

# {FPDFLPAG – FPDFLOW}

Two CSV to PDF tools built around FPDF4ZOS component

(Spring 2019)

## **Introduction :**

These two tools, developed around FPDF4ZOS core engine, aim at transforming a CSV file into a PDF document while functional and visual outlook are externally driven by both configuration file and lay out forms. They are quite similar but differ by one key feature:

- **fpdflpag** generates one page per line of CSV data. The first line may contain the label of each column of the CSV file and these labels are reproduced on each and every page of the PDF document. Assuming initial CSV file contains 1000 lines of data, resulting PDF will contain 999 pages, plus an eventual cover page.
- **fpdfflow** generates a table in the PDF document where each row reflects a line of CSV data of the original CSV file. In that data file, the first line is supposed to contain the headers of the columns table which are reproduced at the top of each PDF page. Assuming initial CSV file contains 1000 lines of data and that each page of the resulting PDF contain 25 rows at most (see below), resulting PDF will contain 40 pages, plus an eventual cover page.

These tools must be given a configuration file to operate properly. Calling syntax appears below and is identical for both tools:

```
fpdflpag -I=<csv-input-file> -O=<pdf-output-file> -K=<configuration-file> [-P=<customer_id>] [-M=<period>]
```

```
fpdfflow -I=<csv-input-file> -O=<pdf-output-file> -K=<configuration-file> [-P=<customer_id>] [-M=<period>]
```

Input (-I) and Output (-O) parameters are rather self explaining.

<customer\_id> and <period> parameters (say -P and -M) refer to data which may be quite useful to insert both in cover page and in the header and / or footer of each and every page of target PDF document. More on this feature below

## **Configuration file :**

These two tools contain almost the same options, each of which is listed and described below. Examples of such configuration files are given in annex A1 and A4 respectively for tools **fpdflpag** and **fpdfflow**.

**FPDFINI=ini\fpdflpag.ini**

This parameter indicates which configuration file the FPDF4ZOS core engine is supposed to take into account while processing FPDF4ZOS initialisation function – say `NewPdf()`.

*No default for this parameter*

#### **DOCUFORM=docupagb**

This parameter must be present and is assumed to point at a valid form ID as this concept is defined in FPDF4ZOS core component. Beyond layout instructions which will shape the visual rendering of output PDF document, this form is also supposed to contain anchors which will precisely drive how the fields will be output on the page. Regarding anchors definition, expected content of this document form will differ whether **fpdflpag** or **fpdflrow** is executed. See next section dedicated to forms for further details.

*Defaults to NO cover page, keeping in mind that this parameter is mandatory.*

#### **COVRFORM=covrpagb**

If this parameter is NOT present or if it points at an empty string (after trimming), those tools will consider that a cover page should NOT appear in output PDF. If present and not empty, the eight characters string is supposed to contain a form which will be used to generate a cover page.

*Defaults to NO cover page*

#### **PAGENUMB=Y**

If this parameter is equal to **Y**, a string **I / N** (with **I** being the current page number out of a total of **N** pages) will be inserted on each and every page of output PDF at the location specified by anchor **PAGENUMB** found in one of the forms.

*Defaults to NO page numbering*

#### **ORIENT=P**

This parameter points at the orientation of the pages generated by the tools. It may take one of the two following values: **P** for Portrait and **L** for Landscape

*Defaults to **P** Portrait orientation*

#### **FRSTLINE=S**

This parameter specifies how the first line of input CSV file should be processed. The following values are supported:

- **H** for Headers: first CSV line is supposed to contain the labels of data contained in each input column. For page, mode, it will appear on each page while for row mode, it will appear as headers of each column of target table.
- **D** for Data: first CSV line is ignored in {CSV → PDF transformation} and is processed as a regular data line.
- **I** for Ignore: first CSV line is supposed to contain headers but those are not to be taken into account. This means that this first line will be ignored and discarded in transformation.

*Defaults to **H** Headers mode*

#### **REC\_LNGR=2400**

This parameter specifies the maximum length of a CSV line in the input file. This parameter is usually significant in z/OS platform where lines are NOT delineated by the usual <CR>, <LF> or <CR><LF> sequences.

*Defaults to 800*

#### **MAX\_FLDS=48**

This parameter specifies the maximum number of fields contained in CSV lines. It is nevertheless limited to 100. If a superior number is found in this parameter, it will be lowered to 100.

*Defaults to 48*

#### **CSVSEPAR=;**

This parameter specifies the field separator character in CSV lines.

*Defaults to ;*

#### **FLGDQUOT=Y | N**

This parameter specifies whether or not in CSV lines, each fields are delimited by double quotes characters. If this is the case, the programs will remove those double quotes in output PDF document.

*Defaults to N*

#### **FILLLABL=£**

It is possible to run these tools without any input file. In that case, a PDF will be created with the forms specified in the configuration file while labels specified in those forms will be filled with the 8 characters string formed with the character specified with this parameter. If input file is provided, this parameter is ignored. This possibility is handy to test forms regardless of any data.

*Defaults to £*

#### **BOOKMARK="%s: %s", 7, 0**

This parameter is for **fpdf1pag** tool only; it is ignored by **fpdf1row** tool. If present, it should contain a string followed by a set of numbers. The string is a printf-like format while the numbers refer to the fields of the CSV file. As the **fpdf1pag** tool outputs a PDF page per CSV line, this parameter indicates that there will be a bookmark for each page and this parameters defines bookmark content.

In the example above, the bookmark will be formed by field #7 followed by a colon, followed by a blank followed by field #0. Note that both field #0 and #7 will be processed as character strings.

*Defaults to No bookmark*

#### **COVRTITL=Employee List**

If a cover page is configured, this parameter will appear as a document title. Besides, it may also be inserted in the header of the footer of each page by means of the dynamic variables &TITL&. See below for more details

*Defaults to no title*

COVLB00x=<label #x in cover page>:

COVER00x=<value #x in cover page>:

In the cover page, there may be up to eight dynamic fields (say COVLB000 to COVLB007). Each such field include a label and a value. In the cover form, the position, font and color of the labels and the values are supposed to be defined in forms by anchors COVLB00x and COVER00x.

*Defaults to fields in cover page*

HEADER0x=&DATE& - &HOUR&

FOOTER0x=&TITL&

In each page, there may be headers and footers and the cover page, there may be up to 4 headers and up to 4 footers. Each such element will be output with position, color and font which are supposed to be defined in forms by anchors HEADER0x and FOOTER0x.

*Defaults to no headers and no footers*

## ***Forms expected by these two tools:***

As mentioned above, expected content of document forms will differ whether **fpdf1pag** or **fpdf1row** tool is considered:

### ***fpdf1pag:***

Beyond visual rendering instructions (say frames, text, images, etc.), document form – key **DOCUFORM** in configuration file – is expected to contain a set of text anchors identified by strings **FIELDxxx** where **xxx** is the field number in the CSV. These anchors will define display properties of each and every field found in data file. If first line of CSV file is expected to contain field labels (say key **FRSTLINE=H** in configuration file), another set of anchors identified by strings **LABELxxx** should be present to further define display properties of each and every label.

Example of such form content is given in Annex A2.

### ***fpdf1row:***

Beyond visual rendering instructions (say frames, text, images, etc.), document form – identified by key **DOCUFORM** in configuration file – is expected to contain a set of 5 anchors the meaning of which is described below:

- Text anchor LABEL000: Text properties of column headers.
- Graphic anchor LABEL000: Graphic properties of column headers.
- Text anchor FIELD000: Text properties of cells (eg data found in CSV fields).
- Graphic anchor FIELD000: Graphic properties of cells.
- Column anchor FIELD000: Widths of column in target table.

Example of such form content is given in Annex A5.

Cover form expected by these 2 tools – *optional key **COVERFORM** in configuration file* – has the same expected format : beyond visual rendering instructions (say frames, text, images, etc.), cover form should contain a set of text anchors identified by strings **COVERxxx** and **COVLBxxx** where **xxx** is a number in the range [0,7] of an element defined in configuration file by the same key.

Example of such form content is given in Annexes A3 and A6.

### ***Meta variables and dynamic substitutions:***

For headers, footers and cover page, these tools have the capability to handle dynamic metadata. Whenever a string containing a set of keywords are encountered, a dynamic substitution is automatically performed by those tools. See below for the list of key words handled in the current release:

- **&CUID&**: a 10 characters string which is supposed to refer to a customer ID. Customer ID is given as an optional external parameter with key **-M**
- **&PERD&**: a 24 characters string which is supposed to refer to the current period. That period is given as an optional external parameter with key **-P**
- **&JNAM&**: a character string which is supposed to refer to a Job Name or a process ID.
- **&JNUM&**: a character string which is supposed to refer to a Job Number or a process ID.
- **&PRGM&**: a character string which will refer to program name (say **fpdflpag** or **fpdflrow**).
- **&TITL&**: a 48 characters string which will refer to document title
- **&DATE&**: a 12 characters string which will refer to current date (format YYYY-MM-DD)
- **&HOUR&**: a 10 characters string which will refer to current hour (format HH24:MM:SS)
- **&NSEQ&**: a 6 hexadecimal characters string which will point at a random sequential number.

## Annex A1: Example of configuration file expected by fpdflpag

```
;
; +=====+
; 1 Configuration file for FPDFLPAG tool 1
; +=====+
;
;
FPDFINI=ini\fpdflpag.ini
COVRFORM=covrpagc
DOCUFORM=docupagc
PAGENUMB=Y
ORIENT=P
FRSTLINE=H
REC_LNGR=2400
MAX_FLDS=80
FILLCHAR=$
FILLLABL=£
;;ATTACHED= abcdefgh.csv
;
; Bookmark: format followed by up to 4 fields
; -----
BOOKMARK="%s: %s", 1, 0
;
; Cover Page - Set miscellaneous fields
; -----
COVRTITL=Employee List
COVLB000=Identifiant Client:
COVER000=&CUID&
COVLB001=Période Paie:
COVER001=&PERD&
COVLB002=Traitement:
COVER002=&JNAM& - &JNUM&
COVLB003=Date - Heure Production:
COVER003=&DATE& - &HOUR&
;
; Footers
; -----
FOOTER00=&CUID&
FOOTER01=Période: &PERD&
;
; Headers
; -----
HEADER00=&DATE& - &HOUR&
;
```

## Annex A2: Example of document form expected by fpdf1pag

```
{...}
;
SetLineWidth (0.4);
SuperRect (15, 18, 120, 20, "DF", 1, 1, 1, 1);
SetTextProp ("LABEL000", 20, 24, -1, -1, 0, 0, 0, "Arial", "N", 10);
SetTextProp ("FIELD000", 72, 24, -1, -1, 0, 0, 0, "Courier", "B", 12);
SetTextProp ("LABEL001", 20, 32, -1, -1, 0, 0, 0, "Arial", "N", 10);
SetTextProp ("FIELD001", 72, 32, -1, -1, 0, 0, 0, "Courier", "B", 12);
;
SetFont ("Arial", "B", 12);
SetTextColor (220, 30, 50);
Text (15, 58, "Job details");
SetTextProp ("LABEL010", 25, 65, -1, -1, 0, 0, 0, "Arial", "N", 8);
SetTextProp ("FIELD010", 70, 65, -1, -1, 0, 0, 0, "Courier", "B", 10);
SetTextProp ("LABEL011", 25, 70, -1, -1, 0, 0, 0, "Arial", "N", 8);
SetTextProp ("FIELD011", 70, 70, -1, -1, 0, 0, 0, "Courier", "B", 10);
SetTextProp ("LABEL012", 25, 75, -1, -1, 0, 0, 0, "Arial", "N", 8);
SetTextProp ("FIELD012", 70, 75, -1, -1, 0, 0, 0, "Courier", "B", 10);
SetTextProp ("LABEL013", 25, 80, -1, -1, 0, 0, 0, "Arial", "N", 8);
SetTextProp ("FIELD013", 70, 80, -1, -1, 0, 0, 0, "Courier", "B", 10);
SetTextProp ("LABEL015", 25, 85, -1, -1, 0, 0, 0, "Arial", "N", 8);
SetTextProp ("FIELD015", 70, 85, -1, -1, 0, 0, 0, "Courier", "B", 10);
SetTextProp ("LABEL016", 25, 90, -1, -1, 0, 0, 0, "Arial", "N", 8);
SetTextProp ("FIELD016", 70, 90, -1, -1, 0, 0, 0, "Courier", "B", 10);
SetTextProp ("LABEL009", 25, 95, -1, -1, 0, 0, 0, "Arial", "N", 8);
SetTextProp ("FIELD009", 70, 95, -1, -1, 0, 0, 0, "Courier", "B", 10);
SetDrawColor (220, 30, 50);
Line (20, 63, 20, 95);
;
SetFont ("Arial", "B", 12);
SetTextColor (220, 30, 50);
Text (15, 113, "Personnal Details");
SetTextProp ("LABEL003", 25, 120, -1, -1, 0, 0, 0, "Arial", "N", 8);
SetTextProp ("FIELD003", 70, 120, -1, -1, 0, 0, 0, "Courier", "B", 10);
SetTextProp ("LABEL004", 25, 125, -1, -1, 0, 0, 0, "Arial", "N", 8);
SetTextProp ("FIELD004", 70, 125, -1, -1, 0, 0, 0, "Courier", "B", 10);
SetTextProp ("LABEL005", 25, 130, -1, -1, 0, 0, 0, "Arial", "N", 8);
SetTextProp ("FIELD005", 70, 130, -1, -1, 0, 0, 0, "Courier", "B", 10);
SetTextProp ("LABEL006", 25, 135, -1, -1, 0, 0, 0, "Arial", "N", 8);
SetTextProp ("FIELD006", 70, 135, -1, -1, 0, 0, 0, "Courier", "B", 10);
SetTextProp ("LABEL007", 25, 140, -1, -1, 0, 0, 0, "Arial", "N", 8);
SetTextProp ("FIELD007", 70, 140, -1, -1, 0, 0, 0, "Courier", "B", 10);
SetTextProp ("LABEL008", 25, 145, -1, -1, 0, 0, 0, "Arial", "N", 8);
SetTextProp ("FIELD008", 70, 145, -1, -1, 0, 0, 0, "Courier", "B", 10);
Line (20, 118, 20, 145);
;
{...}
```

## Annex A3: Example of cover form expected by fpdfpag

```
{...}
;
; =====
; Document cover form for fpdfpag
; =====
;
;
SetLineWidth (0.3);
Line (10, 10, 198, 10);
Line (10, 282, 198, 282);
;
SetLineWidth (0.6);
Line (50, 80, 160, 80);
Line (50, 102, 160, 102);
;
SetTextProp ("COVRTITL", 68, 95, 80, 12, 0, 0, 0, "Arial", "N", 30);
;
SetTextProp ("COVLB000", 45, 150, 80, 12, 0, 0, 0, "Arial", "N", 16);
SetTextProp ("COVER000", 120, 150, 80, 12, 0, 0, 0, "Courier", "N", 16);
SetTextProp ("COVLB001", 45, 165, 80, 12, 0, 0, 0, "Arial", "N", 16);
SetTextProp ("COVER001", 120, 165, 80, 12, 0, 0, 0, "Courier", "N", 16);
SetTextProp ("COVLB002", 45, 180, 80, 12, 0, 0, 0, "Arial", "N", 16);
SetTextProp ("COVER002", 120, 180, 80, 12, 0, 0, 0, "Courier", "N", 16);
SetTextProp ("COVLB003", 45, 195, 80, 12, 0, 0, 0, "Arial", "N", 16);
SetTextProp ("COVER003", 120, 195, 80, 12, 0, 0, 0, "Courier", "N", 16);
;
{...}
```

## Annex A4: Example of configuration file expected by fpdfrow

```
;
; +=====+
; 1 Configuration file for FPDFROW tool 1
; +=====+
;
;
FPDFINI=ini\fpdfrow.ini
COVRFORM=covrrowb
DOCUFORM=docurowb
PAGENUMB=Y
ORIENT=L
FRSTLINE=H
REC_LNGR=2400
MAX_FLDS=80
FILLCHAR=$
FILLLABL=£
MAX_POSY=185
;
; Cover Page - Set miscellaneous fields
; -----
COVRTITL=Employee List
COVLB000=Identifiant Client:
COVER000=&CUID&
COVLB001=Description Client:
COVER001=&CUST_DS&
COVLB002=Période Paie:
COVER002=&PERD&
COVLB003=Traitement:
COVER003=&JNAM& - &JNUM&
COVLB004=Date - Heure Production:
COVER004=&DATE& - &HOUR&
;
; Footers
; -----
FOOTER00=&DATE& - &HOUR&
;
; Headers
; -----
HEADER00=Période: &PERD&
HEADER01=&CUID&
;
```

## Annex A5: Example of document form expected by fpdfflow

```
{...}  
;  
; -----  
; Form example #.2 for fpdfflow (landscape)  
; -----  
;  
SetLineWidth (0.3);  
SuperRect (8, 13, 280, 179, "D", 1, 1, 1, 1);  
;  
SetTextProp ("LABEL000", 12, 18, 2, 8, 0, 0, 0, "Arial", "BI", 10);  
SetDrawProp ("LABEL000", 12, 18, 0.15, 64, 128, 255, 255, 255, 200);  
SetTextProp ("FIELD000", 12, 28, 2, 6, 0, 0, 0, "Courier", "B", 10);  
SetDrawProp ("FIELD000", 12, 28, 0.15, 0, 0, 0, 240, 240, 240);  
SetColumns ("FIELD000", 48, 22, 24, 64, 32, 30, 30, -7, -8, -9, -10, -11, -12, -13, -  
14, -15, -16, -17, -18, -19);  
;  
SetTextProp ("PAGENUMB", 145, 200, -1, -1, 0, 0, 0, "Courier", "I", 9);  
SetTextProp ("HEADER00", 10, 10, -1, -1, 0, 0, 0, "Courier", "N", 9);  
SetTextProp ("HEADER01", 270, 10, -1, -1, 0, 0, 0, "Courier", "N", 9);  
SetTextProp ("FOOTER00", 10, 200, -1, -1, 0, 0, 0, "Courier", "I", 9);  
{...}
```

## Annex A6: Example of cover form expected by fpdfrow

```
{...}  
;  
; =====  
; Document cover for FPDFLROW  
; =====  
;  
;  
SetLineWidth (0.3);  
Line (10, 15, 280, 15);  
Line (10, 195, 280, 195);  
;  
SetLineWidth (0.6);  
Line (90, 40, 200, 40);  
Line (90, 62, 200, 62);  
;  
SetTextProp ("COVRTITL", 110, 55, 80, 12, 0, 0, 0, "Arial", "N", 30);  
;  
SetTextProp ("COVLB000", 80, 100, 80, 12, 0, 0, 0, "Arial", "N", 16);  
SetTextProp ("COVER000", 150, 100, 80, 12, 0, 0, 0, "Courier", "N", 16);  
SetTextProp ("COVLB001", 80, 115, 80, 12, 0, 0, 0, "Arial", "N", 16);  
SetTextProp ("COVER001", 150, 115, 80, 12, 0, 0, 0, "Courier", "N", 16);  
SetTextProp ("COVLB002", 80, 130, 80, 12, 0, 0, 0, "Arial", "N", 16);  
SetTextProp ("COVER002", 150, 130, 80, 12, 0, 0, 0, "Courier", "N", 16);  
SetTextProp ("COVLB003", 80, 145, 80, 12, 0, 0, 0, "Arial", "N", 16);  
SetTextProp ("COVER003", 150, 145, 80, 12, 0, 0, 0, "Courier", "N", 16);  
SetTextProp ("COVLB004", 80, 160, 80, 12, 0, 0, 0, "Arial", "N", 16);  
SetTextProp ("COVER004", 150, 160, 80, 12, 0, 0, 0, "Courier", "N", 16);  
;  
{...}
```