

**Ethernet Interface
Part.-No. 5942362**

**Fast Ethernet Interface
Part.-No. 5942363**

Operator's Manual

Edition 3/03



Product Description

The **Ethernet Interface / Fast Ethernet Interface** makes it possible to connect A-Series printers to a network using a **10 Base T / 100 Base T** network connector and TCP/IP Protocol.

Using the Ethernet Interface allows functions such as :

- Printing with LPR/LPD or RAW-IP
- Direct assignment of an IP Address or use of DHCP Servers
- Query status and change printer settings using HTTP
- Manipulate files stored on the memory card and update Firmware via FTP
- Send the status and error messages by E-Mail (EAlert) and SNMP
- Synchronize the date and time using a Remote Time Server



NOTICE !

The ability to use the available functions depends on the configuration of the local network.

Installation of the Interface

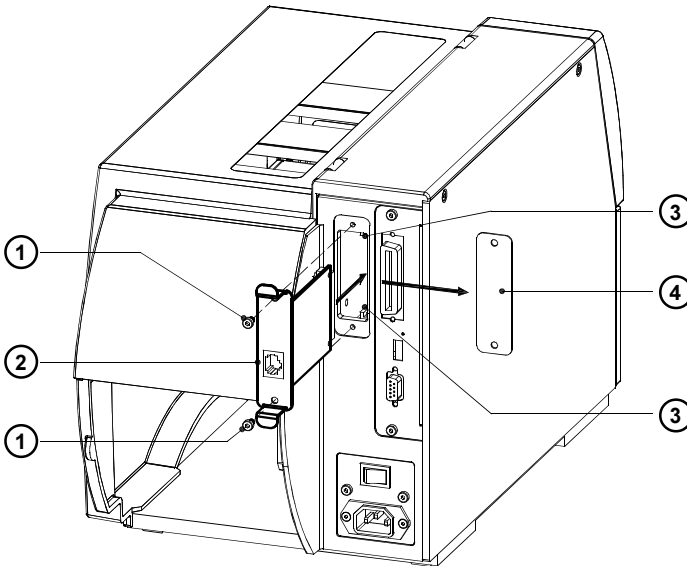


Fig. 1 Installation of the Interface



CAUTION !
Make sure the power to the printer is OFF !

1. Loosen the screws (1) and remove the plate (4)
2. Align the Ethernet Interface (2) with the guide (3).
3. Slide the interface into the printer completely until it stops.
4. Secure the interface using the screws (1).

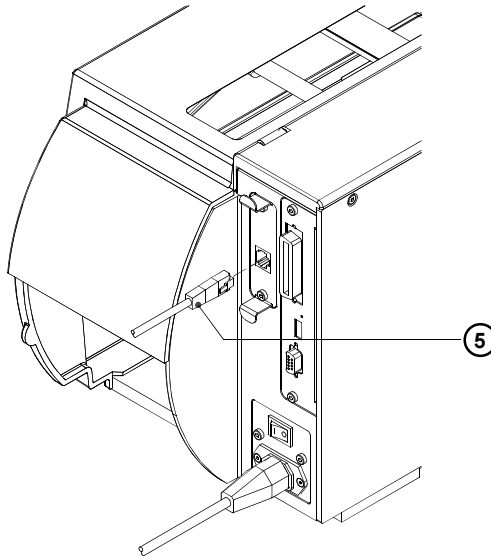


Fig. 2 Connecting the Interface Cable

5. Connect the printer using an RJ-45 cable for 10 Base T / 100 Base T (5) to the network.



CAUTION !
For connecting the printer to the network you must use a shielded cable !

For connecting the printer to a network socket use a patch cable.
For a direct connection to an ethernet interface of a local computer a crossover cable must be used.

6. Power the printer on.

Configuration

Basic Adjustments using the Control Panel

The basic adjustments for the operation of the Ethernet Interface are to be made using the control panel on the printer.



NOTICE !

Please refer to the printer's Operators Manual for instructions on how to use the Navigator pad for configuring the printer.

1. Switch from "Online" mode to the offline-menu by pressing the **[MODE]** key.
2. Press the **[↑]** key or the **[↓]** key to reach the "Setup" menu. Press the **[←]** key.
3. If the printer is protected against unauthorized access with a PIN number, you must enter the PIN number.
4. Select the secondary "interfaces" menu by pressing the **[↑]** key or the **[↓]** key. Press the **[←]** key.
5. Press the **[↑]** key or the **[↓]** key to reach the "Ethernet" parameter. Press the **[←]** key.








 Setup			
 Interfaces			
 Ethernet			
Parameter	Meaning	Selections	
 DHCP	Method of assignment for IP Address Default : On	On Off	
 IP (only with DHCP : Off)	Direct input of the IP address	000.000.000.000 ... 255.255.255.255	
 MASK (only with DHCP : Off)	Input of the SubNet mask	000.000.000.000 ... 255.255.255.255	
 Gateway	Connection of the local area network to other networks Default : Off	Off IP DHCP (option available only with DHCP: On)	

Table 1 Ethernet Menu Outline

DHCP

In order to use the printer on a network, the printer must be assigned an IP Address. By adjusting the "DHCP" parameter, it is determined if the IP Address will be assigned fixed or dynamically using DHCP (Dynamic Host Configuration Protocol).

In order to use DHCP, you must have DHCP Servers on the network. If DHCP Servers are available, the assignment of the IP Address can be automatic. If no DHCP server is available, you must manually enter the assigned IP Address.

IP

If you must input the IP Address manually, make sure that the range is correct for your local network.

Mask

A defined SubNet mask of the local area network must be defined separately from the IP address. The mask defines the classification and the address range of the local area network.

Gateway

A connection between the local and other networks is achieved through the activation of a Gateway. Designate the IP Address of the Computer (or Router) through which a connection can be made.

If a dynamic address assignment for the printer over DHCP was agreed upon, the address of the Router can also be transferred by DHCP. A Gateway must be activated if the printer is to be accessed by a computer outside the local network.



NOTICE !

In addition to the parameters accessible with the control panel, a number of additional parameters can be accessed using the printer's internal webpage.



NOTICE !

If you want to change parameter settings using the printer's internal webpage, first the setup has to be protected by a PIN ! The first setting of this PIN only can be made directly at the printer using the printer's control panel ! You will need to enter the correct PIN for each setting using the printer's webpage !

If no PIN was set, no setup change using the printer's webpage is possible !

The PIN can be set in the menu „Setup -> Security -> PIN“. For details see the Operator's Manual of the printer.

Adjustments over the Printer Web-Page

The firmware of the printer contains an internal webserver which can be accessed using a Java enabled Browser (I.E. Microsoft Internet Explorer 4.X, Netscape Navigator 4.X or higher). You will find details and instructions on how to use this webserver below.

1. Start the Internet Browser.
2. Access the printer's web-page by entering the printer's IP Address in the Internet Browser :
Example **http://192.168.100.208**
3. The printer's web-page will appear in the Internet Browser.
4. When the applet starts, the Status tab will be displayed. Make sure the printer status is 'Online' before making adjustments to the printer.
5. Change to the "Info" tab. In this tab, all configuration parameters can be set.
6. In the top window, the parameters are arranged in a tree structure. To modify a parameter, click on the parameter name or the symbol next to the parameter. Once selected, adjustments can be made in the lower window.
7. In the example Fig. 3, the "Info" tab under the "Ethernet" option is displayed.
8. Once the desired changes have been made, click the OK button in the lower part of the screen. After that the PIN will be requested. Enter the correct PIN.

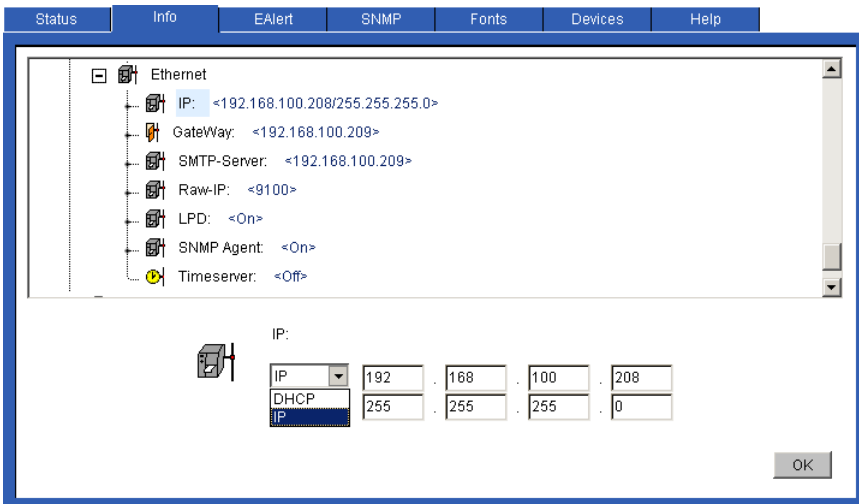


Fig. 3 Java Applet displaying the printer's Info tab under the Ethernet option using an Internet Browser.

IP and Gateway

The IP and Gateway settings can be seen here. However, these parameters should not be changed, since the connection to the printer would be lost.

SMTP Server

The printer has the ability to send email based on the occurrence of certain error conditions to selected email addresses. Notices when 20km of labels (thermal transfer) and 5km of labels (direct thermal) are printed can also be sent out.

To use this feature, the parameter SMTP (**S**imple **M**ail Transfer Protocol) Server must be set to "On" and a valid IP Address for the SMTP server is entered.

More information on sending emails can be found in "Printer Web-Page / EAlert".

Raw-IP

Raw-IP is a service for printing on the network. In order to print with this service, one of the port addresses must be selected.

LPD

LPD is a network printing service. The service is available under Windows NT4.0, Windows 2000 and Windows XP.

To use the printing service, the "LPD" parameter must be set to "On".

SNMP Agent

SNMP (**S**imple **N**etwork **M**anagement **P**rotocol) is a query and command language between managing stations on the one hand and managed units on the other hand. For that purpose the managed unit (the A-series printer) needs a software module, the SNMP agent.

For SNMP communication between printer and managing station the parameter "SNMP Agent" must be set to "On".

More information on possible SNMP messages of the printer can be found in "Printer Web-Page / SNMP".

Timeserver

The Timeserver parameter makes it possible to connect with an Internet Timeserver and synchronize Date and Time of the printer. To use, set the "Timeserver" parameter to "On" and input the IP Address for the Timeserver. The synchronization takes place once an hour. The time received from the Timeserver is not stored permanently in the printer. If the printer is powered down, then restarted, the time displayed will be from the printer's internal clock and not the timeserver. To more closely align the internal clock with the time server, make the necessary changes to the Time parameter and click OK.

Printer Web-Page

The firmware of the printer contains an internal Web-page that can be accessed using Ethernet and an Internet Browser with Java applets enabled.

1. Start the Internet Browser.
2. Access the printer's web-page by entering the Printer's IP Address in the Internet Browser :

Example **http://192.168.100.208**

3. The printer's web-page will appear in the Internet Browser.

"Status" Tab

Date/Time	Description
02-21-2003/01:42:33 pm	Online

Fig. 4 Printer Web-Page "Status" Tab

After loading the printer's web-page, the "Status" tab is displayed. The "Status" tab contains the following information :

- the type of printer
- the firmware version
- the printhead temperature
- the element voltage for the printhead (the element voltage is switched on only during printing; otherwise 0.0 V is displayed)
- the printer status (Ready, Printing Label, Setup or Error)



NOTE !

The information does not update automatically on the Web-Page. For the current status, click the Update button. Update will also take place when a tab change is made.

Status		Info	EAlert	SNMP	Fonts	Devices	Help
A3/300							
Firmware V2.82 (Feb 17 2003) Bootloader V1.01 26.03.2001 Temperature 76 °F Heat voltage 0.0 V							
Printer info				Error			
Date/Time		Description					
*02-21-2003/01:47:04 pm		Head open					
02-21-2003/01:46:53 pm		Out of paper					
02-21-2003/01:46:46 pm		Out of ribbon					
02-21-2003/01:46:45 pm		Online					
							<input type="button" value="Update"/>

Fig. 5 Printer Web-Page - "Status" Tab - Error List

The lower area of the display you will find a list of the error conditions, which occurred since powering on the printer. The list will display the last eight events.

If the printer is currently in an error condition, the error will appear Bold and will be indicated with an *.

Fig. 5 shows in the last line, when the printer was switched on (Online). The other lines show 3 error conditions.

Info Tab

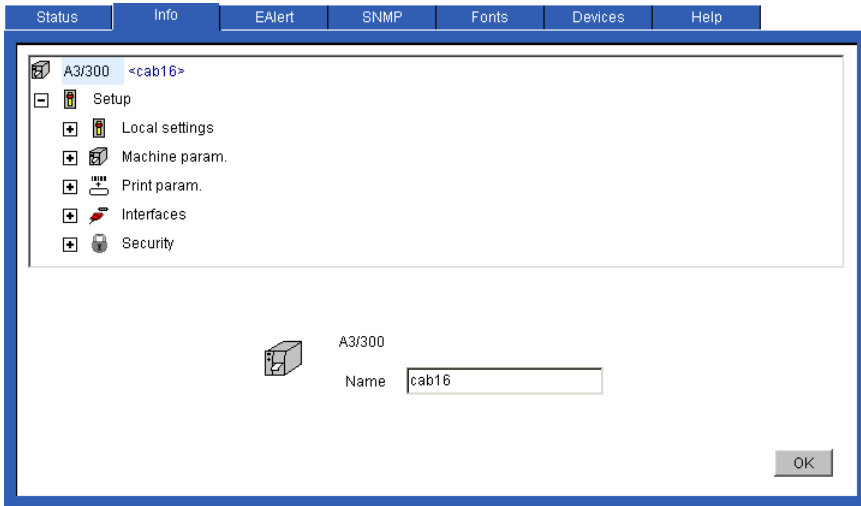


Fig. 6 Printer Web-Page - "Info" Tab

The "Info" tab allows configuration of the parameters which are also accessible using the printer's control panel "Adjustments" menu.



NOTICE !

If you want to change parameter settings using the printer's internal webpage, the setup has to be protected by a PIN ! If the setup is protected, the parameter PIN in the path „Setup-Security“ is set to „On“ ! The first setting of this PIN only can be made directly at the printer using the printer's control panel !

Make sure the printer is Online before making adjustments using the Web-Page. You can check the printer's status by using the "Status" tab.

In the top window, the parameters are arranged in a tree structure. To modify a parameter, click on the name or symbol of the parameter you wish to change. Once selected, the adjustment can be made in the lower window. Confirm the change by clicking the OK button. If the printer is protected against unauthorized access with a PIN number, you must enter the PIN number before changes will be accepted.

Information for the individual parameters can be found in the printer's Operators Manual. The Ethernet parameters are described in the Configuration paragraph in this manual. At the highest level of the tree structure, you can assign a name (see Fig. 6) for the printer. The name can be used to identify the individual printers on a network.

EAlert Tab

When using the Ethernet Interface it is possible for the A-series printers to send error messages by email to selected email addresses. Notices when 20km of labels (thermal transfer) and 5km of labels (direct thermal) are printed can also be sent out.



NOTICE !

For the use of this function, it is necessary to have an SMTP Server configured. (See Configuration page).

The selection of what messages are transmitted and what email address they are sent to are made using the "EAlert" tab on the printer's Web-Page.

The screenshot shows the "EAlert" tab of a printer's web interface. At the top, there are navigation tabs: Status, Info, EAlert (selected), SNMP, Fonts, Devices, and Help. Below the tabs is a table with two columns: "Description" and "Email".

Description	Email
Return address	printer16@firma.com
Out of paper	service2@firma.com
Out of ribbon	service2@firma.com
Thermal transfer: 20km	service1@firma.com

Below the table, there is a configuration section. On the left, a dropdown menu is open, showing a list of error conditions: Return address, Out of paper, Out of ribbon, Head open, No label found, Voltage error, Cutter blocked, and Cutter jammed. The "Return address" option is currently selected. To the right of the dropdown is an "Email:" label followed by an empty text input field. At the bottom right of this section are two buttons: "Delete" and "Set".

Fig. 7 Printer Web-Page - "EAlert" Tab

Before emails can be transmitted, a valid return address must be recognized by the SMTP Server.

Click the down arrow on the Pull down menu in the lower half of the screen and select "Return address" from the choices. Enter the return email address in the "Email" box and click the "Set" button. The return address will appear in the upper section of the screen.

Select the messages the same as above for the individual error condition and the email address to send the message to. The selected email address will appear in the upper window next to the selected error condition.

Modifying or deleting the selections is possible after clicking the desired line in the upper half of the screen.

If the printer is protected against unauthorized access with a PIN number, you must enter the PIN number before changes will be accepted.

Emails are automatically sent when the error condition occurs.

SNMP Tab

SNMP (Simple Network Management Protocol) is a query and command language between managing stations on the one hand and managed units (the A-series printer) on the other hand. For SNMP communication between printer and managing station the parameter "SNMP Agent" must be set to "On". (see "Adjustments over the Printer Web-Page").

	Sink 1	Sink 2
IP	192.168.100.100	0.0.0.0
Community	public	public
Trap		
Critical fault	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Media error	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Startup	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Offline	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Set

Fig. 8 Printer Web-Page - "SNMP" Tab

The "SNMP Tab" allows configuration of the SNMP communication between the printer and the managing stations.



NOTICE !

If you want to change parameter settings, the setup has to be protected by a PIN ! If the setup is protected, the parameter PIN in the path "Setup-Security" is set to "On" !

The first setting of this PIN only can be made directly at the printer using the printer's control panel !

Make sure the printer is Online before making adjustments using the Web-Page. You can check the printer's status by using the "Status" tab.

To modify a parameter, click on the concerning window. Confirm the change by clicking the "Set" button. After that you must enter the PIN number before changes will be accepted.

IP

IP setting for two managing stations, which may communicate with A-series printer via SNMP.

Community

Several SNMP managing stations can be put together as a community. The membership to a community the managing station declares with the SNMP community string (a kind of password). The standard default string is „public“.

Trap

The SNMP agent sends an event notification, called a trap to the managing station to identify the occurrence of special conditions. These traps are sent without request of the managing station.

For the A-series printer the following traps may be chosen :

- Critical fault :** All hardware and protocol error messages, which occur during operation, will be sent to the managing station.
- Media error :** If that function is chosen, the following error messages will be sent to the managing station :
- Out of ribbon
 - Out of paper
 - No label found
 - Head open
 - Warn level ribbon
- Startup :** The managing station gets a message, when the printer is switched on.
- Offline :** The managing station gets a message, when the printer is switched from "Online" mode to the offline-menu by pressing the **[MODE]** key of the printer's navigator pad.

Fonts Tab

In the "Fonts" tab, the parameters of the character fonts available are listed. the table contains both printer internal fonts and the character fonts which have been downloaded to the printer.

No.	Name	Type	Description
-1	_DEF1	Bitmap	Default Font 12x12 dots
-2	_DEF2	Bitmap	Default Font 16x16 dots
-3	_DEF3	Bitmap	Default Font 16x32 dots
-4	OCR_A_I	Bitmap	OCR-A Size I
-5	OCR_B	Bitmap	OCR-B
3	BX000003	TrueType	Swiss 721
5	BX000005	TrueType	Swiss 721 Bold
596	BX000596	TrueType	Monospace 821

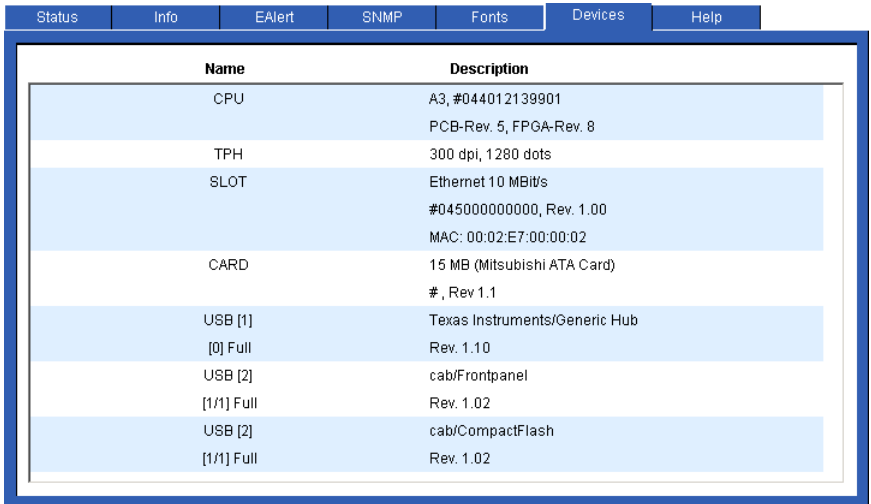
Fig. 9 Printer Web-Page - "Fonts" Tab

The parameters on the screen are defined as follows :

- No.** : Identifying number assigned to the font used for programming.
- Name** : The printer's internal name for a font.
- Type** : Defines what type the font is, such as Bitmap, Speedo, etc.
- Description** : Description of the font. (size, font family)

Devices Tab

The "Devices" tab displays the hardware components of the printer, as well as the devices that are attached to the printer.



The screenshot shows a web interface with a navigation bar at the top containing tabs: Status, Info, EAlert, SNMP, Fonts, Devices (selected), and Help. Below the navigation bar is a table with two columns: Name and Description. The table lists various hardware components and their specifications.

Name	Description
CPU	A3, #044012139901 PCB-Rev. 5, FPGA-Rev. 8
TPH	300 dpi, 1280 dots
SLOT	Ethernet 10 MBIT/s #045000000000, Rev. 1.00 MAC: 00:02:E7:00:00:02
CARD	15 MB (Mitsubishi ATA Card) #, Rev 1.1
USB [1] [0] Full	Texas Instruments/Generic Hub Rev. 1.10
USB [2] [1/1] Full	cab/Frontpanel Rev. 1.02
USB [2] [1/1] Full	cab/CompactFlash Rev. 1.02

Fig. 10 Printer Web-Page - "Devices" Tab

The parameters in the "Devices" tab are defined as follows :

- CPU** : Type and serial number of the CPU Printer Circuit Board and revision number of the Printer Circuit Board and FPGA
- TPH** : Resolution and number of heating points of the installed thermal print head
- CARD** : Storage capacity, manufacturer, serial number and version number of the installed FlashCard
- SLOT** : Type, serial number and revision status of the installed interface expansion card
- USB [a]** : Type and revision status of the installed USB devices
 - [b/c]Speed** a : Identifying number of the USB device
 - b : Identifying number of the USB device, which is connected to device a
 - c : Identifying number of the device b port, which is connected to device a
 - Speed : Low- or Full-Speed USB device

Help Tab

A support page for the Printer Web-Page will be displayed when clicking the "Help" Tab.

Printing on a Network

For editing label contents and for starting the printing of jobs standard Windows applications can be used. In addition, you must install the Windows Printer Driver for the printer. The printer can be operated on a network using the printing protocols "Raw-IP" and "LPD".

Availability and Installation of the Printing Protocols under Windows

Under Windows NT4.0 and Windows 2000 the protocols are available, but LPD is not installed using the standard installation. Under NT, an LPR protocol port can be installed and configured to print to an LPD (Line Printer Daemon) enabled printer like the A3. Windows 2000 offers a new port monitor which is called Standard Port Monitor (SPM). SPM is installed by default when TCP/IP is installed in Windows 2000 and can be reconfigured for LPR- or Raw-IP protocol. Information for installing and configuring these protocols can be found in Windows documentation.

Under the Windows 95/98/ME operating system, there is no built-in support for Raw-IP and LPD but network printing is still possible. There are Third-Party solutions for using TCP/IP with the printer. It is necessary to install special tools in order to use these printing protocols. Information about these Tools are available from cab or Tharo Systems Inc. .



NOTICE !

When Raw-IP is installed, you can select between port addresses of 2501, 3001, 3002, 9100, 9101, 9102 and 9103. The same port address must be configured in the printer.

Adjustment of the Windows Printer Settings

In order to use the printing protocols Raw-IP or LPD, the Windows Printer Settings must be configured as follows :

1. Click on Start -> Settings -> Printer.
2. Click the right mouse button when highlighting the selected printer.
3. Click on Properties and select Details or Adjustments.
4. In the list, you should find the printing protocols installed along with the standard printing protocols. The names of the printing protocols depend on the installation tools used.
5. Select the Raw-IP or LPD option and click OK.



NOTICE !

In the labeling software package EASYLABEL, the Raw-IP Printing protocol is already integrated. With the installation EASYLABEL, RAW-IP is immediately available. An update of the current EASYLABEL version can be downloaded from the website <http://www.tharo.com> free of charge.

FTP Printer Administration

Using the File Transfer Protocol (FTP) you can send files over the network. For the handling of files, you can use most common FTP programs (FTP-Clients), with which files from a local computer or server can be uploaded or downloaded, deleted and overwritten.

With the FTP printer administration, the A-series printers will function as an FTP Server.



NOTICE !

For administration of the A-series printers, you must use an FTP Client that has Binary data transfer available.

The FTP-Printer administration covers two functions :

- Manipulation of files on the memory card installed in the printer.
- FTP firmware update

FTP Log-on

To setup an FTP connection, you must connect to the server using an FTP Client. The details on how to log-on depend on what client is being used. The following information is required for the FTP Client :

1. The IP Address for the printer
2. User name / Password

username : "anonymous" / any password

With this log-in you are able to display and download the files stored on the memory card.

username : "root" / password: PIN number of the printer

This log-in permits displaying, Upload and Download of memory card files and FTP firmware update.



NOTICE !

For successful log-in with the "root" user name, the PIN number must be preconfigured in the Printer's settings. This PIN number is to be input during the FTP log-on as password.

Information of configuring the PIN number can be found in the Operator's Manual for the printer in the Printer Configuration section under Security. If no PIN was assigned, this can be done using the printer's Website under the "Info" tab.

After the log-in is made, accessing the FTP-Server is similar to accessing a Windows file (Fig. 10).

Structure of the FTP Server

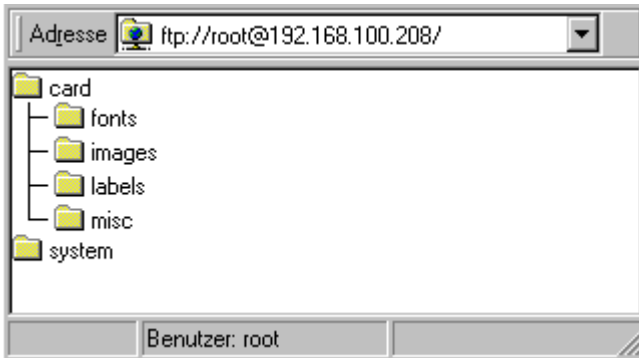


Fig. 11 Structure of the FTP Server

The files accessible over the FTP are divided into two separate directories.

The "card" directory contains the files that are stored on the memory card installed in the printer.

The "system" directory contains the firmware of the printer as a file.

Administration of the Memory Card



NOTICE !

Make sure before accessing the memory card that the printer is in the Online mode. You can check the status of the printer by using the "Status" tab on the printer's web-page.

Download

A download of the files stored on the memory card can take place using both the "anonymous" log-in and the "root" log-in. The screen will display the different file types and structure of the card files.

Upload

For uploading to the card, it is necessary to log-in as "root". In order to upload label files, they must have the extension of **.LBL**. When copying the files onto the memory card, the files will be automatically sorted after the file upload takes place.

FTP Firmware Update



NOTICE !

Make sure the printer is in the Online mode before attempting a firmware update. You can check the printer's status by using the printer's web-page under the "Status" tab.

In order to upload the firmware update, you must be logged-in as "root" (see "FTP Log-on paragraph").

1. Configure the FTP Client for "Binary" transfer mode.
2. Open the "system" folder
3. Copy a valid firmware file (I.E. 282_3217.a3) into the "system" folder.
4. On the printer's display "FTP-Firmware-Upd." should appear. During the uploading of the firmware, a progress bar should be displayed on the LCD. After the file has uploaded correctly, the printer will reset.

The success of the firmware update can be checked using the Printer's web-page and the "Status" tab.

Error Messages

The following table contains an outline of the error messages displayed in the printer display, which can occur when using the Ethernet Interface.

Error	Possible Cause	Possible Solution
No DHCP Server	<ol style="list-style-type: none">1. Printer is not configured for DHCP.2. DHCP Server is currently unavailable.	<ol style="list-style-type: none">1. In DHCP configuration, set to "Off" and assign an IP Address2. Inform the network administrator.
No Link	Missing network connection <ol style="list-style-type: none">1. Interface cable is not connected to the printer.2. Error with the network connection.	<ol style="list-style-type: none">1. Connect cable. If connected, contact your re-seller.2. Inform the network administrator.
No SMTP Server	<ol style="list-style-type: none">1. SMTP Server is not selected in configuration.2. SMTP Server is currently unavailable. Inform the network administrator.	<ol style="list-style-type: none">1. Set SMTP Server configuration to "On" Note ! EAlert becomes available !2. Inform the network administrator.
No Timeserver	<ol style="list-style-type: none">1. Timeserver is currently unavailable.	<ol style="list-style-type: none">1. Inform the network administrator.

Table 2 Error Messages

Copyright SNMP Agent

Copyright 1988, 1989 by Carnegie Mellon University

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