

***EPSON FP-81 II, FP-81 II S, FP-81 II T and
FP-90 III***

REVISION HISTORY

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C	Various	Added graphic file uploading. Updated web page text. Minor improvements made throughout the document.	30 th July 2013	Philip Barnett
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E	Various	Added SQLite note to PHP. Added DNS and TLS notes regarding firmware 3.00 and 3.005. Added SSL note regarding firmware 3.009 and that SSL MODE changes require a printer restart. Updated e-mail practical example. Added cross-domain chapter regarding trusted sites. Added note regarding unsupported special characters in upload filenames. Added note ref php-cgi.zip. Added "Uploading Fpmate CGI Web Service" section. Added "Web Application Loading at Printer Restart" section. Expanded abbreviations. Added / corrected minimum firmware level notes throughout.	29 th January 2014	Philip Barnett
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1 Overview

1.1 Description

The aim of this guide is to provide basic information to software designers who want to make use of the intelligent fiscal printer web functionality. This encompasses browser access, PHP, Samba, graphics, pen drives and e-mail plus uploading.

1.2 List of Related Documents


- Epson_FP_Manuale_Operatore
- Fiscal ePOS Print Solution Dev Guide
- Protocollo di Comunicazione

1.3 Abbreviations

- BMP: Bit Map Picture
- CGI: Common Gateway Interface
- CSS: Cascading Style Sheets
- DDN: Device Data Notification
- DNS: Domain Name System / Server
- FAT: File Allocation Table
- FP: Fiscal Printer
- HTTP: HyperText Transfer Protocol
- HTTPS: HyperText Transfer Protocol Secure sockets
- LAN: Local area Network
- MF: Memoria fiscale (fiscal memory daughter board)
- NVRAM: Non-volatile RAM
- PHP: PHP HyperText Preprocessor
- PID: Product ID
- RAM: Random Access Memory
- RNDIS: Remote Network Driver Interface Specification
- RRJ: Remote Request Job
- SDP: Server Direct Print
- SF: Scheda fiscale (fiscal main board)
- SMTP: Simple Mail Transfer Protocol
- SQL: Structured Query Language
- SSID: Service Set Identifier
- SSL: Secure Sockets Layer
- TCP/IP: Transmission Control Protocol / Internet Protocol
- TLS: Transport Layer Security
- URL: Uniform Resource Locator
- USB: Universal Serial Bus
- VID: Vendor ID
- XML: eXtensible Markup Language

2 Web Server

Intelligent fiscal printers are also web servers. To make use of this functionality, the following steps must be performed:

1. Configure the IP address, subnet mask and default gateway via SET 19. If the wireless adapter is used, continue further down the SET 19 menu structure to enable wireless mode and set the SSID. If necessary configure the encryption details. Note that a USB hub is required if both a wireless adapter and a keyboard and/or pen drive are to be connected at the same time. Please refer to the *Epson_FP_Manuale_Operatore* document for the exact procedure.
2. Connect either the intelligent fiscal printer LAN port to the Ethernet network by cable or insert the wireless adapter into the type A USB port (or hub). Be careful not to confuse the LAN and display ports since they are both of the RJ-45 type. The LAN port has the  symbol next to it.
3. Configure the User ID and password if required (SET 34 WEB SERVER sub menu).
4. Configure SSL if required (SET 34 WEB SERVER sub menu). Requires firmware >= 3.009.
5. If required, configure PHP (SET 34 PHP sub menu) and load php cgi service (available on request). Requires firmware >= 4.01.
6. Activate or deactivate web application loading at printer restart (SET 34 WEB APPLICATION sub menu). Requires firmware >= 4.00.
7. Open a browser and set the URL to the printer IP address only (<http://xxx.xxx.xxx.xxx> or <https://xxx.xxx.xxx.xxx>).
8. Verify that the following root directories appear:
 - cgi-bin
 - www

3 Status Page

The intelligent fiscal printer comes bundled with a printer status web page. Click the following sequence to access it:

- www → printer_status → get_status.html

or enter one of the following URLs:

- http://xxx.xxx.xxx/www/printer_status/get_status.html
- https://xxx.xxx.xxx/www/printer_status/get_status.html

The following page should appear:

Stato Stampante Fiscale

Risultato	true	Stato MF	0
Codice		Stato Stampante	Carta in esaurimento
Descrizione	2	Stato DGFE	OK
Versione SF	4.014	Stato Cassetto	Aperto
Versione MF	04.0	Stato Scontrino	Fiscale/Non fiscale chiuso
Versione fpmate	1018	Stato Operativo	Stato registrazione



The above example shows everything in order and the printer ready for use. It also warns that the paper is low (Carta in esaurimento).

4 Uploading

Intelligent fiscal printers can store web pages and process uploaded PHP * and graphic files **. From firmware version 3.00D onwards, the fpmate.cgi web service can also be updated (zip file available on request).

* PHP available from firmware version 4.01

** Graphics available from firmware version 3.009

4.1 Connecting and Using the Upload Service

1. Click the following sequence:

cgi-bin → upload.cgi

or enter one of the following URLs:

- SSL deactivated – <http://xxx.xxx.xxx.xxx/cgi-bin/upload.cgi>
- SSL activated – <https://xxx.xxx.xxx.xxx/cgi-bin/upload.cgi>

2. An upload page should appear:

UPLOAD FILE

File type: webapp.zip - image.bin - image.bmp

File Upload: (Choose the file to upload)

3. Click "Sfogliala" and browse to the file or zip file to upload.
4. Watch the intelligent printer display and click "upload". Please be patient as it may take time for the printer to unzip the file.

4.2 Uploading Web Applications

Web pages are saved to non-volatile fiscal board FLASH memory or to USB Pen Drives *. Web pages are available even after a power interruption. Files and folders are not uploaded individually; a zip of the entire structure has to be uploaded after which the printer automatically executes an unzip. It then copies the structure to working RAM. It also copies the structure to either non-volatile FLASH memory or to the USB Pen Drive. The structure can contain CSS styling, JavaScript and images just like any other web server. From version 4.01 onwards, the printer can execute PHP server side scripts. The printer can also process a single automatic PHP script file as described in the PHP section.

* USB Pen Drive functionality available from firmware 3.009.

To upload web applications, the following steps must be performed:

1. Create a zip file of your web application pages making sure that the home page path is located in the root directory. The zip filename should be less than 33 characters long (excluding the extension) and must not contain any spaces or special characters such as (.).
2. Follow the instructions for connecting to the upload service.
3. Browse to the web application zip file created in step 1.
4. Wait until the message "WEB APPLICATION SALVA IN MEMORIA..." is replaced by the message "WEB APPLICATION FINE SALVATAGGIO". This should coincide with an updated web page response to the browser that contains the following lines:

Filename: <path>|<file>.zip (Internet Explorer) otherwise:

Filename: <file>.zip

Filesize: xxxxxx bytes

Content of the file: application/x-zip-compressed

*rm -f -r *.zip*

UPLOAD OK

*rm -f -r /var/web_server/www/webapp/**

unzip <file>.zip -d /var/web_server/www/webapp

Note that if the zip is small, the message will disappear immediately from the display and conversely if the zip is large, the message will not appear immediately.

4.3 Uploading PHP Files (Firmware >= 4.01)

PHP files must be included in the web pages zip file. The automatic PHP script that can be executed during fiscal receipt emission must reside under /www/webapp/. The PHP service (available on request) has to be uploaded to the intelligent fiscal printer (file php-cgi.zip). The fiscal printer retains the PHP functionality after a power interruption. The PHP service also includes SQLite.

4.4 Uploading Graphic Files (Firmware >= 3.009)

Graphic files are not saved to non-volatile memory and are therefore lost after the printer is powered off completely – Files are retained if switching off with the front power switch. After having uploaded an image, the file is processed and then kept or deleted only during the print out of either a fiscal receipt or non-fiscal receipt according to the SET 34 GRAPHIC FILE → TYPE setting. Please refer to the *Epson FP Manuale Operatore* guide. Please note that the /www/graphic/ folder should only contain one file – If more than one file exists, graphic file management is deactivated by the printer. The filename must not contain any spaces and must not be longer than 35 characters long including the .bin / .bmp extension.

To upload graphic files, the following steps must be performed:

1. Prepare a BMP or Epson raster format bin file taking care to make sure that:
 - a. The filename is no more than 31 characters long (excluding the extension).
 - b. The filename does not contain any spaces or special characters such as (.
 - c. The filename extension is lower case (i.e. either .bmp or .bin).

Epson recommends a file size less than 20KB.

The printer can accept monochromatic, 16 colour and 256 colour BMP formats. However, since it only ever prints monochromatic, monochromatic format files should be used as no quality benefit is gained from using the other formats. Monochromatic files are also smaller and get processed and printed much quicker.

2. Follow the instructions for connecting to the upload service and browse to the graphic file prepared in step 1.
3. Click "upload". The updated web page should contain the following lines:

```
-----  
Filename: <path>|<file>.bin or .bmp (Internet Explorer) otherwise:  
Filename: <file>.bin or .bmp
```

```
Filesize: xxxxxx bytes
```

```
Il contenuto del file era: application/octet-stream
```

```
rm -f -r *.zip
```

```
UPLOAD OK
```

```
rm /var/web_server/www/graphic/*.bin mv 2.bin /var/web_server/www/graphic or
```

```
rm /var/web_server/www/graphic/*.bin mv 2.bin /var/web_server/www/graphic  
-----
```

4. Check that the file exists under:

www → graphic

or enter one of the following URLs:

- SSL deactivated – <http://xxx.xxx.xxx.xxx/www/graphic>
- SSL activated – <https://xxx.xxx.xxx.xxx/www/graphic>

4.5 Uploading Fpmate CGI Web Service (Firmware >= 3.00D)

A new fpmate web service version (available on request) can be uploaded which takes effect immediately by substituting the cgi-bin/fpmate.cgi file. A zip file called fpmate.zip must be uploaded. The update is also saved to NVRAM. However, the original version bundled with the firmware still remains available. The SET 34 FPMATE.CGI UPDATE submenu contains the FPMATE UPDATE parameter and it indicates one of two possible printer start-up source locations (from where fpmate.cgi should be copied from) as follows:

- 0 – At start-up, load original version bundled with the firmware
- 1 – At start-up, load updated version

4.6 Uploading Background Program (Firmware >= 4.013)

A background program can be launched on the fiscal printer during start up. The service is activated via the SET 34 BACKGROUND PROGRAM submenu where it is also possible to indicate the name of the script. The script file must be included in the web pages zip file so that it initially resides under /www/webapp/. During start up, the file is then stored in a hidden directory together with any files where the filename before the file extension is the same *. For example:

- Background_program.sh (name programmed in SET 34)
- Background_program.php (related file)
- Background_program.pinc (related file)

Please use the following recommended sequence:

1. Load web application that also includes the background program files using Upload Service.
2. Confirm that the background files reside under /www/webapp/
3. Program the printer SET 34:
 - a. Activate the service
 - b. Set the name (for example, Background_program.sh)
4. Restart the printer
5. Confirm that background files no longer reside under /www/webapp/
6. Confirm that your script is running
7. Restart the printer again
8. Confirm that your script is running

* If the USB pen drive mode has been activated, background files are copied to the hidden directory so as to retain them during the subsequent restart. Your background files also need to be copied onto the USB pen drive away from the printer.

5 Web Application Testing

5.1 Connecting to the fiscal printer homepage

1. Connect to the intelligent fiscal printer root page.
2. Click the following sequence:

www → webapp → index.html (or index.htm)

or enter one of the following URLs:

- SSL deactivated – <http://xxx.xxx.xxx.xxx/www/webapp/index.html>
- SSL activated – <https://xxx.xxx.xxx.xxx/www/webapp/index.html>

Your homepage should appear.

5.2 EpsonFpDemoWeb

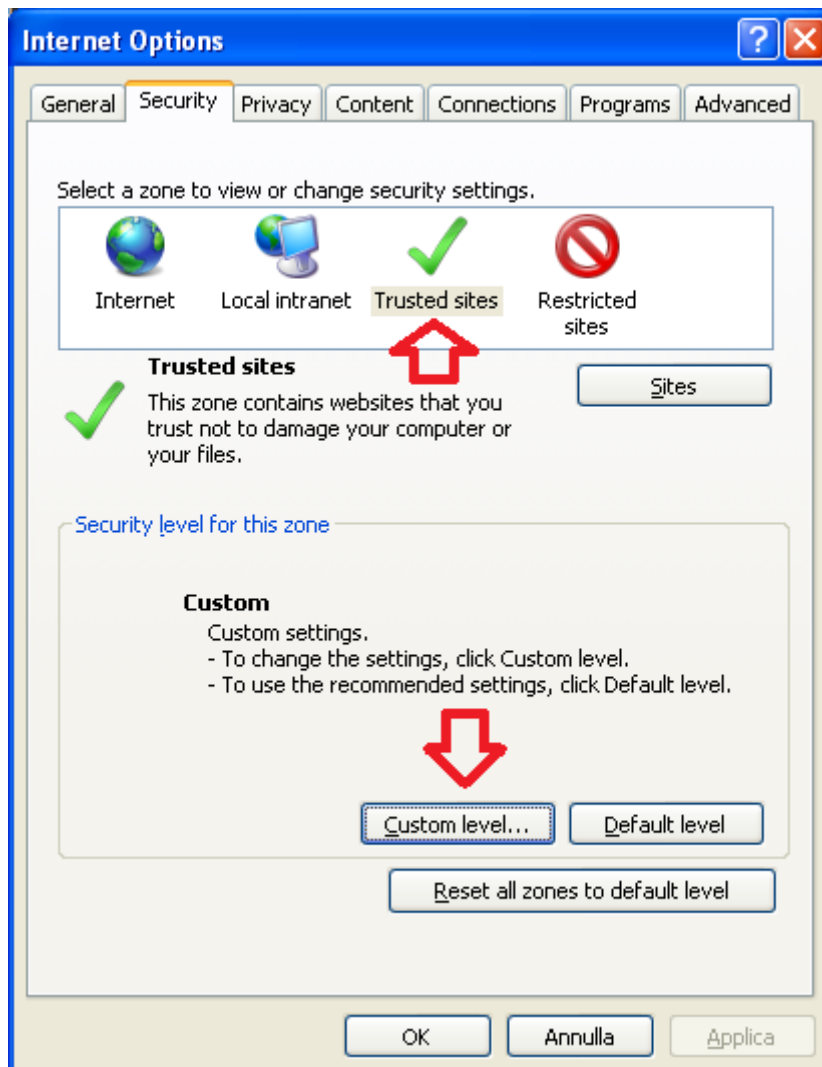
If the EpsonFPDemoWeb application was uploaded, print a test fiscal receipt as follows:

1. Click "Fiscal Receipt" top row option.
2. Fill out the following fields:
 - a. Description.
 - b. Quantity.
 - c. Unit Price.
3. Click "Print Rec Item".
4. Fill out the following fields:
 - a. Description.
 - b. Payment.
5. Click "Print Rec Total".
6. Click "End Fiscal Receipt"
7. Click "Send".

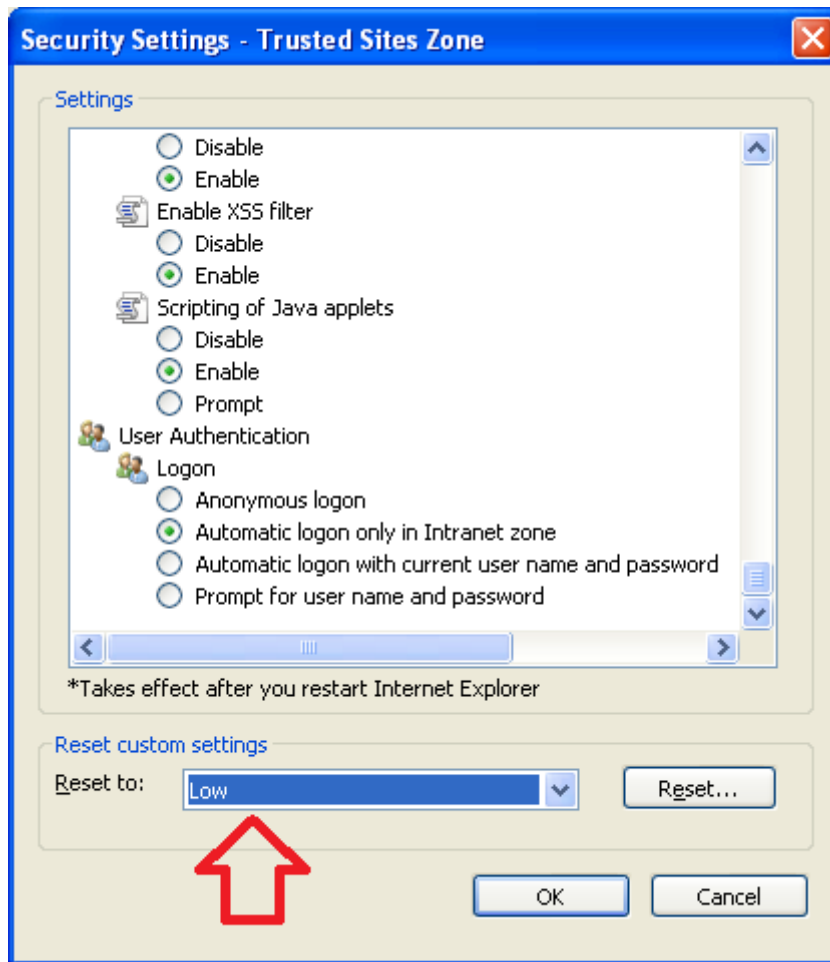
5.3 Cross-Domain Security

The browser security settings could prevent cross-domain XMLHTTP requests from being sent. It may be necessary to add a trusted site (whitelist entry).

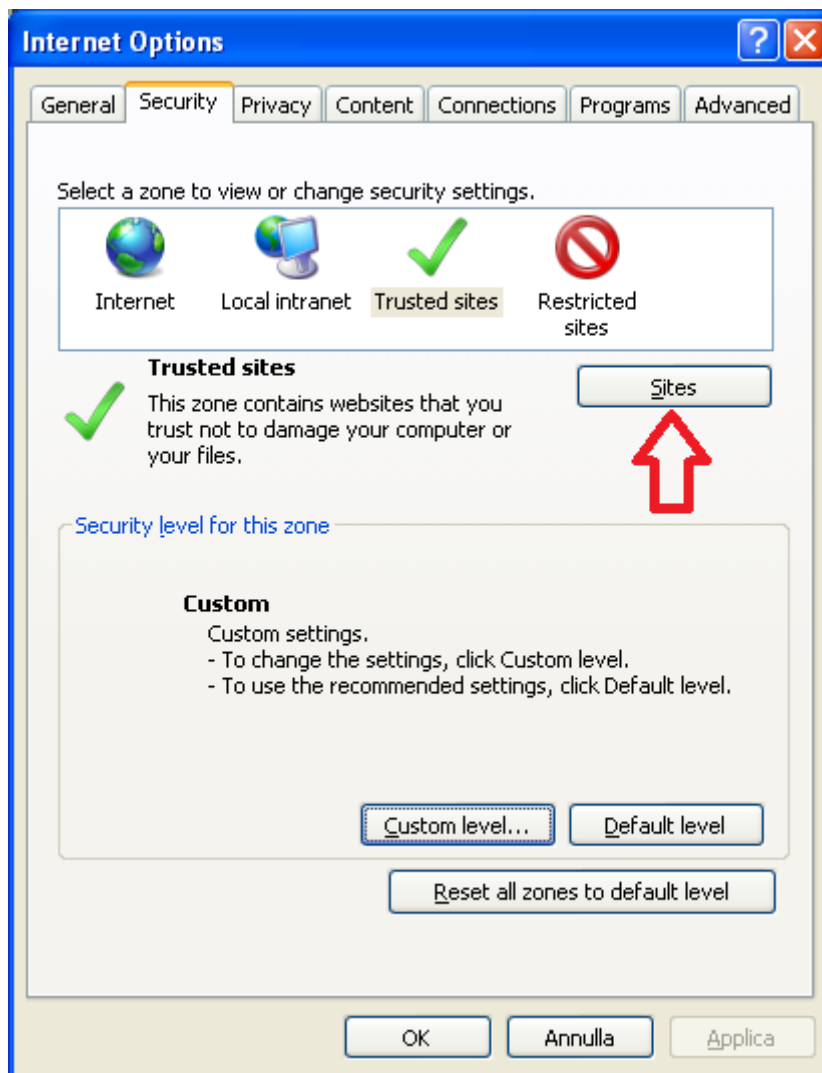
For example, in Internet Explorer 8 proceed to Tools → Options → Security. Highlight "Trusted sites" and click Custom level:



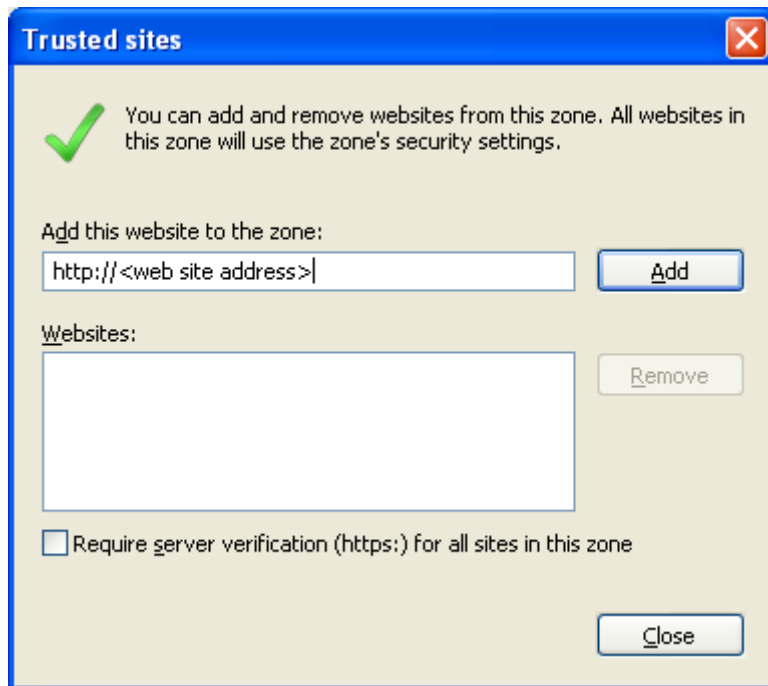
Change the security level to Low:



With "Trusted sites" still highlighted, click Sites:



Add the site address where the web pages reside rather than the IP address of the fiscal printer that receives the XMLHTTP request (fpmate.cgi):



The change may not take effect until either a new session is executed, a new tab is opened or Internet Explorer is restarted (by closing all web pages).

6 Web Application Loading at Printer Restart (Firmware \geq 4.00)

From firmware version 4.00 onwards, it is possible to select whether or not to load the web application from NVRAM during a printer restart. By default, web application loading is deactivated. Previous versions of firmware always loaded the web application. Loading can be activated or deactivated via the SET 34 WEB APPLICATION sub menu where the following parameter can be set:

- WEB APPLICAT. (0 = Deactivated or 1 = Activated)

This parameter has no effect if a USB Pen Drive is connected.

7 E-mail

7.1 Description

Intelligent fiscal printers can generate e-mail messages and send them to mail gateways for onward transmission. To make use of this functionality, the following steps must be performed:

1. Configure the e-mail parameters via SET 32. Note that earlier versions of firmware do not support DNS and only support basic SMTP without AUTH PLAIN. DNS names can be used from firmware version 3.00. Usernames and passwords through AUTH PLAIN authentication and BMP can be used from version 3.005. TLS can be used from version 4.012. Please refer to the *Epson FP Manuale Operatore* document for the exact procedure. Make sure that the SET 19 DNS address or addresses are programmed. The following parameters can be programmed:
 - TX SERVER (Server type. For example: smtp)
 - TX SRV NAME (Server IP address or DNS name)
 - TX PORT (Usually 25)
 - TX USER (Used when AUTH PLAIN or TLS is activated)
 - TX PASSWORD (Used when AUTH PLAIN or TLS is activated)
 - TX OPTIONS (See table below)
 - FROM (Sender)
 - TO (FISC.) – Recipient when fiscal receipt content is sent
 - TO (NOTIF.) – Recipient when warnings are sent. For example: DGFE full or removed.
 - DOC/TXT/BMP

TX OPTIONS Table

Byte Position	Value	Note
1	0 = AUTH PLAIN deactivated 1 = AUTH PLAIN activated 2 = TLS activated	AUTH PLAIN is available from firmware version 3.005. TLS is available from firmware version 4.012.
2	Automatic E-mail sending with Z-Report: <ul style="list-style-type: none">- 0 = Deactivated- 1 = Activated	Available from firmware version 4.013.

2. The send e-mail option must be activated prior to the opening of a fiscal receipt or the printing of a fiscal report. From firmware 4.013, automatic fiscal report can be activated. From firmware 4.011, direct invoice e-mails can also be sent. The activation is only valid for the subsequent operation meaning that it must be re-activated prior to a second, third receipt/invoice etc. The activation can be achieved in two ways:
 1. Through a specific key on the keyboard connected to the fiscal printer USB port.
 2. From a command sent by a PC.

Via Keyboard

A chosen key must be associated with function 197. Please refer to the *Epson FP Manuale Operatore* document for the exact procedure or see below. The key is simply pressed before opening a fiscal receipt or printing a report. From firmware 4.011, direct invoice e-mails can also be sent. To cancel the request, press the key again.

Via PC

Currently Direct IO must be employed. Please refer to the following chapter in the *Protocollo di Comunicazione* document:

- H1=1; H2=146 – RICHIESTA INVIO SCONTRINO TRAMITE E-MAIL

In both cases the following messages appear on the display:

- INVIO E-MAIL ATTIVATO (E-mail transmission activated)

And if sent a second time:

- INVIO E-MAIL ANNULLATO (E-mail transmission cancelled)

7.2 Practical Request via Keyboard

Program the e-mail parameters

The following example configures amongst other parameters the Vodafone Italia SMTP gateway. Press:

1. 3333 → CHIAVE → 32
2. If smtp wording is missing or different press:
 - STORNO to blank out any previous setting followed by 83 → 77 → 84 → 80 → CONTANTE/TOTALE to set value to "smtp".
 - Else if "smtp" wording is already present just press CONTANTE/TOTALE.
3. Enter the SMTP gateway IP address including leading zeroes and dots. The example here is 80.84.1.120 which is associated with smtp.vodafone.net:

16 → 24 → 20 → 14 → 16 → 24 → 20 → 14 → 16 → 16 → 17 → 14 → 17 → 18 → 16 → CONTANTE/TOTALE. If you make a mistake press STORNO to clear the display and try again. Others include for example Telecom Italia's Alice address out.aliceposta.it which is 82.57.200.132. When not using AUTH PLAIN, make sure that the fiscal printer is within the same network as the SMTP gateway as SMTP mail requests from elsewhere tend to fail with the error "Relay Access Denied".
4. Leave E-MAIL TX PORT set to 25.
5. Optionally set E-MAIL TX USER (requires firmware >= 3.00).
6. Optionally set E-MAIL TX PASSWORD (requires firmware >= 3.00).
7. Set E_MAIL TX OPTIONS to:
 - 0 – No AUTH PLAIN – Key in 16 to set 0.
 - 1 – AUTH PLAIN – Key in 17 to set 1 (requires firmware >= 3.005).
 - 2 – TLS (requires firmware >= 4.012)
8. Set E-MAIL FROM as desired.
9. Set E-MAIL TO (FISC.) as desired.
10. Leave the remaining parameters.

Associate a key with function 197

The key sequence is as follows:

- 3333 → CHIAVE → 29 → <press desired key> → 197 → CONTANTE/TOTALE → CHIAVE

Activate Mail Request

Press the key associated with function 197 (previous step). Print a fiscal receipt or fiscal report. From firmware 4.011, direct invoice e-mails can also be sent. Check destination e-mail inbox.

QWERTY POS Associations

If you happen to be using a PC QWERTY keyboard, please bear in mind the following key associations:

- C = CHIAVE
- F2 = STORNO
- Invio /Enter (bottom right hand corner) = CONTANTE/TOTALE
- For numbers, use the row above QWERTY

8 SSL (Firmware >= 3.009)

From firmware version 3.009 onwards, the embedded intelligent fiscal printer web server supports SSL. SSL is enabled via the SET 34 WEB SERVER sub menu where the following parameters can be set:

- USER ID
- PASSWORD
- SSL MODE (0 = deactivated or 1 = activated) *

* Changes to SSL MODE requires a printer restart.

With SSL activated, connections from the browser must be made via HTTPS. A certificate warning will need to be confirmed to proceed.

9 PHP (Firmware >= 4.01)

9.1 Description

Intelligent From firmware version 4.01 onwards, intelligent fiscal printers support PHP and SQLite in web pages and also a custom script that can be executed automatically during fiscal receipt emission. The custom script is executed after payment but before fiscal receipt closure. The PHP service (available on request) has to be uploaded to the intelligent fiscal printer (file php-cgi.zip). The PHP service includes SQLite. Starting from firmware 4.014, one of nine PHP scripts can also be launched "on the fly" from either a keyboard sequence or by the 1-140 native PC command.

9.2 Programming

PHP is enabled via the SET 34 PHP sub menu where the following parameters can be set:

- PHP MODE:
0 = Deactivated or
1 = Activated
- SCRIPT TYPE:
0 = Automatic script deactivated.

1 = Automatic script executes after payment but before fiscal logo. The printer waits for a response file in the /www/graphic/ folder (5 seconds). The response is appended (printed) to the fiscal receipt after which the response file is deleted.

2 = Automatic script executes after cutting the paper. The printer doesn't wait for a response file in the /www/graphic/ folder.

3 = Run script in background (from firmware version 4.013 onwards).
- SCRIPT NAME. Default automatic script name is rec_ending_script.php *

* The PHP script of the same name must have been included in the web pages zip uploaded via the /cgi-bin/upload.cgi web service and must reside under /www/webapp/. This script can make use of the rec.json file described below and can deposit a file in the /www/graphic folder/.

If the PHP mode is deactivated, the automatic script and background script are also deactivated.

9.3 Launching PHP Scripts "on the fly"

Starting from firmware 4.014, one of nine PHP scripts can also be launched "on the fly" from either a keyboard sequence using key function 200 or by the 1-140 native PC command. Information on how to load the scripts will be supplied on request (camillo_radaelli@epson.it).

10 Samba (Firmware >= 4.01)

From firmware version 4.01 onwards, intelligent fiscal printers support Samba. The Samba service (available on request) has to be uploaded to the intelligent fiscal printer (file samba.zip). Samba is enabled via the SET 34 SAMBA sub menu where the following parameter can be set:

- SAMBA MODE (0 = Deactivated or 1 = Activated)

Activating and deactivating Samba requires a printer restart. With Samba activated, the following two shares are accessible:

1. cgi-bin
2. www

In the www share, the webapp sub-directory can be used to deposit XML files where they will be processed automatically by the embedded fpmate.cgi.

The printer cannot run both PHP and Samba services at the same time. If both are activated in programming, the PHP service has the priority. In this case, the Samba service is not started.

11 USB Pen Drive (Firmware >= 3.009)

From firmware version 3.009 onwards, intelligent fiscal printers support the use of USB Pen Drives. A single USB Pen Drive can be enabled via the SET 34 USB PEN DRIVE sub menu where the following parameter can be set:

- USB PEN DRIVE (0 = Deactivated or 1 = Activated)

Activating and deactivating USB Pen Drives require a printer restart.

The web server root is determined as follows:

- Deactivated – The web server root contains the files and folders loaded from the fiscal board FLASH memory.
- Activated – The USB Pen Drive is mounted as the web server root.

The USB Pen Drive must contain a single FAT32 formatted partition.

Please note that in this mode the web server does not perform any redirection to index.html:

- <http://xxx.xxx.xxx.xxx/> will not redirect to index.html
- <http://xxx.xxx.xxx.xxx/index.html/> will load index.html

Please bear in mind that the upload.cgi and fpmate.cgi services plus the printer status page are no longer accessible. The fpmate.cgi file can be copied to your USB pen drive away from the printer. The file is available on request.

12 Graphic Files (Firmware >= 3.009)

12.1 Setup

From firmware version 3.009 onwards, graphic file setup is performed via the SET 34 GRAPHIC FILE sub menu where the following parameter can be set:

- TYPE (3 digit code)

12.2 Description

Graphic files are processed and/or kept or deleted only during the print out of either a fiscal receipt or non-fiscal receipt according to the SET 34 GRAPHIC FILE → TYPE parameter. Please refer to the *Epson FP Manuale Operatore* guide. Please note that the /www/graphic/ folder should only contain one file – If more than one file exists, graphic file management is deactivated by the printer. The folder is cleaned by disconnecting the power to the printer completely – Files are retained if switching off with the front power switch. Typical routines are as follows:

Coupons

1. If necessary deactivate the rec ending script as it may conflict by saving its own graphic file in the /www/graphic/ directory. Rec ending scripts are deactivated via SET 34 PHP → SCRIPT TYPE = 0.
2. Upload the coupon file.
3. Configure SET 34 GRAPHIC FILE → TYPE setting it to either 100 or 200.
4. If TYPE = 100, print a fiscal receipt. If TYPE = 200, print either a fiscal or non-fiscal receipt.
5. Check that coupon is appended to the fiscal receipt or is in the last part of the non-fiscal receipt body.
6. If TYPE = 100, print another fiscal receipt to make sure the coupon is printed again. If TYPE = 200, print either a fiscal or non-fiscal receipt to make sure the coupon is not printed again.
7. If necessary, reprogram the rec ending script (SET 34 PHP → SCRIPT TYPE).

Logos in NVRAM

1. If necessary deactivate the rec ending script as it may conflict by saving its own graphic file in the /www/graphic/ directory. Rec ending scripts are deactivated via SET 34 PHP → SCRIPT TYPE = 0.
2. Upload the logo file.
3. Configure SET 34 GRAPHIC FILE → TYPE setting it to one of nine values ranging from 210 to 290. The second byte indicates the logo index from 1 to 9.
4. Print a fiscal or non-fiscal receipt.
5. Configure the four HEADER FOOTER indexes (SET 15 / 9, 10, 19 and 20) as desired.
6. Execute a print out and check that the header and footer are as expected.
7. If necessary, reprogram the rec ending script (SET 34 PHP → SCRIPT TYPE).

13 USB Network Mode (Firmware \geq 3.00B)

After having activated LAN WIRED-WIFI-USB option 2, the physical RJ-45 printer LAN port is not used any more. From the point of view of the PC, the IP addresses of the printer and the USB NET PC port should belong to a distinct subnet with respect to the other LAN ports and their networks on the PC.

The PID VID pair from the printer changes to 0525h and A4A2h.

After having connected the PC the following device becomes available:

- RNDIS Ethernet Gadget

Windows XP Driver

A .inf file will need to be downloaded from the web, modified and installed as a driver.

Windows 7/8 Driver

The driver already exists. The following network adapter driver can be used:

- "Microsoft Corporation" → "Remote NDIS based Internet Sharing Device"

Useful Links

http://www.webos-internals.org/wiki/USBnet_Setup

http://docwiki.gumstix.org/index.php?title=Windows_XP_usbnet

14 Receipts as Images (Firmware ≥ 4.00)

14.1 Description

Intelligent fiscal printers can convert fiscal receipts into a graphical format and then forward them to providers who offer personalised receipt retention services. To make use of this functionality, the following steps must be performed:

1. Configure the S.F. BMP parameters via SET 33. Please refer to the *Epson FP Manuale Operatore* document for the exact procedure. If regarding the SMTP server you intend to use the DNS name, please make sure that the SET 19 DNS address or addresses are programmed. The following six parameters can be programmed:
 - MITTENTE (Sender e-mail address and furthermore the username used with TLS authorisation)
 - SMTP SRV (IP address or DNS name of the SMTP server)
 - OGGETTO (Subject – optional)
 - DESTINAT. (Recipient e-mail address)
 - PASSWORD (Sender password used with TLS authorisation)
 - OPTIONS (indicates attachment types, available from firmware version 4.013 onwards)

Most if not all of the above parameters should be supplied by your service provider.

2. The send graphic receipt activation can be performed either during or after fiscal receipt emission. The activation is only valid for the receipt in progress or for the last receipt emitted. The activation can be achieved in two ways:
 - a. Through the use of two and optionally three specific keys on the keyboard connected to the fiscal printer USB port.
 - b. From one of two and optionally four possible commands sent by a PC.

Via Keyboard

At least two keys must be associated with the following two functions:

- Function 137 (Client number)
- Function 199 (Graphic receipt activation)

Optionally, a separate key can be associated with function 198 (Client verification).

Please refer to the *Epson FP Manuale Operatore* document for the SET 29 key mapping procedure.

Via PC

Currently Direct IO must be employed. Please refer to the following commands in the *Protocollo di Comunicazione* document:

- H1=1; H2=141/143 – VERIFICA NUMERO TELEFONO SCONTRINO GRAFICO
- H1=1; H2=142/144 – VERIFICA E ATTIVAZIONE NUMERO TELEFONO SCONTRINO GRAFICO

In both cases the following messages appear on the display. The top line is always the following:

- ** SCONTRINO BMP **

The bottom line can be one of the following:

- VERIFICA IN CORSO (client number check in progress)
- VERIFICA ESEGUITA (Client number check OK)
- MANCA ATTIVAZIONE (Client number check failed)
- INVIO IN CORSO (Graphic receipt transmission in progress)
- ERRORE COMUNICAZIONE (Communication error)

A non-fiscal receipt is printed that contains the client number, the fiscal receipt number and the date. It also indicates whether the transmission was successful or not by printing:

If successful:

* * * * * INVIO EFFETTUATO * * * * *

If errors were encountered:

* * * * * ERRORE INVIO * * * * *

14.2 Practical Request via Keyboard

The activation can be performed either during or after fiscal receipt emission. There are four possible sequences as follows:

Sequence 1

- Fiscal receipt opened
- Key function 137 → Client number → Key function 199 to activate
- Receipt closed
- Graphic receipt sent

Sequence 2

- Fiscal receipt opened
- Key function 137 → Client number → Key function 198 to verify
- Key function 137 → Client number → Key function 199 to activate
- Receipt closed
- Graphic receipt sent

Sequence 3

- Fiscal receipt emitted
- Key function 137 → Client number → Key function 199 to activate
- Graphic receipt sent immediately

Sequence 4

- Fiscal receipt emitted
- Key function 137 → Client number → Key function 198 to verify
- Key function 137 → Client number → Key function 199 to activate
- Graphic receipt sent immediately

15 Background Program (Firmware >=4.013)

15.1 Description

Intelligent fiscal printers can execute background programs (scripts). The Background Program is enabled via the SET 34 BACKGROUND PROGRAM sub menu where the following parameters can be set:

- BACKGROUND PROGRAM MODE:
0 = Deactivated or
1 = Activated
- NAME. Default script name is E015_client.sh

Please refer to the [Uploading Background Program \(Firmware >= 4.013\)](#) section for additional details.

16 Receipt JSON

16.1 Description

Up until firmware version 4.014, if the automatic PHP script option was enabled, the printer automatically saved fiscal receipt data in the rec.json file. From version 4.014 onwards, file saving is activated or deactivated independently via a new RECEIPT JSON SET 34 parameter. The file resides and has always resided in the following location:

- /www/json_files/rec.json

It contains receipt data. The structure is as follows:

```
"recHeader": {
    "rowHeader": "      Epson Italia Spa      ",
    "rowHeader": "      Via dei Vizzi 93/05      ",
    "rowHeader": "      20092 Cinisello Balsamo      "
},
"recNumber": "4",
"recDate": "27-06-2016",
"recHour": "11:44",
"recAmount": "2.00",
"customerId": "b5892388-f90d-4f46-824f-60aac216eb07",
"endRec": "true"
```

The optional customerId field is set in the fiscal receipt XML file with a printRecMessage XML element having the messageType attribute set to "7".

It is enabled or disabled via the SET 34 RECEIPT JSON sub menu where:

0 = Deactivated or
1 = Activated

From firmware 4.016 onwards, the structure has been extended to include a transaction breakdown and the payment method used. recDate and recHour have been replaced by a single recDate UTC string.

```
{
    "recHeader": {
        "rowHeader": "      Epson Italia Spa      ",
        "rowHeader": "      Via dei Vizzi 93/05      ",
        "rowHeader": "      20092 Cinisello Balsamo      "
    },
    "recNumber": "1",
    "recDate": "2016-08-26T12:29:59+02:00",
    "recAmount": "7.00",
    "customerId": "      ",
    "salesItem": [
        {
            "type": "01",
            "description": "REPARTO 1      ",
            "quantity": "1.000",
            "unitPrice": "10.00",
            "amount": "10.00",

```

```

        "eanCode": "
        "deductable": "0"
    },
    {
        "type": "04",
        "description": "SCONTO
        "quantity": "0.001",
        "unitPrice": "0.00",
        "amount": "1.00",
        "eanCode": "
        "deductable": "0"
    },
    {
        "type": "03",
        "description": "REPARTO 1
        "quantity": "1.000",
        "unitPrice": "1.00",
        "amount": "1.00",
        "eanCode": "
        "deductable": "0"
    },
    {
        "type": "02",
        "description": "REPARTO 2
        "quantity": "1.000",
        "unitPrice": "1.00",
        "amount": "1.00",
        "eanCode": "
        "deductable": "0"
    }
  ],
  "payment": {
    "paymentType": "cash",
    "amount": "7.00"
  }
}

```

Type has the following numerical significance:

- 01 Sale
- 02 Return
- 03 Correction (storno)
- 04 Item discount
- 05 Subtotal discount
- 06 Item surcharge
- 07 Subtotal surcharge
- 08 Void item

17 Remote Request Job (Firmware >= 4.016)

17.1 Description

The remote request job capability can be divided into two functions:

1. Device Data Notification
2. Server Direct Print

Device Data Notification (DDN)

After having read a barcode or QR code, the printer immediately generates a request to the server. The request contains the specific code. The server responds accordingly.

Server Direct Print (SDP)

The printer periodically polls a server for a new job. The response either contains a "no job" indication or an XML job file.

In both cases, full details are available on request.