (2m)	NC14004-B074	
AC Cable for EUROPE, ASIA (2m)	NC14004-B075	
AC Cable for UK (2m)	NC14004-B076	
AC Cable for USA (1m)	NC14004-B077	
AC Cable for EUROPE, ASIA (1m)	NC14004-B078	
AC Cable for UK (1m)	NC14004-B079	
Rack mount kit	FP-P006	

MEMO

Chapter 7 - Troubleshooting

This chapter describes how to solve problems that may occur when using this product.

Contents of this chapter

7.1. Definition of Errors

An error message will be displayed when an error occurs while using this product.
Refer to the error messages and descriptions below and select the appropriate solution.

Some errors can be fixed while some are critical. When the description says "Contact technical support", refer below for information on contacting our technical support.
🕮 Refer to 7.5 Technical Support (page 184)

Error code	Message	Detail
0001	RAM NG! 0xXXXXXXXX 0xXXXXXXXX 0xXXXXXXXX Error Code 0001	An error was detected when verifying SDRAM. The first number is the error address (hexadecimal). The second number is the written value (hexadecimal). The third number is the read value (hexadecimal). Solution: Check the SDRAM using the self-diagnostic program. Contact our technical support.
0002	ROM NG! 0xXXXXXXXX 0xXXXXXXXX 0xXXXXXXXX Error Code 0002	An error was detected when reading the flash ROM twice. The first number is the error address (hexadecimal). The second number is the value that was read first (hexadecimal). The third number is the value that was read second (hexadecimal). Solution: Check the flash ROM using the self-diagnostic program. Contact our technical support.
0003	System program Inflate NG! XXX Error Code 0003	Failed to decompress the system program. The number XXX is the error number (decimal). 100: Failed to secure heap buffer (1024 bytes of work area for decompression could not be secured) 101: Bad compressed file (bad magic header; the first two bytes are not 0x1f, 0x8b) 102: Bad compressed file (bad magic header; the third byte is not 0x8 or bits five to seven of the fourth byte are not 0) 103: Bad compressed file (EOF detected) 104: Bad compressed file (bad CRC detected) 105: Bad compressed file (original size anddecompressed size mismatch detected) -2: Reached the end of the file being decompressed -3: Bad compressed file data -4: Failed to secure memory for decompression -5: No space in output buffer Solution: The system program is not stored on the flash ROM correctly. Contact our technical support.

Error code	Message	Detail
0004	File system Inflate NG! XXX Error Code 0004	Failed to decompress the file system. The number XXX is the error number (decimal). 100: Failed to secure heap buffer (1024 bytes of work area for decompression could not be secured) 101: Bad compressed file (bad magic header; the first two bytes are not 0x1f, 0x8b) 102: Bad compressed file (bad magic header; the third byte is not 0x8 or bits five to seven of the fourth byte are not 0) 103: Bad compressed file (EOF detected) 104: Bad compressed file (bad CRC detected) 105: Bad compressed file (original size and decompressed size mismatch detected) -2: Reached the end of the file being decompressed -3: Bad compressed file data -4: Failed to secure memory for decompression -5: No space in output buffer Solution: The file system is not stored on the flash ROM correctly. Contact our technical support.
0005	Self Diagnostic program Inflate NG! XXX Error Code 0005	Failed to decompress the self-diagnostic program. The number XXX is the error number (decimal). 100: Failed to secure heap buffer (1024 bytes of work area for decompression could not be secured) 101: Bad compressed file (bad magic header; the first two bytes are not 0x1f, 0x8b) 102: Bad compressed file (bad magic header; the third byte is not 0x8 or bits five to seven of the fourth byte are not 0) 103: Bad compressed file (EOF detected) 104: Bad compressed file (bad CRC detected) 105: Bad compressed file (original size and decompressed size mismatch detected) -2: Reached the end of the file being decompressed -3: Bad compressed file data -4: Failed to secure memory for decompression -5: No space in output buffer Solution: The self-diagnostic program is not stored on the flash ROM correctly. Contact our technical support.

Error code	Message	Detail
0006	ROM NG! erase XXX Error Code 0006	Failed to erase the flash ROM during recovery. The number is the block number that failed to erase (decimal). Solution: Check the flash ROM using the self-diagnostic program. Contact our technical support.
0007	ROM NG! write XXX Error Code 0007	Failed to write to the flash ROM during recovery. The number is the block number that failed to write (decimal). Solution: Check the flash ROM using the self-diagnostic program. Contact our technical support.
0008	ROM NG! 0xXXXXXXXX 0xXXXXXXXX 0xXXXXXXXX Error Code 0008	Failed to verify the flash ROM during recovery. The first number is the written flash ROM address (hexadecimal). The second number is the written value (hexadecimal). The third number is the read value (hexadecimal). Solution: Check the flash ROM using the self-diagnostic program. Contact our technical support.
0009	System program not found in FlashROM. Error Code 0009	Attempted to boot the system program from the flash ROM but the system program was not found in the flash ROM. Solution: Contact our technical support.
0010	File system not found in FlashROM. Error Code 0010	Attempted to load the file system from the flash ROM to SDRAM but the file system was not found in the flash ROM. Solution: Contact our technical support.
0011	Self Diagnostic program not found in FlashROM. Error Code 0011	Attempted to boot the self-diagnostic program from the flash ROM but the self-diagnostic program was not found in the flash ROM. Solution: Contact our technical support.

Error code	Message	Detail
0012	CF Sub-board not present. Error Code 0012	DIP switches were set to boot from the CF card but the CF sub-board is not attached. Solution: For the FX-3001SR, the CF sub-board is not attached. Turn off DIP switch 1. For the FX-3001SRF, contact our technical support.
0013	CF Storage Card not found. Error Code 0013	DIP switches were set to boot from the CF card but the CF card was not inserted in the slot. Solution: Insert the CF card in the slot and press the RESET button or turn the power off and then back on. If that does not work, contact our technical support.
0014	CF Power ON failure. Error Code 0014	The CF card could not be turned on when booting from the CF card. Solution: Press the RESET button or turn the power off and then back on. If that does not work, contact our technical support.
0015	System program not found in CF Storage Card. Error Code 0015	The system program was not found in the CF card when booting from the CF card. Solution: Check that a bootable CF card is inserted. Reinsert the CF card in the slot and press the RESET button or turn the power off and then back on. If that does not work, contact our technical support.
0016	File system not found in CF Storage Card. Error Code 0016	The file system was not found in the CF card when booting from the CF card. Solution: Check that a bootable CF card is inserted. Reinsert the CF card in the slot and press the RESET button or turn the power off and then back on. If that does not work, contact our technical support.

Error code	Message	Detail
0017	System program CF not ready 0xXXXX Error Code 0017	When booting from the CF card, the system program could not be read because of an error with the CF card. The displayed number is the error status (hexadecimal). 0xFFFF is an operational time out. For numbers other than 0xFFFF, the error is shown by bit. 0x0080: Bad block or CRC error 0x0040: Unrecoverable error (data ECC error) 0x0010: Sector error or missing error for specified sector ID 0x0004: Command was aborted (CF card is not ready, write error, or invalid command) 0x0001: General error Solution: Contact our technical support.
0018	File system CF not ready 0xXXXX Error Code 0018	When booting from the CF card, the file system could not be read because of an error with the CF card. The displayed number is the error status (hexadecimal). 0xFFFF is an operational time out. For numbers other than 0xFFFF, the error is shown by bit. 0x0080: Bad block or CRC error 0x0040: Unrecoverable error (data ECC error) 0x0010: Sector error or missing error for specified sector ID 0x0004: Command was aborted (CF card is not ready, write error, or invalid command) 0x0001: General error Solution: Contact our technical support.
0019	System program read error XXX Error Code 0019	When booting from the CF card, the system program could not be read. File information may be broken. The displayed number is the error number (decimal). 27: File too large Solution: Check that a bootable CF card is inserted. Reinsert the CF card in the slot and press the RESET button or turn the power off and then back on. If that does not work, contact our technical support.

Error code	Message	Detail
0020	File system read error XXX Error Code 0020	When booting from the CF card, the file system could not be read. File information may be broken. Solution: Check that a bootable CF card is inserted. Reinsert the CF card in the slot and press the RESET button or turn the power off and then back on. If that does not work, contact our technical support.
0021	map table not found. Error Code 0021	Flash ROM location information could not be found. All the programs may not be saved on the flash ROM. Solution: Contact our technical support.
0022	Illegal map table. Error Code 0022	Flash ROM location information is not correct. The program on the flash ROM may not have been saved correctly. Solution: Contact our technical support.
0023	Illegal File header. Error Code 0023	Program contents stored on the flash ROM may not be correct. The program must be replaced. Solution: Contact our technical support.
0024	recover4 not found. Error Code 0024	The file recover4, which is necessary for recovery, is not on the flash ROM. Solution: Contact our technical support.
0025	System program not found in recover4. Error Code 0025	The system program cannot be found in the file recover4, which is necessary for recovery. Solution: Contact our technical support.
0026	File system not found in recover4. Error Code 0026	The file system cannot be found in the file recover4, which is necessary for recovery. Solution: Contact our technical support.
0027	recover6 not found. Error Code 0027	The file recover6, which is necessary for recovery, is not on the flash ROM. Solution: Contact our technical support.

Error code	Message	Detail
0028	System program not found in recover6. Error Code 0028	The system program cannot be found in the file recover6, which is necessary for recovery. Solution: Contact our technical support.
0029	File system not found in recover6. Error Code 0029	The file system cannot be found in the file recover6, which is necessary for recovery. Solution: Contact our technical support.

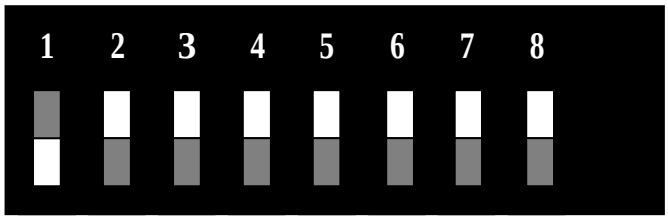
7.2. Self-diagnostic Program

Function overview

This is a mode to discover the cause when an error occurs while operating this product.

Starting and exiting

1. Set DIP switch 1 on the front panel of this product to ON and restart.



indicates a switch.

2. When the self-diagnostic program is started, the following menu is displayed.

```
system diag mode   Rev1.00.00xx
-----------------
1: Data R/W test
2: Hardware test
3: EXIT
select >
```

Select menu number 1 to perform a read/write test on peripheral devices or bus integrity.
Select menu number 2 to perform a test on DIP switches, buttons, or LEDs.

Detailed descriptions can be found in the following sections.

To exit the self-diagnostic program, select 3: EXIT from the main menu.

```
system diag mode   Rev1.00.00xx
-----------------
1: Data R/W test
2: Hardware test
3: Exit
select > 3 Enter↵

Bye...
```

Alternatively, the device may be turned off to exit the self-diagnostic program.

7.2.1 Data R/W test

The following items can be tested.

```
Data R/W test
----------------
1: SDRAM
2: FlashROM
3: NIC
4: RTC
5: Compact Flash
6: UART
7: return
```

7.2.1.1 SDRAM test

This test confirms the operation of the SDRAM controller and the read/write function for data.
Tests may be performed on SDRAM0 and SDRAM1.
The 32 MB address range for SDRAM0 is 0x08000000 to 0x09FFFFFF and for SDRAM1 is 0x0C000000 to 0x0DFFFFFF.

```
SDRAM test
--------------------
1: data compare test
2: bus integrity test
3: return
select >
```

7.2.1.1.1 data compare test

An SDRAM zero clear verification and a full verification in 0x00 → 0xFF → 0xAA → 0x55 order are performed.
(1) Input format

```
Start address? [0x08000000:default, -1:top]   >
End   address? [0x08FFFFFF:default, -1:bottom] >
```

Specify a test start address and end address.
If only the Enter key is pressed, the test will be performed with the default values.
If -1 is entered, the start address is set to 0x08000000 and the end address is set to 0x0DFFFFFF.
If another value is entered, it must be in hexadecimal format.

Example

```
Start address? [0x08000000:default, -1:top]   > 08000000 Enter↵
End   address? [0x08FFFFFF:default, -1:bottom] > 09FFFFFF Enter↵
```

The output message that appears on the local console can be set to also be displayed on the target port.

```
Output message to Local and Target Port? [Y/N] >
```

Select N to display the test message to the local port only.
Select Y to display the test message to both the local and target ports.

(2) Test results

The SDRAM control registers and test results are displayed as shown below.

```
SDRAM Control Registers
 SDCTL0       0x00221000:81128300
 SDCTL1       0x00221004:81128300
 MISCELLANEOUS 0x00221014:00000000
 SDRST        0x00221018:00000000
Check SDRAM0
 Zero clear test
 Test 0x08000000 -  0x09FFFFFF
 write 0x00000000 ...
 verify ... success
 0x00,0xFF,0xAA,0x55 test
 Test 0x08000000 -  0x09FFFFFF
 write 0x00000000 ...
 verify ... success
 Test 0x08000000 -  0x09FFFFFF
 write 0xFFFFFFFF ...
 verify ... success
 Test 0x08000000 -  0x09FFFFFF
 write 0xAAAAAAAA ...
 verify ... success
 Test 0x08000000 -  0x09FFFFFF
 write 0x55555555 ...
 verify ... success
SDRAM0 check done.
```

Error messages

If a verification error occurs after writing to the SDRAM, an error message is displayed.

The SDRAM address of the error, written data, and read data are displayed.

Example

```
verify error !
Address:0x08580380  write data:0x00000000  read data:0x00800000
```

7.2.1.1.2 bus integrity test

This is a test designed to induce a bit error in the dependence/independence of the address bus and data bus using a large amount of consecutive data such as 1, 0, 1, 0, etc.
(1) Input format

```
Start address? [0x08000000:default, -1:top]   >
End  address? [0x08FFFFFF:default, -1:bottom] >
```

Specify a test start address and end address.
Same as the data compare test.

(2) Test results
The SDRAM control registers and test results are displayed as shown below.

```
Start address? [0x08000000:default, -1:top]   > -1 Enter↵
End  address? [0x08FFFFFF:default, -1:bottom] > -1 Enter↵
Output message to Local and Target Port? [Y/N] > Y Enter↵
SDRAM Control Registers
 SDCTL0       0x00221000:81128300
 SDCTL1       0x00221004:81128300
 MISCELLANEOUS 0x00221014:00000000
 SDRST        0x00221018:00000000
Check SDRAM0
 Test 0x08000000 -  0x09FFFFFF
 write 0xAAAAAAAA/0x55555555 ...
 verify ...
SDRAM0 check done.
Check SDRAM1
 Test 0x0C000000 -  0x0DFFFFFF
 write 0xAAAAAAAA/0x55555555 ...
 verify ...
SDRAM1 check done.
```

Error messages
Same as the data compare test.

7.2.1.2 FlashROM test

This test confirms the operation of the local bus and the read/write function for data.
The 32 MB address range for the flash ROM is 0x10000000 to 0x11FFFFFF.
The address range to test specifies the offset address (0x0000000 to 0x1FFFFFF) in the flash ROM.

(1) Saving data on the flash ROM
In order to read/write using the flash ROM, confirm whether to save the program on the flash ROM.
If Y is selected, all the programs in the flash ROM are saved on the SDRAM. After the flash ROM test is finished, they are written on the flash ROM again.

```
Data R/W test
----------------
1: SDRAM
2: FlashROM
3: NIC
4: RTC
5: Compact Flash
6: UART
7: return
select > 2 Enter↵
Save basic program from FlashROM? [Y/N] > Y Enter↵
save program ... done


FlashROM test
---------------------
1: data compare test
2: bus integrity test
3: return
select > 2 Enter↵
Start address? [0x00000000:default, -1:top]    > Enter↵
End   address? [0x00FFFFFF:default, -1:bottom] > Enter↵
Check FlashROM
 Test 0x00000000 -  0x00FFFFFF
 write 0xAAAAAAAA/0x55555555 ...  block 134
 verify ... success.
FlashROM check done.

FlashROM test
---------------------
1: data compare test
2: bus integrity test
3: return
select > 3 Enter↵

Recover programs to FlashROM ... block 269
Recover programs to FlashROM ... verify done.
```

7.2.1.2.1 data compare test

The data on the flash ROM in the specified range is copied to the SDRAM, written on the flash ROM again, and verified.
(1) Input format

```
Start address? [0x00000000:default, -1:top]    >
End   address? [0x00FFFFFF:default, -1:bottom] >
```

Specify a test start address and end address.
If only the Enter key is pressed, the test will be performed with the default values.
If -1 is entered, the start address is set to 0x0000000 and the end address is set to 0x1FFFFFF.
If another value is entered, it must be in hexadecimal format.

* The address specified here becomes the offset address in the flash ROM. It is not the absolute address of the flash ROM.

Example

```
Start address? [0x00000000:default, -1:top]    > 0 Enter↵
End   address? [0x00FFFFFF:default, -1:bottom] > FFFFF Enter↵
```

(2) Test results
The test results are displayed as shown below.

```
Check FlashROM  0x00000000 - 0x000FFFFF
save programs ... done.
recover programs to FlashROM ... block 014    <- Displays the sector number being processed as needed
recover programs to FlashROM ... verify done.
FlashROM check done.
```

Error messages

If a flash ROM sector erase error, flash ROM write error, or verification error occurs, an error message is displayed.
For a flash ROM sector erase error, an error message is displayed when toggle operations are not completed within 10 seconds.
For a flash ROM write error, an error message is displayed when toggle operations are not completed within 10 milliseconds.
The block number (sector) of the error, flash ROM offset address, written data, and read data are displayed.

Sector erase error

```
*** Erase Error - Block No.1 ***
```

Write error

```
*** Write Error - Block No.1 offset:0x00004000 ***
```

Verification error

```
verify error !
FlashROM offset:0x00004000  write data:0x00000000  read data:0x00088B1F
```

7.2.1.2.2 bus integrity test

This is a test designed to induce a bit error in the dependence/independence of the address bus and data bus using a large amount of consecutive data such as 1, 0, 1, 0, etc.

(1) Input format

For the bus integrity test, confirm whether to save the program on the flash ROM.
If Y is selected, the programs in the flash ROM for the test are saved on the SDRAM. After the bus integrity test is finished, they are written on the flash ROM again.

```
Save programs from FlashROM? [Y/N] >
Start address? [0x00000000:default, -1:top]    >
End   address? [0x00FFFFFF:default, -1:bottom] >
```

The format for the address rage is the same as that for the data compare test.

(2) Test results

The test results are displayed as shown below.

```
Save programs from FlashROM? [Y/N] > Y Enter↵
Start address? [0x00000000:default, -1:top]    > 0 Enter↵
End   address? [0x00FFFFFF:default, -1:bottom] > FFFFFF Enter↵
Check FlashROM  0x00000000 - 0x00FFFFFF
save programs ... done.
 write 0xAAAAAAAA/0x55555555 ... block 134
 verify ... done.
FlashROM check done.
recover programs to FlashROM ... block 134
recover programs to FlashROM ... verify done.
```

Error messages
Same as the data compare test.

7.2.1.3 NIC test

This test confirms the operation of the local bus and the read/write function for data for the Ethernet controller.

```
NIC test
---------------------
1: data compare test
2: bus integrity test
3: return
select >
```

7.2.1.3.1 data compare test

A zero clear verification and a full verification in 0x00 → 0xFF → 0xAA → 0x55 order for a read/write test are performed for the NIC registers. This is repeated 10 times.

Example

```
Bank 0
zero clear   ... success.
write 0x0000 ... success.
write 0xFFFF ... success.
write 0xAAAA ... success.
write 0x5555 ... success.
Bank 1
zero clear   ... success.
write 0x0000 ... success.
write 0xFFFF ... success.
write 0xAAAA ... success.
write 0x5555 ... success.
Bank 2
zero clear   ... success.
write 0x0000 ... success.
write 0xFFFF ... success.
write 0xAAAA ... success.
write 0x5555 ... success.
Bank 3
zero clear   ... success.
write 0x0000 ... success.
write 0xFFFF ... success.
write 0xAAAA ... success.
write 0x5555 ... success.
.
.
.
Bank 0
zero clear   ... success.
write 0x0000 ... success.
write 0xFFFF ... success.
write 0xAAAA ... success.
write 0x5555 ... success.
Bank 1
zero clear   ... success.
write 0x0000 ... success.
write 0xFFFF ... success.
write 0xAAAA ... success.
write 0x5555 ... success.
Bank 2
zero clear   ... success.
write 0x0000 ... success.
write 0xFFFF ... success.
write 0xAAAA ... success.
write 0x5555 ... success.
Bank 3
zero clear   ... success.
write 0x0000 ... success.
write 0xFFFF ... success.
write 0xAAAA ... success.
write 0x5555 ... success.
```

Error messages

The register name and value of the error, and the register values for all the banks are displayed.

```
Bank 0
zero clear   ... success.
write 0x0000 ... success.
write 0xFFFF ... success.
write 0xAAAA ... success.
write 0x5555 ... success.
Bank 1
zero clear   ...
IA0-1 reg unmatch 0x0000 ===> 0xFFFF
Bank 0: 0x1505 0x0000 0x4105 0x0000 0x0404 0x1054 0x0000 0x3300
Bank 1: 0x20B1 0x1801 0xFFFF 0x0000 0x0000 0x0000 0x1210 0x3301
Bank 2: 0x3332 0x8000 0x8080 0x0000 0x5555 0x5555 0x0004 0x3302
Bank 3: 0x0000 0x0000 0x0000 0x0000 0x3330 0x3391 0x001F 0x3303
```

7.2.1.3.2 bus integrity test

This is a test designed to induce a bit error in the dependence/independence of the address bus and data bus using a large amount of consecutive data such as 1, 0, 1, 0, etc. This is repeated 10 times.

Example

```
Bank 0 write 0xAAAA/0x5555 ... success.
Bank 1 write 0x5555/0xAAAA ... success.
Bank 2 write 0xAAAA/0x5555 ... success.
Bank 3 write 0x5555/0xAAAA ... success.
.
. (Omitted)
.
Bank 0 write 0xAAAA/0x5555 ... success.
Bank 1 write 0x5555/0xAAAA ... success.
Bank 2 write 0xAAAA/0x5555 ... success.
Bank 3 write 0x5555/0xAAAA ... success.
Bank 0 write 0x5555/0xAAAA ... success.
Bank 1 write 0xAAAA/0x5555 ... success.
Bank 2 write 0x5555/0xAAAA ... success.
Bank 3 write 0xAAAA/0x5555 ... success.
```

Error messages

The register name and value of the error, and the register values for all the banks are displayed. Same as the data compare test.

7.2.1.4 RTC test

This test confirms the operation of RTC using the I2C bus.

```
RTC test
--------------------
1: data compare test
2: bus integrity test
3: return
select >
```

With this function, all of the registers in the RTC are read and saved when the test starts, and then those register values are written again after the test is finished.

7.2.1.4.1 data compare test

A zero clear verification and a full verification in 0x00 → 0xFF → 0xAA → 0x55 order for a read/write test are performed for all areas of the RTC registers. This is repeated 10 times.

```
zero clear ... success.
write 0x00 ... success.
write 0xFF ... success.
write 0xAA ... success.
write 0x55 ... success.
.
. (Omitted)
.
zero clear ... success.
write 0x00 ... success.
write 0xFF ... success.
write 0xAA ... success.
write 0x55 ... success.
```

Error messages

An error message will be displayed for an I2C bus error or an RTC register read/write error.

(1) I2C bus error

(a) If the I2C bus is busy for 10 seconds when I2C communication starts or ends

```
I2C Bus Busy (IBB bit ON)
```

(b) If I2C is enabled and the bus master cannot operate when the mode is switched to bus master mode

```
I2SR arbitration lost
I2SR is 0x000000XX      <- Also displays I2C status register content
```

(c) If data transfer has not completed after 10 seconds while read/write is being performed

```
I2C Timeout (IIF bit OFF)
```

(2) RTC register read/write error

The RTC register address and name of the error, written data, and read data are displayed.

Example

```
zero clear ... 01h: [Min] unmatch 0x00000000 ===> 0x0000007F
```

7.2.1.4.2 bus integrity test

This is a test designed to induce a bit error in the dependence/independence of the address bus and data bus using a large amount of consecutive data such as 1, 0, 1, 0, etc. This is repeated 10 times.

Example

```
write 0x55/0xAA ... success.
write 0xAA/0x55 ... success.
.
.
.
write 0x55/0xAA ... success.
write 0xAA/0x55 ... success.
```

Error messages

Same as the data compare test.

Advanced version only

7.2.1.5 Compact Flash test

This test confirms the operation of the local bus and the read/write function for data.

```
Compact Flash test
--------------------
1: data compare test
2: bus integrity test
3: return
select >
```

This is a test only for the advanced version. For the standard version, the following is displayed and this test cannot be performed.

```
select > 1 Enter↵
Loputo Board !
Please set CF sub-board.
```


7.2.1.5.1 data compare test

An zero clear verification and a full verification in 0x00 → 0xFF → 0xAA → 0x55 order for a read/write test are performed for the CF card register areas. This is repeated 10 times.

Example

The CF signal status for GPIO Port-D and CF request register status are displayed.

When the CF card is inserted, turn the card on and start the test. Turn the card off when the test is finished.

```
GPIO Port-D  CF_INTRQ:0 CF_ACK:0 CF_STATUS:0
 CF_REQ register  CF_STATUS:0 CF_nBUSY:1 CF_START:0 CF_STOP:0
<< CF Card present. >>
CF Power ON
 CF_REQ register  CF_STATUS:0 CF_nBUSY:1 CF_START:0 CF_STOP:0
zero clear   ... success.
write 0x0000 ... success.
write 0xFFFF ... success.
write 0xAAAA ... success.
write 0x5555 ... success.
.
.
.
zero clear   ... success.
write 0x0000 ... success.
write 0xFFFF ... success.
write 0xAAAA ... success.
write 0x5555 ... success.
CF Power OFF
 CF_REQ register  CF_STATUS:0 CF_nBUSY:1 CF_START:0 CF_STOP:0
```

Error messages
The register name, written data, and read data are displayed.

Example

```
GPIO Port-D  CF_INTRQ:0 CF_ACK:0 CF_STATUS:0
 CF_REQ register  CF_STATUS:0 CF_nBUSY:1 CF_START:0 CF_STOP:0
<< CF Card present. >>
CF Power ON
 CF_REQ register  CF_STATUS:0 CF_nBUSY:1 CF_START:0 CF_STOP:0
zero clear   ...
CF_SNO reg unmatch 0x00 ===> 0xFF
CF Power OFF
 CF_REQ register  CF_STATUS:0 CF_nBUSY:1 CF_START:0 CF_STOP:0
```

7.2.1.5.2 bus integrity test

This is a test designed to induce a bit error in the dependence/independence of the address bus and data bus using a large amount of consecutive data such as 1, 0, 1, 0, etc. This is repeated 10 times.

Example

```
GPIO Port-D  CF_INTRQ:0 CF_ACK:0 CF_STATUS:0
 CF_REQ register  CF_STATUS:0 CF_nBUSY:1 CF_START:0 CF_STOP:0
<< CF Card present. >>
CF Power ON
 CF_REQ register  CF_STATUS:0 CF_nBUSY:1 CF_START:0 CF_STOP:0
write 0xAAAA/0x5555 ... success.
write 0x5555/0xAAAA ... success.
write 0xAAAA/0x5555 ... success.
write 0x5555/0xAAAA ... success.
write 0xAAAA/0x5555 ... success.
write 0x5555/0xAAAA ... success.
write 0xAAAA/0x5555 ... success.
write 0x5555/0xAAAA ... success.
write 0xAAAA/0x5555 ... success.
write 0x5555/0xAAAA ... success.
CF Power OFF
 CF_REQ register  CF_STATUS:0 CF_nBUSY:1 CF_START:0 CF_STOP:0
```

Error messages
Same as the data compare test.

7.2.1.6 UART test

This tests sending and receiving data for the local console port (UART1) and target port (UART2) using a loop back cable. Port settings of 460800bps and 8N1 are used to perform the test.
Sent data is received from the loop back cable so the test is performed at that point and ends at any point an inconsistency is discovered.
When set to "continuous", the test ends at any point a key is pressed.
When sent data size is specified, the test ends when the specified amount of data is sent and received.

```
UART test
---------------------
1: data compare test
2: bus integrity test
3: return
select >
```


7.2.1.6.1 data compare test

Data from 0x00 to 0xFF is repeatedly sent.
(1) Input format
Specify the port to test, whether to test continuously, and the sent data size if not testing continuously.

```
Local Console? [Y/N, N:Target Port] > N Enter↵
continuous? [Y/N] > N Enter↵
How many size? (kB) [-1:100kB] > 300 Enter↵
connect Loop back cable. then hit any key

connect terminal from Target Port for message output.
if ready, hit any key from Target Port
```

When testing the local console port, the target port is used for a terminal to input and output messages so connect a terminal to the target port. After connecting the loop back cable to the local console, press any key on the target port terminal.
When connecting a terminal to a target port, attach a type A adapter to the cable and connect it to a PC.

(2) Operating the terminal and test results
Follow the steps below to display the test results.

(a) Specify the target port and size

```
Local Console? [Y/N, N:Target Port] > N Enter↵
continuous? [Y/N] > N Enter↵
How many size? (kB) [-1:100kB] > 300 Enter↵
connect Loop back cable. then hit any key
running [100%]                    <- Updates the percentage display as needed
complete!
hit any key
```

(b) Target port, continuous testing

```
Local Console? [Y/N, N:Target Port] > N Enter↵
continuous? [Y/N] > Y Enter↵
connect Loop back cable. then hit any key
running [cont,1,140kB]            <- Updates the byte count display as needed
abort @ 1,167,858 byte        <- Aborts the test and displays the value when a key is hit
hit any key
```

(c) Specify the local console port and size

```
Local Console? [Y/N, N:Target Port] > Y Enter↵
continuous? [Y/N] > N Enter↵
How many size? (kB) [-1:100kB] > 300 Enter↵
connect Loop back cable.
connect terminal from Target Port for message output.
if ready, hit any key from Target Port
```

After connecting the loop back cable to the local console port, press any key on the target port terminal. The message below will be displayed on the terminal.

```
running [100%]                          <- Updates the percentage display as needed
complete!
connect console terminal. then hit any key on this terminal
```

After the test is finished, disconnect the loop back cable from the local console and reconnect the terminal. Press any key on the target port terminal to start the test. The UART test menu screen will be displayed on the local console screen.

```
UART test
---------------------
1: data compare test
2: bus integrity test
3: return
select >
```

(d) Local console port, continuous testing

```
Local Console? [Y/N, N:Target Port] > Y Enter↵
continuous? [Y/N] > Y Enter↵
connect Loop back cable.
connect terminal from Target Port for message output.
if ready, hit any key from Target Port
```

After connecting the loop back cable to the local console port, press any key on the target port terminal to start the test. The message below will be displayed on the terminal.

```
running [cont,1,323kB]            <- Updates the byte count display as needed
abort @ 1,355,177 byte        <- Aborts the test and displays the value when a key is hit
connect console terminal. then hit any key on this terminal
```

After the test is finished, disconnect the loop back cable from the local console and reconnect the terminal. Press any key on the target port terminal. The UART test menu screen will be displayed on the local console screen.

Error messages

If the sent data and received data do not match

```
error @ 71,431 byte                    <- Displays the processed byte count
(0x07 -> 0xFF)                         <- Sent and received data
UART1 USR1=0x00006450 USR2=0x00009080 <- Displays status registers 1 and 2 of UART1
UART2 USR1=0x00002050 USR2=0x00004088 <- Displays status registers 1 and 2 of UART2
```

If a timeout error (10 seconds) occurs when sending or receiving data

```
Rx timeout @ 0 byte                    <- Displays the processed byte count
(0x00 -> )                             <- Sent and received data
UART1 USR1=0x00006450 USR2=0x00009080 <- Displays status registers 1 and 2 of UART1
UART2 USR1=0x00002050 USR2=0x00004088 <- Displays status registers 1 and 2 of UART2
```


7.2.1.6.2 bus integrity test

This is a test designed to induce a bit error by continuously sending a large amount of data for 0xAA, 0x55, 0x00, and 0xFF.
The input format and procedures are the same as those for the data compare test.

Example

```
Local Console? [Y/N, N:Target Port] > N Enter↵
continuous? [Y/N] > Y Enter↵
connect Loop back cable. then hit any key
running [cont,2,465kB]
abort @ 2,524,989 byte
hit any key
```

Error messages

Same as the data compare test.

7.2.2 Hardware test

The following items can be tested during the hardware test.

```
Hardware test
--------------------
1: DIPSW
2: LED
3: CF/Init
4: Register Read/Write
5: return
```

7.2.2.1 DIPSW

This reads and displays the current status of the DIP switches.

```
Hardware test
--------------------
1: DIPSW
2: LED
3: CF/Init
4: Register Read/Write
5: return
select > 1 Enter↵

DIPSW
87654321 (ON(1), OFF(0))
00000001
```

The DIP switch status is read and displayed one time when the test is performed, and then the screen returns to the hardware test menu screen.

7.2.2.2 LED

By using the keys, control whether the LED is on, off, or blinking.

```
Hardware test
--------------------
1: DIPSW
2: LED
3: CF/Init
4: Register Read/Write
5: return
select > 2 Enter↵

LED
Quit:q
    [GREEN] [RED]
   0: OFF   OFF
   1: OFF   ON
   2: ON    OFF
   3: ON    ON
   4: OFF   OFF
   5: OFF   BLINK
   6: BLINK  OFF
   7: BLINK  BLINK
Other: OFF   OFF
```

Keys 0 to 7 control the LED. Press q or Q to return to the hardware test menu screen.
Pressing a key other than 0 to 7, q, or Q will turn the LED off.

7.2.2.3 CF/Init

This reads and displays the current status of the CF/Init button.

```
Hardware test
--------------------
1: DIPSW
2: LED
3: CF/Init
4: Register Read/Write
5: return
select > 3 Enter↵

CF/INIT Button
OFF
```

The CF/Init button status is read and displayed one time when the test is performed, and then the screen returns to the hardware test menu screen.

7.2.2.4 Register Read/Write

This function can be used to view/change the memory mapped I/O register.
Take caution as this function can rewrite the register.
Choose among Byte access (8-bit), Half Word access (16-bit), and Word access (32-bit).
The values that are displayed/entered are all in hexadecimal format.

```
Hardware test
--------------------
1: DIPSW
2: LED
3: CF/Init
4: Register Read/Write
5: return
select > 4 Enter↵

Register Read/Write test
------------------------
1: Byte     access
2: Half Word access
3: Word     access
4: return
select >
```

(1) Byte access

```
select > 1 Enter↵
Byte:Register Address [hexa](end: . or q) = Specifies the address to be viewed/changed
Byte:Register Address [hexa](end: . or q) = 08000000  <- Enter 08000000
                                                        and press the Enter key
08000000: 00/     <- Displays the content of the address 08000000
                        To change the content of the address 08000000, enter the
                        value and press the Enter key

Byte:Register Address [hexa](end: . or q) = 08000000
08000000: 00/ 12   <- Enter 12 and press the Enter key to display the content of the next address
08000001: 00/ p    <- Enter p to display the preceding content
08000000: 12/ n    <- Enter n to display the next content
08000001: 00/ n
08000002: 00/ p
08000001: 00/ p
08000000: 12/ q    <- Enter q to enter another address
Byte:Register Address [hexa](end: . or q) =

Byte:Register Address [hexa](end: . or q) = 08000000
08000000: 12/ .    <- Enter . to enter another address
Byte:Register Address [hexa](end: . or q) = 08000000
08000000: 12/

Byte:Register Address [hexa](end: . or q) = 08000000
08000000: 12/ 13.   <- Enter the value and . to change the content and then enter another address
Byte:Register Address [hexa](end: . or q) =

Byte:Register Address [hexa](end: . or q) = 08000000
08000000: 13/

Byte:Register Address [hexa](end: . or q) = 08100000
08100000: 10/   <-Press the Enter key to display the content of the next address
08100001: 2F/
08100002: 11/
08100003: EE/
```

Error messages

When an invalid address is specified, "Illegal address" is displayed.
This is resolved using data from the self-diagnostic program and exception handling is not performed.

```
Byte:Register Address [hexa](end: . or q) = 14000000
14000000: Illegal address
```

When a register address is specified that is not available for byte access, "Cannot access" is displayed.

```
Byte:Register Address [hexa](end: . or q) = 00200000
00200000: Cannot access 8BIT data for this register
```

(2) Half Word access

This is the same as byte access except that it is processed in 16-bit units.

(3) Word access

This is the same as byte access except that it is processed in 32-bit units.

7.3. Recovery (Returning to Factory Settings)

Perform a recovery procedure to return this product to initial settings.

Procedure

1. Turn the power on while pressing the Init button. If this product is already on, press the RESET button while pressing the Init button.

   "...now system recovery..." is displayed as shown below and the device switches to the recovery procedure.
   While the LED lights in order of green, red, and orange, recovery is taking place.

```
...now system recovery...
checking system memories...
.............................RAM ok
.............................ROM ok
......
................................
```

2. The message below is displayed, the LED blinks green, and recovery is finished.

```
.......done!
***** Please turn off power, or reset. *****
```

3. Restart the device. Make sure the status LED is blinking green, turn the power switch off, and turn it back on, or press the RESET button.

The recovery procedure is finished. This product will start up with the initial settings.

The product takes approx. 2 minutes 15 seconds to start up immediately after recovery is finished.

7.4. Updating the firmware

The following describes how to write a binary image on the flash ROM in order to update this product's firmware.

Execute the writeflash command to write the image file on the flash ROM.
🕮 Refer to 4.1.25 writeflash Command (page 79)

Procedure

1. Prepare a binary image in the CF card or NFS in advance, log in to this product, and execute the writeflash command in the shell console.
   While the binary image is being written, the status LED blinks orange.
   The LED lights green and writing is finished when control returns to the shell console.

   (Example: the binary image "std-kernel4-1.00.0387" in the NFS is being written)

```
$ writeflash /mnt/fcl_bin/std-kernel4-1.00.0387 Enter↵
$
```

2. If writing another binary image, execute the writeflash command in the same way.

3. After all of the binary images have been written, rebooting is required. Press the RESET button.

The firmware update is finished.
Contact us for details on obtaining binary images.

CAUTION

The product takes longer than usual to start up immediately after firmware update is finished.

7.5. Technical Support

<Inquiry about our products>

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