NS Series
Programmable Terminal

FTP Function

Contents

1. FTP on the NS Series

1.1.　　Intended Purpose

　FTP enables uploading/downloading data between a client (computer) and the NS Series　using Ethernet network. Unlike the Screen Data Transfer provided with NS-Designer, FTP enables uploading/downloading data files so it can be used for replacing part of the screen data such as changing an image or a text file.

1.2.　　Models

The models with Ethernet functionality are available as listed below.
System version 5.0 or higher is required if you want to use FTP.

NS12-TS01(B)-V1
NS10-TV01(B)-V1
NS8-TV01/11(B)-V1
NS5-SQ01(B)-V1

2. External Interfaces

2.1.　　Data Storage Location

The data created with NS-Designer is saved in the following location.

\The specified path

    ├── Project Name.ipp ← Project file

    ├── \Project name　←　Project folder

    │   ├── screen data file
    │   (.opw, .ini, .vec, and .bmp)

    │
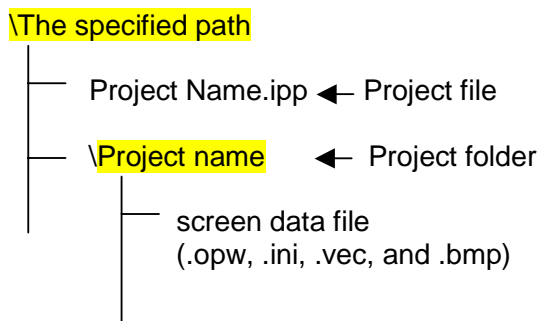
- A project file and a folder will be created in the specified path.
- Screen data and parameter files except for the project file, will be saved in a project folder.

2.2.　　Data Storage in the NS

The data transferred to the PT with the Screen Data Transfer tool is saved in the following location:

.

```
 ╭─────────────────╮
 │     /fr0/etc     │
 ├─────────────────┤
 │                  │
 │ Parameter files (.ini) │
 │                  │
 ╰─────────────────╯
```

```
 ╭─────────────────╮
 │       /fr1       │
 ├─────────────────┤
 │ Project file (.ipp)    │      Data files except for
 │ Screen Data files ←────────   .ini files
 │                  │
 ╰─────────────────╯
```
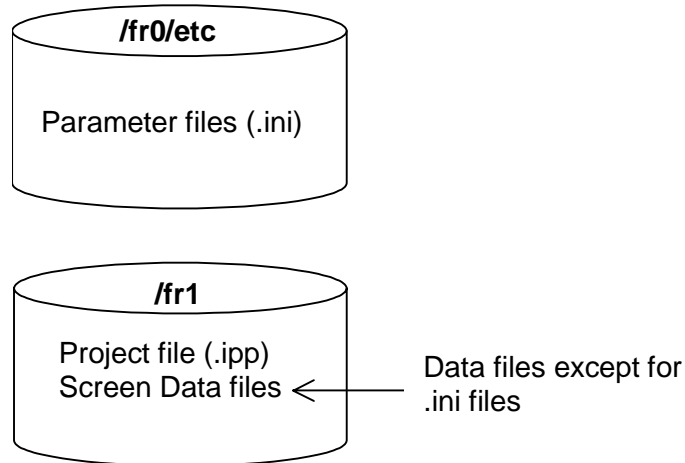
- Only parameters files (.ini) are saved in the "/fr0/etc".
- The screen and project data files except for the parameter files (.ini) are saved in the "/fr1"

2.3.　　Screen Data Transfer

-When accessing the NS from a computer by FTP/Telnet, accessible paths will be " /fr0/etc", "/fr1", and "/at0".

Other folders are secured and should not be modified or deleted.

- Files with an extension .ini will be stored in the folder "/fr0/etc" and the rest will be stored in folder "/fr1" when uploading/downloading screen data.

- The folder "/at0" where the logs and recipes are stored is also accessible. Files can be uploaded/downloaded from/to the "/at0" folder.

NS

/fr0

Bin,etcsys,fgw,font,ot
her,run,sys

ETC

Inaccessible
(Invisible)

FTP client (Computer, etc...)

Project File

.ipp

Project Folder

.ini

/fr1

.jpw, .vec, .csv,
.txt, .bmp, .jpg...

/at0

Memory Card
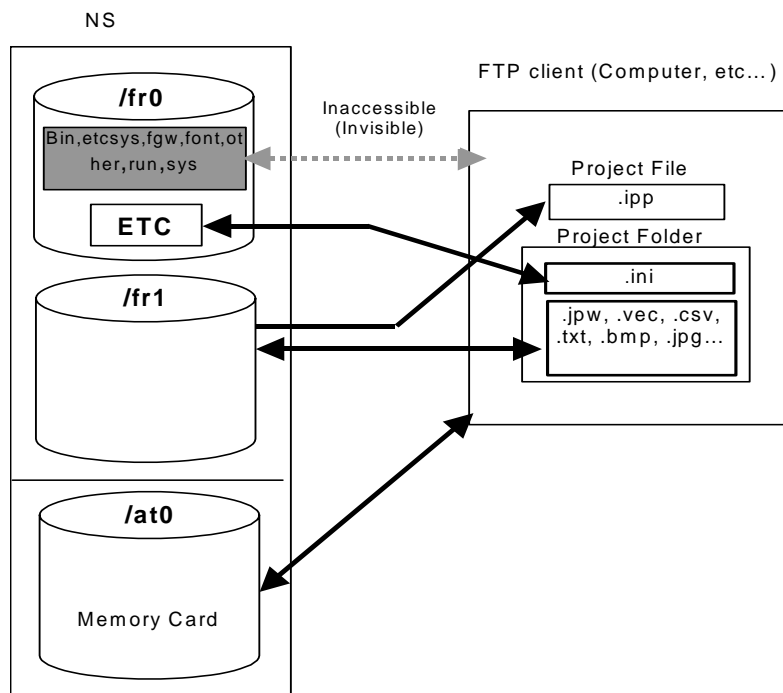
3. NS FTP Functionality

3.1. Supported functionality

- Enable/disable the FTP/Telnet function
- Changing login and password
- Downloading part of screen data
- Replacing images
- Downloading whole screen data
- Uploading part of screen data
- Uploading whole screen data
- Deleting screen data

3.2. How to use

3.2.1. Enable/disable the FTP (telnet) function

1) General

   Enabling this setting allows FTP/Telnet clients to connect to the NS.
   When FTP is disabled clients will not be able to connect.

2) Details
   - NS terminal
     Default the FTP function is disabled. To **enable** the FTP you need
     to go to the system menu of the NS terminal. Then choose the
     Comm. Tab to go to the communication settings. Selecting
     Ethernet Enable will show all Ethernet settings.
     The settings such as Network address, IP address, subnet mask
     need to be set. Press Enable for FTP and then Write to save the
     configuration. After saving you need to restart the NS.
     Press Write button after selecting FTP **Disable** button and restart
     the NS to disable FTP function.
   - NS-Designer
     The NS-Designer does not have an option to enable/disable the
     FTP functionality.

3) Remarks
   FTP cannot be enabled through NS-Designer. Also when you upgrade
   the system program (firmware) the FTP settings will not be backed up.
   This means after upgrading the system program FTP has to be enabled
   again in the system menu.

4) Failure Protection
   If an internal memory of NS contains invalid values caused by battery
   discharging, settings are set back to default and FTP/Telnet will be
   disabled.

3.2.2. Changing login and password

1) General

It is possible to change the user ID and password to log on to the FTP/Telnet server.
Use the current ID to change the user ID and password. The user ID and password set as factory default are as listed below. When you perform a clean installation of the system program, the user ID and password are also set as this.

User ID: default
Password: default

2) Details

Start Telnet from a computer and execute the command to change user name and password. After changing the password, execute the reset command, press the reset button on the back of the NS terminal, or restore the power supply of the NS to reflect the changes.

Command	Details
>telnet[hostname]	Execute the Telnet command. Type the IP address of the NS for [hostname].
User name?:**[user ID]**	Log onto Telnet. Enter the specified user ID.
Password:**[Password]**	Enter the password corresponding to the user ID.
$**chpwd**	Execute the command to change password.
New User name:**[user ID]**	Enter the new user ID.
New Password:**[Password]**	Enter the new password.
Do you want to save NEW Username and Password (y or n) ? [y or n]	Enter "y", if you want to change the new user ID and password. If not, enter "n".
$**reset**	Execute the command to reset the NS.

3) Remarks

User ID and password can only be changed as described above.

4) Failure Protection

If an internal memory of NS contains invalid values caused by battery discharging, settings are set back to default and FTP/Telnet will be disabled. Also user id and password are set back to default.

3.2.3. Downloading part of screen data

1) General

Screen data files and parameter files can be transferred from a computer to NS with FTP individually. Also part of image data used in the project can be replaced. The file to be transferred should be overwritten to the same file to maintain compatibility with project data.

2) Details

Start Telnet from a computer and log onto the target NS to download (put) the desired file(s). You could download screen data (.ipw) files, text (.txt) files or images (.bmp/.jpg) that are used in a screen. Execute the reset command with telnet, press the reset button on the back of the NS terminal, or restore the power supply to the NS.

Command	Details
>telnet **[hostname]**	Execute the Telnet command. Type the IP address of the NS for [hostname].
User name?:**[user ID]**	Log onto Telnet. Enter the specified user ID.
Password:**[Password]**	Enter the password corresponding to the user ID.
$**sendmode 2**	Execute the command to switch the NS to transfer mode.
$**exit**	Exit Telnet command.
>**ftp [hostname]**	Execute the ftp command. Type the IP address of the NS for [hostname].
User ([hostname]):**[user ID]**	Log onto the FTP server. Enter the specified user ID.
Password:**[Password]**	Enter the password corresponding to the user ID.
ftp>**binary or ascii (see note)**	Switch to the binary transfer mode or ASCII transfer mode.
ftp>**lcd [source path]**	Move to the folder where the source files are stored in the computer.
ftp>**cd [destination path]**	Move to the folder where the source files will be stored in the NS. (ex. cd /fr1 for screen data)
ftp>**put [file name]**	Specify the desired file and execute data transfer. When transferring more than one file, execute this command for each file or use **mput** command.
ftp>**quit**	Exit ftp server command.
>telnet **[hostname]**	Execute the Telnet command.
User name?:**[user ID]**	Log onto Telnet. Enter the specified user ID.
Password:**[Password]**	Enter the password corresponding to the user ID.
$**reset**	Execute the command to reset the NS.

Note: Enter "ftp>ascii" to switch to the ASCII transfer mode when the parameter files (.ini) are transferred to the "fr0/etc" folder. Switch to the binary transfer mode to transfer the rest of data.

3.2.4. Replacing images
1) General

Images (BMP/JPG) used in the screen data can be replaced during operation of the NS.
The target file to be transferred should be overwritten to the same file to maintain compatibility with project data.

2) Details

Log onto the NS from a computer with FTP and download (put) the desired image(s). After log onto Telnet to initialize the image data cache memory in NS. Switch screen on the NS to display the downloaded image.

Command	Details
>ftp **[hostname]**	Execute the FTP command. Type the IP address of the NS for [hostname].
User ([hostname]):**[user ID]**	Log onto the FTP server. Enter the specified user ID.
Password:**[Password]**	Enter the password corresponding to the user ID.
ftp>**binary**	Switch to the binary transfer mode.
ftp>**lcd [source path]**	Move to the folder where the source files are stored in the computer.
ftp>**cd /fr1**	Move to the destination screen data area (/fr1) in the NS.
ftp>**put [filename]**	Specify the desired file and execute data transfer. When transferring more than one file, execute this command for each file or use **mput** command.
ftp>**quit**	Exit FTP server command.
>telnet **[hostname]**	Execute the Telnet command. Type the IP address of the NS for [hostname].
User name?:**[user ID]**	Log onto Telnet. Enter the specified user ID.
Password:**[Password]**	Enter the password corresponding to the user ID.
$**sendmode 9**	Initialize the image data cache memory in the NS.

3) Remarks

If switch screen is not performed after executing commands mentioned above, the replaced image will not be displayed on NS screen. The initialization of image data cache memory (sendmode 9) does not change the image on the screen. It only loads the image into cache memory.

3.2.5.　Downloading whole screen data

1) General
Screen data files and parameter files of NS can be transferred from a computer to the NS with FTP. It enables transferring screen data without using the Screen Data Transfer tool provided with the NS-Designer.

2) Details
Start Telnet from a computer and log onto the target NS with FTP, clear the screen data area, and download (put) the screen data files. Execute reset command with Telnet, press the reset button on the back of the NS, or restore the power supply to the NS.

Command	Details
>telnet **[hostname]**	Execute the Telnet command. Type the IP address of the NS for [hostname].
User name?:**[user ID]**	Log onto Telnet. Enter the specified user ID.
Password:**[Password]**	Enter the password corresponding to the user ID.
$**sendmode 2**	Execute the command to switch the NS to transfer mode.
$**exit**	Exit Telnet command.
>**ftp-i [host name]**	Execute the FTP command. Type the IP address of the NS for [hostname]. The -i parameter turns off interactive prompting during multiple file transfers.
User ([hostname]):**[user ID]**	Log onto the FTP server. Enter the specified user ID.
Password:**[Password]**	Enter the password corresponding to the user ID.
ftp>**ascii**	Switch to the ASCII transfer mode.
ftp>**lcd [source path]**	Move to the folder where the source files are stored in the computer.
ftp>**cd /fr0/etc**	Specify the path (parameter files area) in the NS.
ftp>**mput *.ini**	Transfer parameter files.
ftp>**binary**	Switch to the transfer mode in binary code.
ftp>**cd [destination path]**	Move to the folder where the source (NS) files are stored.
ftp>**cd /fr1**	Specify the path (screen data area) in the destination (NS).
ftp>**mdelete ***	Delete the screen data files in NS.
ftp>**mput ***	Transfer all screen data files.
ftp>**quit**	Exit FTP server command.
>telnet **[hostname]**	Execute the Telnet command.
User name?:**[user ID]**	Log onto the Telnet. Enter the specified user ID.
Password:**[Password]**	Enter the password corresponding to the user ID.
$**reset**	Execute the command to reset the NS.

3.2.6. Uploading part of screen data

1) General
Screen data files can be transferred from NS terminal to a computer.
Log and recipe files stored in the screen data area of the NS or on a
Memory Card in the NS can also be transferred.

2) Details
Log onto the NS with FTP and upload the desired file(s).

Command	Details
>ftp -i **[hostname]**	Execute the FTP command.
User ([hostname]):**[user ID]**	Log onto the FTP server. Enter the specified user ID.
Password:**[Password]**	Enter the password corresponding to the user ID.
ftp>**binary or ascii (see note 1)**	Switch to the binary transfer mode or ASCII transfer mode.
ftp>**lcd [destination path]**	Move to the target folder of the destination computer.
ftp>**cd [source path]**	Move to the source folder in the NS.
ftp>**mget [filename] [filename]**	Specify the desired file(s) to transfer.
ftp>**quit**	Exit FTP server command.

Note 1: When uploading a setting file (.ini) in the "/fr0/etc", switch to
the ASCII transfer mode. When uploading a file in "/fr1/at0", switch to
the binary transfer mode.

3.2.7. Uploading whole screen data

1) General
The NS project can be transferred from NS to a computer. You would
use it if you want to create a backup of the project that resides
currently in the NS.

2) Details
Log onto the NS with FTP and upload the project files.

Command	Details
>**ftp -i [hostname]**	Execute the FTP command.
User ([hostname]):**[user ID]**	Log onto the FTP server. Enter the specified user ID.
Password:**[Password]**	Enter the password corresponding to the user ID.
ftp>**ascii**	Switch to the ASCII transfer mode.
ftp>**lcd [destination path]**	Move to the target folder in the destination computer.
ftp>**cd /fr0/etc**	Specify the path (parameter file area) in the NS.
ftp>**mget ***	Transfer the parameter files (.ini).
ftp>**binary**	Switch to the binary transfer mode.

ftp>**cd /fr1**	Specify the path (screen data area) in the NS.
ftp>**mget ***	Transfer screen data files.
ftp>**quit**	Exit FTP server command.

3.2.8. Deleting screen data

1) General

It is also possible to delete screen data files in NS.

2) Details

Start Telnet from a computer and log onto the NS with FTP to delete screen data files. You should not delete the setting files in the "/fr0/etc" folder. After deleting files execute the reset command, press the reset button of on the back of the NS, or restore the power of NS.

Command	Details
>telnet **[hostname]**	Execute the Telnet command.
User name?:**[user ID]**	Log onto Telnet. Enter the specified user ID.
Password:**[Password]**	Enter the password corresponding to the user ID.
$**sendmode 0**	Execute command to switch the NS to transfer mode.
$**exit**	Exit Telnet command.
>ftp **-i [hostname]**	Execute the FTP command.
User ([hostname]):**[user ID]**	Log onto the FTP server. Enter the specified user ID.
Password:**[Password]**	Enter the password corresponding to the user ID.
ftp>**cd /fr1**	Specify the path where the screen data files are stored in the destination (NS).
ftp>**mdelete ***	Delete the screen data files in the NS.
ftp>**quit**	Exit FTP server command.
>telnet **[hostname]**	Execute the Telnet command.
User name?:**[user ID]**	Log onto Telnet. Enter the specified user ID.
Password:**[Password]**	Enter the password corresponding to the user ID.
$**reset**	Execute the command to reset the NS.

3.3.   Function Details

1) Screen image of the System Menu
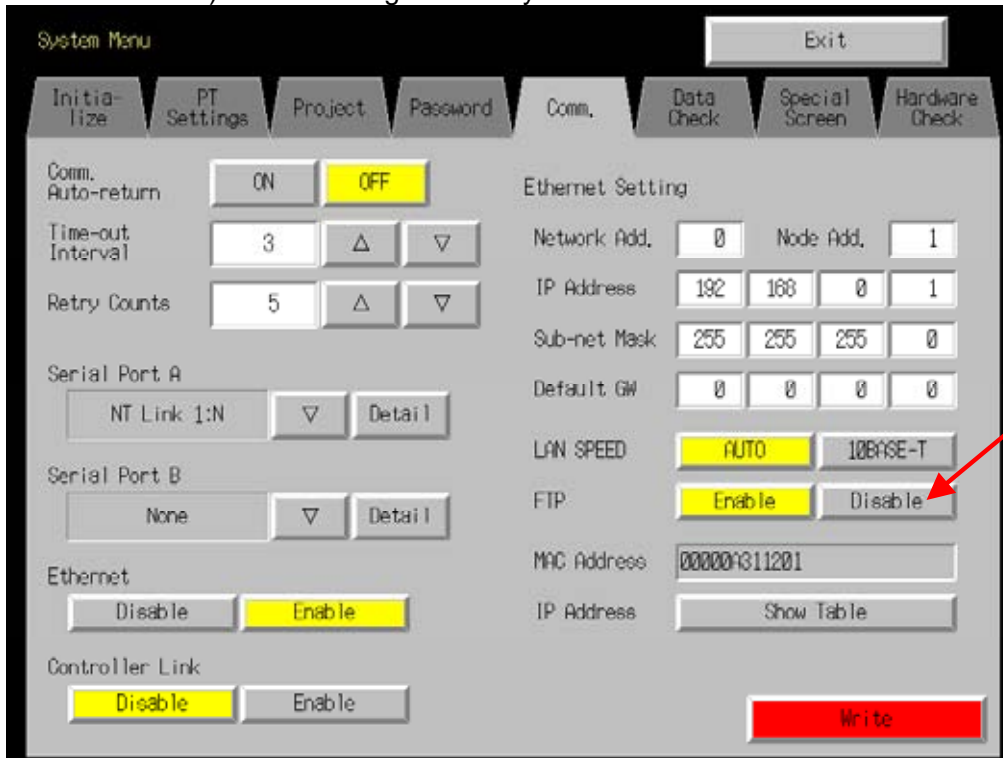
-Settings

FTP	Function
Enable	Starts the service of FTP and Telnet. The NS can be accessed from a computer with FTP and telnet. This will be reflected after restarting the NS.
Disable (Default)	Disables the use of FTP and Telnet. This will be reflected after restarting the NS.

-Maintain of the set values
Set values are held in the SRAM that is backed up in the NS. Those will be initialized if they have been lost because of battery discharge. Also setting goes back to the default.

-Setting Values
The set values are read when starting the NS to determine whether services of FTP and telnet start. Press *Write* button on the screen and restart the NS to reflect the changes of settings.

2) Sendmode command
Sendmode <Screen No.> [<Progress of data transfer>]

Screen No.	Function
0	The NS switches to the "Connection Complete" screen. It can be switched with an

	application when downloading, uploading or deleting data.
1	The NS switches to the "Transmission Complete" screen. This command should be used if it is necessary to show this message on the NS.
2	The NS switches to the "Download" screen.The progress of transmission can be specified in this screen. Switch to this screen with an application when downloading the data so that the progress is shown on the NS.
3	The NS switches to the "Upload" screen.The progress of transmission can be specified in this screen. Switch to this screen with an application when uploading the data so that the progress is shown on the NS.
9	Initializes the image data (BMP/JPG) cache memory. Execute this command and switch screen after transferring an image. Then the transferred image can be shown on the screen.

Note 1: If a parameter has been skipped, the command usage will be shown.

Note 2: If a parameter between 4 and 8 or more than 9 has been specified, the command usage will be shown.

Progress	Function
0 to 100	It fills the progress bar to show the specified percentages when displaying the screen "Transmitting" (displaying the yellow bar on the screen). The parameter "2" or "3" earlier mentioned only activates this command.

Note 1: If setting this command has been skipped after selecting the parameter (Screen No.) "2" or "3", the action will be same as specifying "0".

Note 2: If a parameter higher than 100 has been set, it will be regarded as 100 (the number more than 256 and less than 0 cannot be set).

-Case that the screen No. 0 is shown on the NS.

Connection Complete

Start downloading/uploading

-Case that the screen No. 1 is shown on the NS.

Transmission
Complete

- Case that the screen No.2 is shown on the NS.

Transmitting...

File Name:

Tool --> NS Hardware
(Download)

Case that the screen No. 3 is shown on the NS.

Transmitting...

File Name

NS Hardware --> Tool
(Upload)

3.4.　　Note

- Do not dele the paramater files (.ini) in the "/fr0/etc/" of NS.
  Only overwrite the normal parameter files (.ini) created with the NS-Designer.
- Set the ASCII transfer mode when downloading/uploading the parameter files (.ini).
- Set the transfer mode as binary transfer mode when downloading/uploading the screen data files and the project file (.ipp).
- Files in the "/fr1" folder of NS must be deleted before downloading whole screen data. Use the subcommand "delete" for deleting the data files.