User Manual



3-Heights®
PDF Producer

PDF/A conform

Version 6.27.4

PDF-TOOLS.COM
Premium PDF Technology

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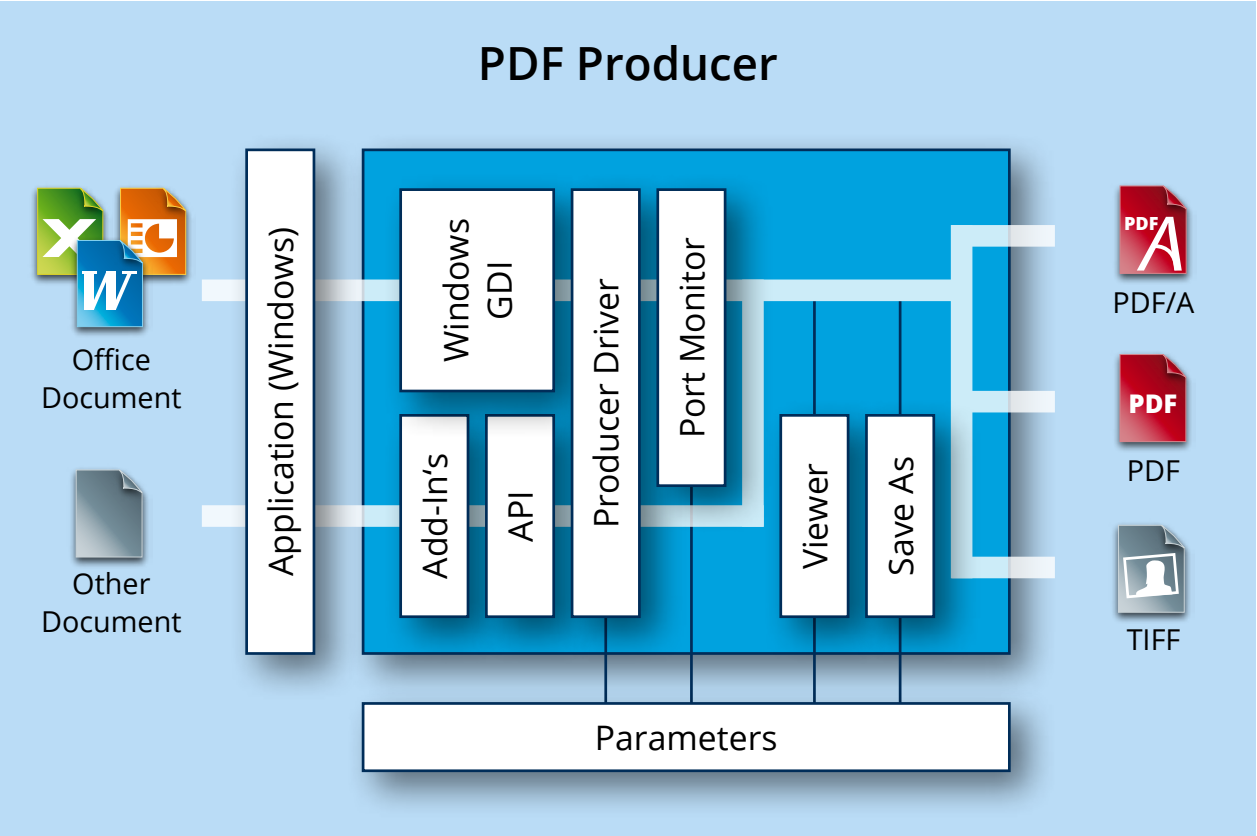
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1 Introduction

1.1 Description

The 3-Heights® PDF Producer creates files conforming to PDF and PDF/A from any Windows application via the print function. The product was specially designed for use in professional client and server environments (Citrix, Windows TS) and for integration in OEM applications.

Software development partners have a multitude of additional options such as a programming interface (API) which makes it easy to incorporate the component in own applications. The product is characterized by its high speed, the outstanding quality and optional PDF/A conformance of the resulting documents.



1.2 Functions

The PDF Producer converts documents from any Windows application into PDF, PDF/A or TIFF. A wide variety of parameters such as the page format, compression and others can be configured. The embedding of fonts can be reduced to the minimum in order to get small file sizes. The product can handle multiple print jobs at the same time which makes it suitable for server environments. The optional synchronous operation mode makes the output files available immediately after submitting the print job. This reduces the complexity of the application integration significantly. Developers of OEM products can profit from APIs, Command Line Tools and sample programs to automate their deployment and operation tasks.

1.2.1 Features

General features

- Scripted installation (MSI) for automated software distribution
- Synchronous and asynchronous document creation
- Set standard settings for all users
- Set customized settings per user
- Port monitor for automated and configurable post-processing of generated PDF documents
- Port pool for parallel document creation in multi-user environments (Terminal Server, Citrix)
- Automatic resolution limitation to prevent memory space problems

PDF document-related features

- Set page size for more than 100 standard page formats (A4, ...)
- Set page orientation (portrait, landscape)
- Set color or gray scale
- Set scaling (100%, ...)
- Set pages per sheet (1, 2, 4, 6, ...)
- Set PDF conformance (PDF 1.x, PDF/A)
- Set output intent color profile
- Linearize file for fast web viewing
- Set border dimensions
- Set embed fonts (yes, no)
- Set the quality to increase the effect of the lossless compression (JPEG)
- Set compression for color and grayscale images (JPEG, JPEG2000, Flate)
- Automatically detect and adjust portrait and landscape formats
- Encrypt and password-protect documents and set user access permissions
- Application of stamps, watermarks, etc., with the aid of XML control files
- Add XMP metadata to the output document

TIFF document-related features

- Set class of putput image (fax, bitonal, grayscale, RGB, CMYK)
- Set page size (A4, ...)
- Set page orientation (portrait, landscape)
- Set output color space (gray, RGB, CMYK)
- Set output resolution
- Set image compression (G4, LZW, ...)
- Set image compression quality

1.2.2 Formats

Input formats

The tool accommodates all input formats supported by the printing application.

PDF producer output formats

- PDF 1.x (PDF 1.4, …, PDF 1.7)
- PDF 2.0
- PDF/A-1b, PDF/A-2u, PDF/A-3u

TIFF producer output formats

- Bi-tonal
  - uncompressed
  - CCITT G3
  - CCITT G3-2D
  - CCITT G4
  - LZW
  - Flate
  - Packbits
- Grayscale (4 or 8 bit), RGB and CMYK
  - uncompressed
  - LZW
  - JPEG
  - Flate
  - Packbits

1.2.3 Conformance

- ISO 32000-1 (PDF 1.7)
- ISO 32000-2 (PDF 2.0)
- ISO 19005-1 (PDF/A-1)
- ISO 19005-2 (PDF/A-2)
- ISO 19005-3 (PDF/A-3)

1.3 Applications

- On-the-fly PDF creation on-the-fly for workstations
- Pre-installed PDF creation on Microsoft Terminal and Citrix servers
- Integrated PDF creation in enterprise applications, e.g. document rendition services, archiving services, etc.

1.4 Understanding the 3-Heights® PDF Producer

If you are not familiar with this product or not sure about its application area and functionality, please read this chapter first. It describes the concept and idea and is important to be understood. It highlights the most important features of the product. The following section applies to the "3-Heights® PDF Producer" and "3-Heights® TIFF Producer", which will be abbreviated as "Producer".

From an application's point of view the function and control of the Producer is equivalent to any other printer driver. This means:

1. The Producer must be used in combination with a Windows application that has the ability to print. A PDF or TIFF file is produced by the printer driver which interprets the Windows GDI calls from the printing application (e.g. Microsoft Word). For more details, see also chapter "GDI Specification Coverage".
2. The Producer does neither have the ability to read the application's original document (e.g. Word document), nor does it have the functionality to print it on paper.
3. The Producer is seamlessly integrated into the Windows printer architecture, whose capabilities (e.g. remote printing, device modes, port monitors, etc.) can be fully used by the controlling application.
4. Further applications can be called for post-processing of the generated documents, such as sending the document to a web service.
5. The driver creates the PDF and TIFF document directly without going through PostScript. This increases the speed and quality significantly and allows for the synchronous document creation.
6. The API, which is available for OEM applications, does not change the above concept. The API is a convenient means to automate the creation and enrichment of PDF Documents such as adding XMP metadata (see separate documentation).

A number of parts are supplied for OEM customers, which facilitate the development and integration of the producer into their own applications.

- An default port application (3-Heights® PDF Application Runner) which provides a GUI to save the created document, send it to an email program etc.
- A programming interface (3-Heights® PDF Producer API) to perform tasks such as configuring the driver and the port monitor.
- An API and Command Line Tool to perform installation, uninstallation, upgrade, configuration and recovery tasks.
- A collection of sample programs in C, VB.NET, etc. to demonstrate the usage of the Producer such as creating a document using GDI calls, playing EMF files, adding XMP metadata, starting applications and invoking the print function.
- This manual an the separate manual for developers about programming and installation APIs.

1.5 Operating systems

The 3-Heights® PDF Producer is available for the following operating systems:

- Windows Client 7+ | x86 and x64
- Windows Server 2008, 2008 R2, 2012, 2012 R2, 2016, 2019, 2022 | x86 and x64

'+' indicates the minimum supported version.

1.6 Documentation

There are two manuals.

	Manual
Product Name	**Description**

Manual	
PDF Producer	This documentation contains information, mainly used by the end-user, such as: ■ Installation uninstallation of the product on a desktop computer ■ Configurations and document settings ■ How to print from a Windows application ■ Usage scenarios and printing application examples Online documentaion available for download: https://www.pdf-tools.com/public/downloads/manuals/PdfProducer.pdf
PDF Producer API	This documentation contains information for developers, such as: ■ Installation Command Line Tool and deployment scenarios ■ Installation API and integration into own installation programs ■ The PDF Producer API ■ The Licensing interface Online documentaion available for download: https://www.pdf-tools.com/public/downloads/manuals/PdfProducerAPI.pdf

1.7 Glossary

This chapter should provide a quick overview of the most important key words that are used in this documentation.

Keyword	Description
Printer	In terms of the Windows operating system, a printer is an object which can be accessed by a printing Windows application to create print jobs. Printers are listed in the window "Devices and Printers" of your system's Control Panel. Examples for names of printers: ■ 3-Heights® PDF Producer ■ 3-Heights® TIFF Producer ■ HP Laser Jet 4050 Series PS The names of printers can be defined by the user. Commonly a printer is also referred to a hardware device that is able to print a hard copy of a file. However this type of printer is not meant in this manual.

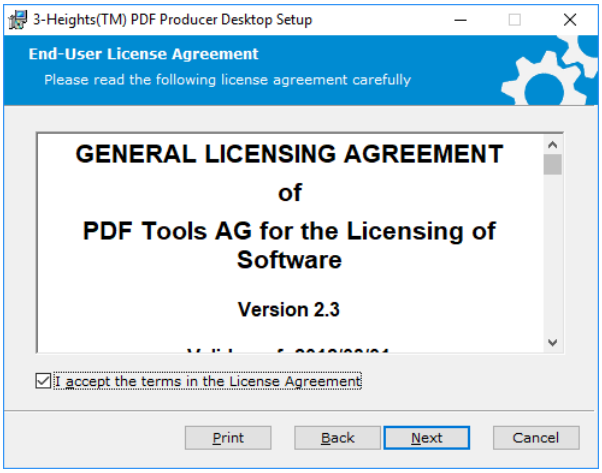
Printer Driver	A printer driver is a piece of software that is used by the printer to translate data from the printing application (GDI) to a format that is understandable by the printer device. The most common formats are PostScript and PCL. 3-Heights® PDF Producer Driver creates directly PDF without going through PostScript. Printer drivers can be selected in the "Advanced" tab of a printer's property dialog. Multiple printers can use the same printer driver. Printer drivers often have the same name as the printer by which they are used. For that reason the terms "printer" and "printer driver" are confused frequently. Examples for names of Printer Drivers: ■ 3-Heights® PDF Producer Driver ■ HP Laser Jet 4050 Series PS The names of printer drivers are given by the manufacturer.
Port	Every printer has a port. The port defines to where documents are sent, such as a printer port, or a file port. Examples for Ports: ■ 3-Heights® Port ■ LPT1, LPT2, COM1, COM2 ■ An IP address ■ FILE
Port Monitor	A port monitor is a piece of software that is monitoring a port and processing data sent to that port. The 3-Heights® PDF Port Monitor is monitoring the 3-Heights® Port and saves the documents at the location that is configured in the port monitor and optionally post-processes them (e.g. opens them in a PDF viewing application).
Print Job	A print job is a series of pages that are printed as an undivisable multi-page document. When printing to a physical device, all pages of a print job are printed on paper before the next print job starts. When printing to the 3-Heights® PDF Producer, all pages of a print job are added to a single PDF document.
Print Processor	A print processor can pre-process (e.g. convert) the input data before it is sent to the spooler and from there to the print monitor. The 3-Heights® Producer Print Processor will enable future product features.

2 Installation

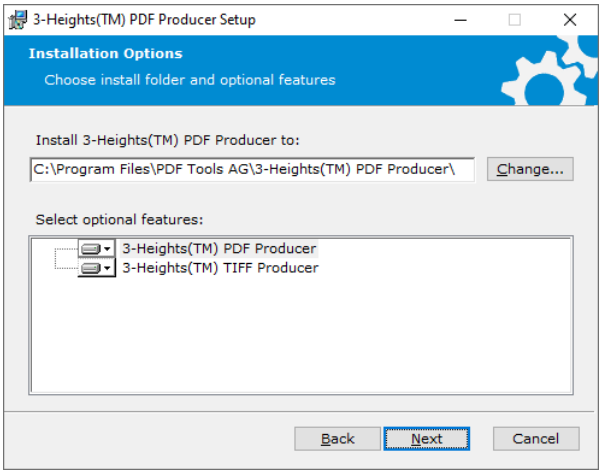
2.1 Interactive installation

This is the standard installation process for the 3-Heights® PDF Producer.

1. Run the `PdfProducer-‹Version›-Windows-‹Architecture›.msi`. Be sure to choose the correct architecture corresponding to your 64-bit or 32-bit computer.
2. After going through the initial setup page, accept the terms in the “License Agreement”.



3. Continue to the Installation Options via the “Next” button.
   a. Change the destination folder, if desired.
   b. Select the features to be installed.
   c. Click on “Next”.



4. Trigger the installation by clicking on the “Install” button.
5. After the installation, the 3-Heights® PDF (and TIFF) Producers should now be listed in the window “Devices and Printers”.

2.2 Automated installation using MSIEXEC

This is a description how the 3-Heights® PDF Producer can be installed using the Microsoft Installer MSIEXEC and its incorporated additional functionalities. This is used for automated installation, e.g. for deployment.

Type the following command to retrieve the usage of MSIEXEC:

```
msiexec /?
```

The following command launches the installer of the 3-Heights® PDF Producer without any additional parameters. It is basically the same as starting (double-clicking) the MSI file directly:

```
msiexec /i "3-Heights(TM) PDF Producer.msi"
```

If you would like to log the installation, use the switch /l. The following command logs all information except verbos and extra debugging messages:

```
msiexec /l* installation.log /i "3-Heights(TM) PDF Producer.msi"
```

You can use 3-Heights® PDF Producer specific configuration settings via MSI properties on the command line. Supported settings (properties) are:

```
PDFPORT_NAME
PDFPORT_COMMAND
PDFPRINTER_NAME
PDFPORT_PROMPTNAME=0 (default 1, prompt enabled)
TIFFPORT_PROMPTNAME=0 (default 1)
PDFPORT_ADDTIMESTAMP=1 (default 0)
TIFFPORT_ADDTIMESTAMP=1 (default 0)
PDFPORT_ADDUSER=1 (default 0)
TIFFPORT_ADDUSER=1 (default 0)
PDFPORT_REMOVEEXTENSION=0 (default 1)
TIFFPORT_REMOVEEXTENSION=0 (default 1)
PORTPOOLSIZE=10 (default 1; maximum: 20)
PRINTDIRECT=1 (default 0, use spooling)
PDFDEVMODE=C:\pdf.devmode (default None, Path to a PDF DEVMODE file)
TIFFDEVMODE=C:\tiff.devmode (default None, Path to a TIFF DEVMODE file)
```

Note: TIFF printer entries will by default use the same port(s) as PDF entries. If you want to configure different port settings for the PDF and TIFF printer entries, you must also configure different port directories.

Note: For more information about saving and loading document settings (DEVMODE), ensure that the feature “Developer Tools” is installed and check the PDFProducerAPI.pdf manual.

The following command defines the name of the directory to which the port monitor outputs documents. Note that the path must always end with a backslash:

```
msiexec /i "3-Heights(TM) PDF Producer.msi" PDFPORT_NAME="C:\Documents and
```

```
Settings\All Users\Documents\PDF Outbox\"
```

The following command sets the printer name:

```
msiexec /i "3-Heights(TM) PDF Producer.msi" PDFPRINTER_NAME="My 3-Heights(TM)
PDF Producer"
```

Here is an example which combines several settings:

```
msiexec /qb /l* i.log /i "3-Heights(TM) PDF Producer.msi" PDFPORT_NAME=
"C:\Documents and Settings\All Users\Documents\PDF Outbox\"
```

(Due to a "feature" of Windows, it is not possible to pass the string `"%FILE%"` as argument because `""%%FILE%%""` is transformed to `"%FILE%"`. Instead the argument should be passed as `Q-FILE-Q`, MSIUTIL replaces this by `"%FILE%"`.)

For `PDFPORT_PROMPTNAME` and `TIFFPORT_PROMPTNAME` use value `"0"` to disable the prompt. By default the file name prompt is enabled.

It is also possible to control the feature set to be installed. The package consists of the following MSI feature set:

- PDFProducer (contains the PDF Producer driver, port monitor, API DLL, printer installer and port explorer executables, the manual and readme file)
- TIFFProducer (contains the TIFF printer driver)

The INSTALLLEVEL for PDFProducer is 1. TIFFProducer has an INSTALLLEVEL of 200.

Furthermore, `PortExplore.exe` has an installation condition of `PE<>"N"`. To install just the PDF printer, you would specify the following command:

```
msiexec /qb /l* i.log /i "3-Heights(TM) PDF Producer.msi"
ADDLOCAL=PDFProducer PE=N
```

The silent de-installation stops processes that have driver DLLs loaded. There are two silent modes. Option `/qb` allows pop-up dialog boxes; `/qn` suppresses pop-up dialog boxes.

2.3 Update

1. Ensure that no application is currently using the PDF Producer. If the printer is shared, also ensure that the PDF Producer is not used from other machines.
2. Run the `PdfProducer-‹Version›-Windows-‹Architecture›.msi` similar to the installation procedure.
3. If the printer is shared, other machines need to restart the "Print Spooler" service to get the updated version.

2.4 Uninstall

1. Ensure that no application is currently using the PDF Producer. If the printer is shared, also ensure that the PDF Producer is not used from other machines.
2. Uninstall the PDF Producer using the Start Menu entry.

2.5 Troubleshooting

2.5.1 After an update, an evaluation watermark is printed

Ensure that you restart the "Print Spooler" service on the machine, specially if the Printer is shared in a network environment.

2.5.2 Error 126

Should the installation or uninstallation fail with the error 126 (Error message: The specified module could not be found), verify the %PATH% environment variable is set correctly and does not include any invalid directories. To verify or change the %PATH% environment variable, open "System" from the "Control Panel". In the tab "Advanced", click on "Environment Variables…". Under System variables, find and select the entry "Path", then press the "Edit…" button underneath it. Remove any invalid directories.

2.5.3 Printing via PDF Producer blocks applications

Printing via a PDF Producer printer entry works like printing through any Windows printer: print jobs are serialized to pass one by one to the configured printer port. This can block the printing application, if other applications are also using the same printer and port, and if printing is configured to **not** use spooling.

There are two parameters that permit performance tuning in these cases:

1. The printer's advanced setting "direct printing": If "direct printing" is configured, change this to "Spool print documents…"
2. Port pooling: Make use of port pooling for the PDF printer, and increase the number of ports to a sufficiently large count

> **Note1:** If you anticipate that multiple users and/or application will be using the same printer(s) and port(s), you can specify the necessary parameters via command line during the installation. (See `PORTPOOLSIZE` and `PRINTDIRECT` parameters.)

> **Note2:** When configuring port pooling with multiple ports, make sure to configure all port settings identically to ensure deterministic behavior.

3 Configuration

The configuration of either the 3-Heights® PDF Producer or the 3-Heights® TIFF Producer is done at two different places:

- Printer Properties
- Document Settings

Printer properties are set per printer. Document settings are set per user (or all users).

This chapter gives a brief overview for both producers. Detailed configuration information is found at the in the corresponding chapters for the PDF and TIFF Producers.

Configurations applied in the printer are **persistent**.

In a Windows application that is printing a document, specific settings for each document can be applied. Document settings configured from within an application are **volatile** and are only valid for a print job, or a series of print jobs. After the application is closed, the document settings are lost. If document settings are not defined at the time of printing from an application, the default values (current user's document settings) are applied.

3.1 Printer properties

Printer Properties define the properties of the Windows printer. These are:

- Printer Name
- Network Sharing
- Ports
- Windows Security
- etc.

Once you install either the 3-Heights® PDF Producer or the 3-Heights® TIFF Producer, you can use the Properties dialog box to set its properties. You access the Printer Properties dialog box by doing the following:

- Start your "Control Panel" and in the category "Hardware and Sound" click on the "View devices and printers".
- Right-click on the icon of the printer you want to configure and select "Printer properties" from the pop-up menu.

Printer properties are set per printer. If multiple sets of printer properties (e.g. different ports or different network sharing) are required, multiple instances of the producer need to be installed.

3.2 Document settings

Document settings define how a PDF or TIFF document is to be produced. The settings are different for the PDF and TIFF Producer. They include for example:

- Orientation
- Paper Size
- Color
- Resolution
- Image Compression
- etc

Document settings can be set for all users or for the current user.

- To configure the current user's document settings: In the tab "General" of Printer Properties dialog box, press the button "Printing Preferences…".

- To configure the default document settings for all users: In the tab “Advanced”, press the button “Printing Defaults…”. This operation requires administrator rights.

Doing either opens the document settings dialog box.

4 Configuration of the 3-Heights® PDF Producer

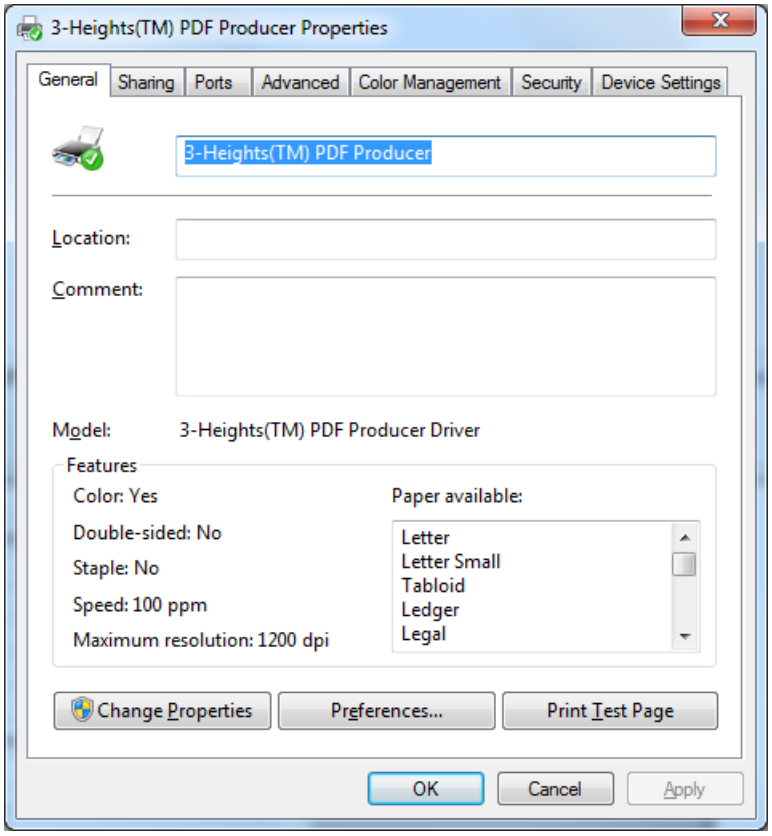
After installing the 3-Heights® PDF Producer, its default settings are set to factory defaults. The default values can be adjusted and set individually for the current user or for all users.

The current user's document setting are by default applied to any document printed using the 3-Heights® PDF Prdocuer.

4.1 Printer properties

4.1.1 General

This tab lists the printer name, and optionally the location and a comment of the printer. It also lists the default features of printers, such as color, and available paper sizes.

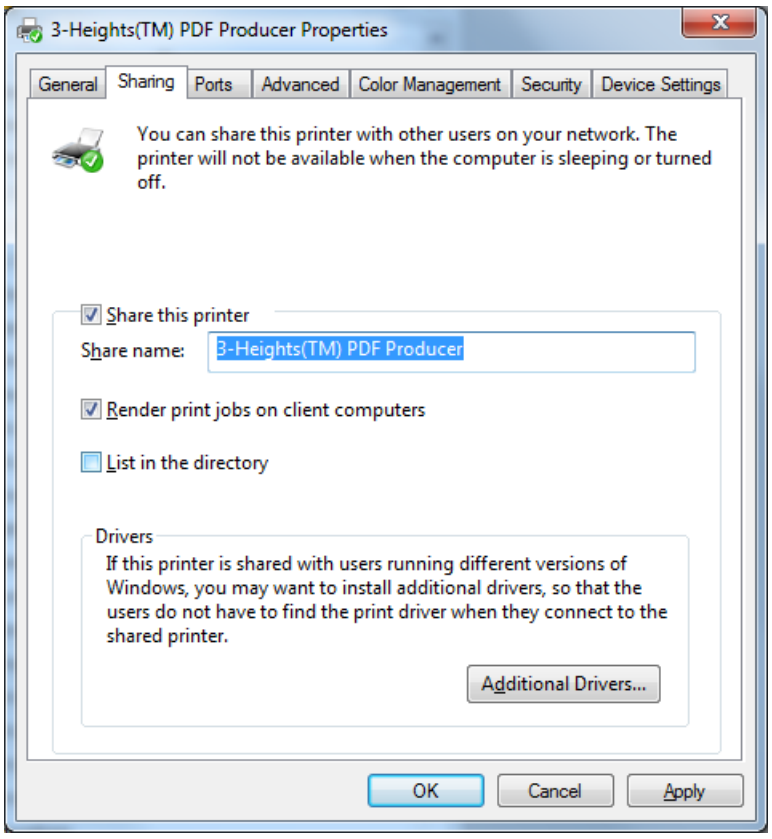


Press the button "Printing Preferences..." to open a dialog box for the current user's personal default document properties. A description of the available features that can be configured is available in the chapter Document Settings.

Press the button "Print Test Page" in order to print a one-page test page to the PDF Producer.

4.1.2 Sharing

Specify the name if the printer is shared. Check the "List in the Directory" box to publish the shared printer in the Active Directory and thereby allow users to search for the printer based on its capabilities and location.

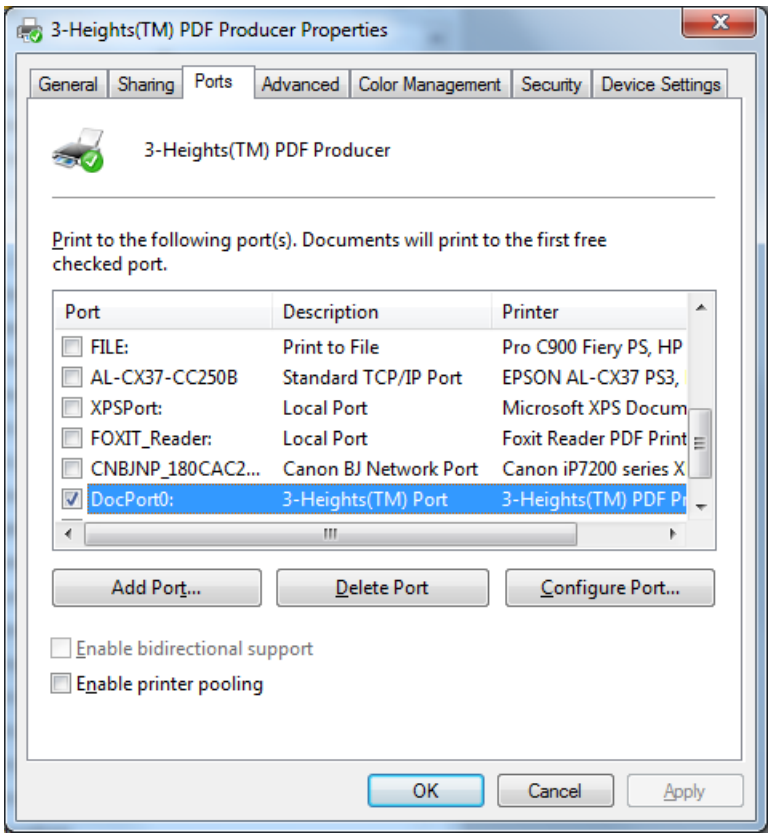


4.1.3 Ports

The installation process automatically installs a port monitor called "3-Heights(TM) Port Monitor", and creates a new instance of this type. This is the default port after installation. The port has the name that was defined during the installation. The default is `.\PDF OutBox\.` which means the output is stored in the sub-directory `PDF OutBox` of the user's `My Documents` directory. This requires that only users who have such a folder on the target system may submit print jobs otherwise the operation will fail.

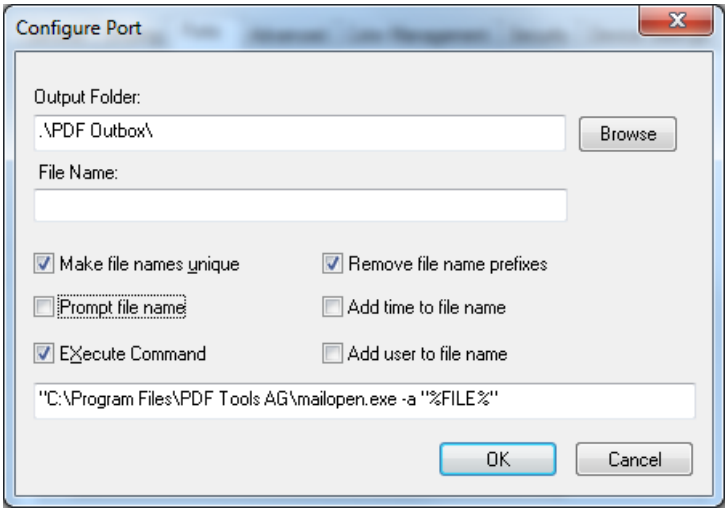
Alternatively an absolute path can be defined, such as: `C:\PDF OutBox\.`

The port monitor handles any document that is sent to a port of the type "3-Heights(TM) Port".



The path may contain system variables, such as %TEMP%.

If you would like to not use the 3-Heights(TM) Port, but another port, such as FILE, you can reset it by checking another port. Press the button “Configure Port…” to view and edit the settings of the port.



Make file names unique By checking “Make File Names Unique” documents with the same name are automatically renamed, by adding a number in brackets to the file name. If it is not checked, output files with the same name overwrite each other.

Remove file name prefixes With this box checked file names with some predefined prefixes such as `Microsoft Word -` etc. are removed from the resulting file name. This configuration parameter is set by default.

Prompt file name If you wish a dialog box to be prompted and asking for the file name every time a document is created.

Time in file name By ticking the checkbox "Add time to file" name, the resulting file name is automatically given a prefix with the current time. The prefix consists of 17 characters representing the current date (including year, month, day, hour, minutes, seconds, milliseconds) and an underscore.

Example:

20110219082359777_ stands for 2011, February 19, 08:23:59 and 777 ms.

Execute program after creation of PDF

By checking "Execute Command" a command can be specified, which is executed after the file is created. The placeholder %FILE% can be used as a variable of the file name. This feature can be used for example to launch an application to display the PDF after it is created.

Extended path names must be included in "quotation marks" like for shell commands. Depending on the command the placeholder may or may not require quotation marks: "%FILE%". Here are some sample commands:

```
"C:\Program Files\PDF Tools AG\3-Heights(TM) PDF Viewer\bin
\viewer.exe" "%FILE%"
```

```
"C:\Program Files\Adobe\Acrobat 7.0\Acrobat\Acrobat.exe" "%FILE%"
```

The command is executed under the account that submitted the print job.

In order to execute different commands for different instance of the 3-Heights® PDF or TIFF Producer, multiple ports of the type 3-Heights® Port Monitor must be installed and configured individually.

If this option is active then the specified command line executable has access to environment variables of the printing user's session.

In addition to the %FILE% variable the %COPIES% and %COLLATE% variables are replaced by the corresponding values in the device mode (i.e. printer settings).

The command line may also contain variables from the system environment in the command. The variable %FILE% is reserved and is automatically replaced by an empty string. The same applies to invalid variables. (System Variables can be listed using the command `set` in the command prompt.)

Assuming %VIEWERPATH% is defined (e.g. as "C:\Program Files\PDF Tools AG\3-Heights(TM) PDF Viewer\bin")

```
"%VIEWERPATH%\viewer.exe" "%FILE%"
```

Execute a script

The command can only start processes. In order to start a batch script (`.bat`, `.cmd`) the executable `cmd.exe` needs to be started with the batch file as parameter.

Example: Of an execute command

```
C:\Windows\system32\cmd.exe /c start C:\run.bat "%FILE%"
```

The content of the referred batch file `C:\run.bat`:

```
"C:\Program Files\PDF Tools AG\3-Heights(TM) PDF Viewer\bin\viewer.exe" %1
```

```
exit
```

If the script resides at a location whose path contains blanks, the path can be set using /D"‹path›", where ‹path› is an existing directory that contains blanks.

```
C:\Windows\system32\cmd.exe /c start /D"C:\sp ace\" run.bat "%FILE%"
```

> **Tip:** Ports can also be set by certain printing application. For example in the print dialog of Microsoft Word, there is a check box "Print to File", if checked, the port "FILE" is used for this particular print job.
>
> If the application does not allow for selecting the port, but it is required to print to different ports, one can simply install multiple instances of the PDF Producer, each with different ports and select the port by selecting a different instance of the PDF Producer.
>
> This trick can also be applied for other settings of the printer (e.g. one instance produces PDF/A another produces regular, web-optimized PDF).

Multiple ports

The 3-Heights® Port Monitor Version 4.1.26.0 and later supports printer pooling. This allows creating multiple ports for the same PDF Producer. The port monitor delegates the print job to the first free port. As a result, documents can be created in parallel. It is suggested to use 1 to 4 ports, but not more than available CPUs. The ports can be of different port types and/or have different configurations (e.g. different output directories).

When printing directly to the FILE port, only one port is required, because this port supports parallel processing implicitly.

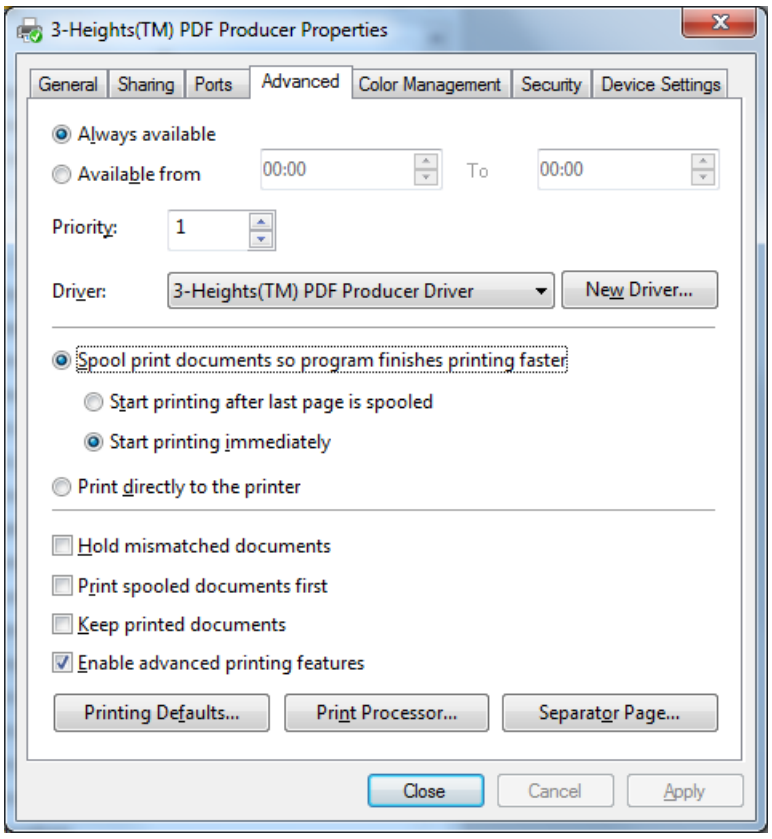
To enable multiple ports, do the following steps:

- Create additional instance of the 3-Heights® PDF Port Monitor.
- In the tab "Ports" tick the box "Enable printer pooling".
- Tick all ports that should be part of the pool.

4.1.4 Advanced

Creating PDF synchronously vs. asynchronously

In order to create PDF documents synchronously check the radio button "Print directly to the printer" in the "Advanced tab" (default). This means the print command returns once the print job is closed and the PDF is complete.



In order to create PDF documents asynchronously check the radio button “Spool print documents so program finishes printing faster”. This means at the time the print command returns the PDF is potentially not yet completed, but only in queue, and the application can proceed without waiting until it is finished.

Printing defaults

Pressing the button “Printing Defaults…” opens the document settings for all users. If the 3-Heights® PDF Producer is shared, these will be the default document settings for all users. In order to modify these settings, the logged-in user must have the proper access-rights.

User’s document settings defined in General →“Printing Preferences…” overrule these document settings.

4.1.5 Color management

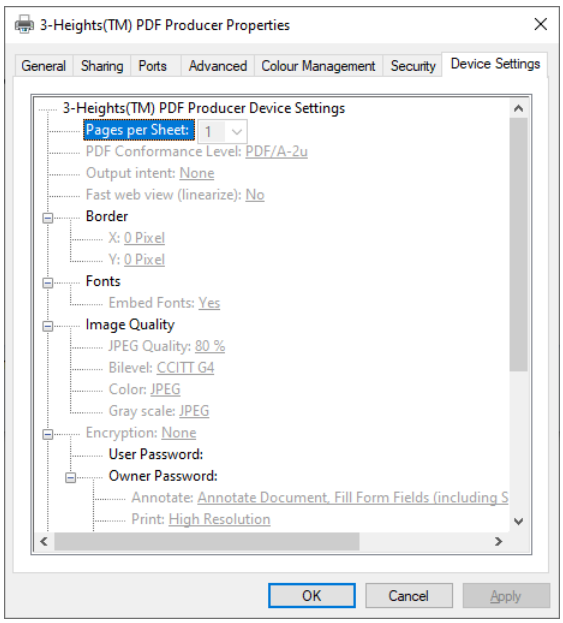
Not supported at this time.

4.1.6 Security

Set the Windows standard permissions that you can allow and deny for users and groups.

4.1.7 Device settings

The tab Device Settings shows a subset of the document settings. These are the factory defaults for the settings PDF Compliance Level, Fonts and Image Quality. They are read-only.



4.2 Document settings

Document settings define how a PDF document is to be produced. For example it defines what version of PDF shall be created, or what type of image compression shall be applied, shall fonts be embedded or not, etc.

Document settings can be set persistently for the current user, or default settings for all users, or individually and volatile when printing from an application, see Section How to print from a Windows application.

Current user: Under the tab “General”, press on the button “Printing Preferences...”.

All users: Under the tab “Advanced”, press the button “Printing Defaults...”.

> **Tip:** The initial value of the current user is defined by the All users setting. Once the current user has a setting, changes in the default for all users have no impact on already existing current user settings.

4.2.1 Paper/Output

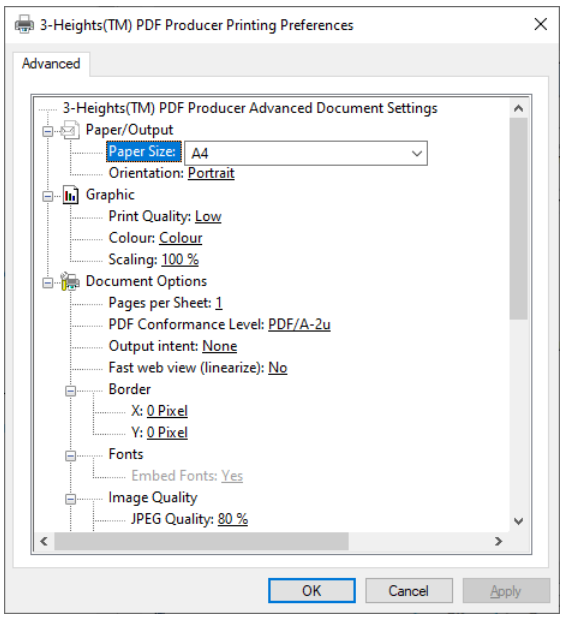
The paper format and output orientation are usually controlled by the printing application. (E.g. paper size and format of a Word document.)

Paper size All paper sizes installed on the system (including the 118 Windows default paper sizes) are available for selection.

Default: A4

Orientation Choose between Portrait and Landscape orientation.

Default: Portrait



Tip: To add additional (custom) paper sizes, do the following steps:

1. Open the "Devices and Printers" window
2. From the menu "File" select "Server Properties"
3. In the tab "Forms" check the box "Create a New Form", specify the paper size and press the button "Save Form". Note that the PDF file format limits paper sizes to 200x200 inches, which is 5080x5080 cm.

4.2.2 Graphics

Print quality Define the resolution of rendering. Available settings are:

- High (1200 DPI)
- Medium (600 DPI)
- Low (300 DPI)
- Draft (150 DPI)
- Display High (120 DPI)
- Display Low (96 DPI)

The print quality has different impacts:

- PDF Producer: The selected resolution is applied by the PDF Producer. It affects down-sampling of images as well as the precision of coordinate system calculations, e.g. of text and graphics.
- Printing application: The set print quality is reflected in the device capabilities. This means the printing application renders (or should render) with the appropriate resolution. Effects of that are:
  - The application may (or may not) apply up or down-sampling of images.
  - Due to rounding to full pixels, at low resolution, the coordinate system may be missing one pixel to render the last character of a word, what would fit in at higher resolution. As a result line and page breaks (e.g. of Microsoft Word) can vary with different resolutions.

  (These effects are related to the Windows printing architecture, which does not support WYSIWYG).

Generally a higher print quality results in a visually better output at the cost of a larger file size. However selecting a too high print quality may result in the printing application up-sampling images, which does not necessarily improve the quality but only increases the file size.

Default: Low

Color Gray scale uses one color channel, whereas color requires at least three channels. Therefore gray scale PDF documents will in general have a smaller file size.

Default: Color

ICM method Set the Image Color Management (ICM) to one of the following settings:

- "Disabled"
- handled by Windows
- handled by the PDF Producer

Default: Disabled

The ICM intent

- Colormetric: For matching a particular color.
- Contrast: Optimized for photographic images.
- Saturation: Optimized for presentation graphics.

Default: Colormetric

4.2.3 Document options

Pages per sheet ("N-Up") This setting allows for placing multiple pages (1, 2, 4, 6, 9, 16) on one sheet.

Default: 1

PDF conformance level Sets the PDF version. Supported are

- PDF 1.4 (Corresponds to Acrobat 5 and higher)
- PDF 1.5 (Corresponds to Acrobat 6 and higher)
- PDF 1.6
- PDF 1.7
- PDF/A-1b
- PDF/A-2u
- PDF/A-3u

Selecting PDF/A-1b automatically adjusts other settings. Among other requirements, in PDF/A fonts must be embedded, JPEG2000 compression is not allowed, etc. See also the note about PDF/A in the chapter Features.

Selecting PDF/A-2u creates a document, which conforms to PDF/A-2 levels B and U.

Default: PDF/A-2u

Output intent Sets the Output Intent for the produced PDF document. Possible values are "None" or an installed color profile.

- None: sRGB colors will be used without conversion. If the PDF Compliance Level is PDF/A, the Output Intent will be the "sRGB Color Space Profile", otherwise there will be no Output Intent.
- Color Profile: Colors will be converted to fit the chosen color profile and the Output Intent will be set to the chosen color profile. There are two exceptions:
  - Color is set to "GrayScale": Colors are directly converted to a grayscale value using the color space "DeviceGray". Independently, the Output Intent will be set to the chosen color profile.
  - A stamp file is used: The Output Intent setting is ignored and treated like it is set to "None".

  If this setting is used in the API and a invalid color profile is used, it will be ignored and treated like it is set to "None".

Default: None

Installed color profiles can be selected, if they fulfill these criteria:

- Valid ICC Profile
- Output device is MONITOR or PRINTER
- Version 2.x
- Color space RGB or CMYK
- Color transformation from RGB to the color profile must be possible.

Fast web view (linearize) Add so called linearization tags to the document. A linearized document has a slightly larger file size than a non-linearized file, and provides the following features (among others):

- When a document is opened through a PDF viewing application plugin for an Internet browser, the first page can be viewed without downloading the entire PDF file.
- When another page is requested by the user, that page is displayed as quickly as possible and incrementally as data arrives, without downloading the entire PDF file.

Default: No

Fonts

- Embed Fonts: A font can be embedded as a resource into a PDF document. This ensures the document is portable and the font displays equally on different systems. Embedding a font file however increases the file size of PDF document.
  The following fonts are only embedded if embedding is selected: PDF Standard Fonts (Helvetica, Courier, Times Roman, Symbol and ZapfDingbats)
  Common fonts that are available on basically every operating system, such as “Arial”, “Times New Roman”
  The following fonts will always be embedded:
  - Fonts for uncommon characters, e.g. Asian characters
  - Fonts that use uncommon glyphs
  - Symbolic fonts
  - Barcode fonts

  Default: Yes

Image quality Set the compression types for bi-level and continuous tone images.

- JPEG quality: Set the compression quality for JPEG compressed images, allowed values are 1 to 100. A higher value results in an image with a visually higher quality and a larger file size. A lower value uses a higher compression rate that comes with a visually lower quality and a smaller file size.
  Default: 80
- Bi-level:

None	No compression
CCITT G4	Fax Group 4
JBIG2	Joint Bi-level Image Experts Group
Flate	Flate compression

  Default: CCITT G4
  Default: Flate
- Continuous Tone:

None	No compression
JPEG	Joint Photographic Expert Group
JPEG 2000	JP2 compression, supported in PDF 1.5 and higher and PDF/A-2 and higher.
Flate	Flate compression

Default: JPEG

Encryption Select between "None" and Weak (40-bit RC4, min PDF 1.2), Medium (128-bit RC4, min PDF 1.4), Strong (128-bit AES, min PDF 1.6) and Strong (256-bit AES, min PDF 1.7). A PDF/A document may not be encrypted.

- User Password: The password to open the document. If a user password is set, the application displaying the document (e.g. Acrobat Reader) will pop up a box asking for a password. At this point, either the user or the owner password must be provided. The user password is optional.
- Owner Password: The password to change the security settings (permission flags and passwords) of the document. The owner password is required to be set if any sort of encryption is applied.
- Permissions:
  - Annotate: This option sets the permissions of annotations. Annotations are interactive features, such as form fields, check boxes, sticky notes, links, file attachments, etc.
    1. None
    2. Fill Form Fields (including Signing)
    3. Annotate Document, Fill Form Fields (including Signing)

    Default: None
  - Print: This option sets if and at which quality printing the document is allowed.
    1. None
    2. Low Resolution (150 DPI)
    3. High Resolution

    Default: None
  - Extract: Allow mark and extraction of text and graphics.
    1. None
    2. Extract Text and Graphics in Support of Visually Impaired Users
    3. Extract Text and Graphics for any Purpose

    Default: None
  - Author: This option defines whether modifying the actual document is allowed.
    1. None
    2. Insert, Rotate and Delete Pages
    3. Assemble Document and Create or Modify Form Fields (including Signature Fields)

    Default: None

Page rendering options

- Rotate Landscape Pages: Set whether landscape pages should be rotated or not. The available options are:
  - None
  - Clockwise
  - Counter-Clockwise

  Default: None
- Use a back buffer: Use a memory buffer to support complex operations such as binary and ternary raster operations. On documents where these operations are not applied, enabling the back buffer comes with an increase of processing time. For unusually-formed documents, using the back buffer may as well come with a better performance.
  Default: No

- Downsample Images: Automatically downsample images if their resolution exceeds the value defined in the "Print Quality". Requires the back buffer to be enabled. Re-sampling adjusts the image and optimizes it for the defined print resolution (see "Print Quality"). It always comes with a loss of information as it alters the original image. The 3-Heights® PDF Producer only samples down, it never samples up.
  Default: Yes
- Rasterize Pages: Store each page of the output PDF as one rasterized image that is rendered by the GDI. The benefit of using this option is that any visual content can be rendered, as the conversion to PDF operations is not required. The downside is a usually larger file size and the loss of vector and text objects.
  Default: No

Stamp file Set the path to an XML stamp file. The stamp file can add content such as text or images to defined pages. See Section XML stamp file.

Default: None

Background stamp file Similar to "Stamp File", but stamps are applied to background of pages.

Default: None

Process control data Control data are defined as key-value pair using the format `@@key@value@@`, where the key is not allowed to use the '@' character. Key and value are not allowed to use line breaks.

- Ignore: Process the document without handling any control data.
- Metadata: Remove control data from the output page and add the key-value pairs to the document metadata.
- Metadata and output: Add the control data key-value pairs to the document metadata without removing it from the output page.

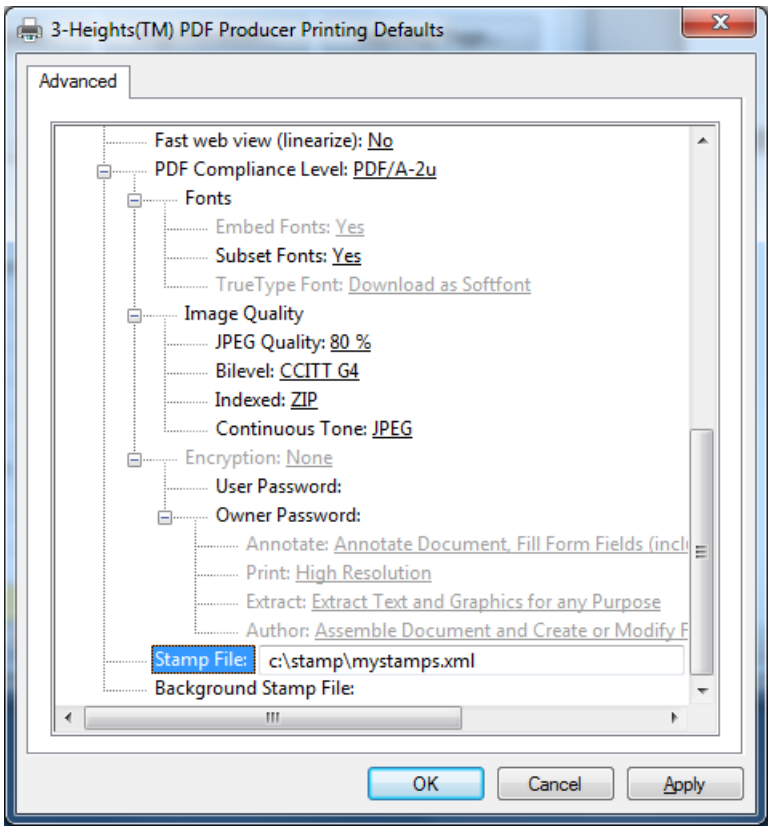
Default: Ignore

XMP metadata file Set the path to an XML Metadata File. The metadata will be added to the PDF output document, however the correctness of the XMP Metadata will not be validated.

Default: None

4.3 XML stamp file

In the "Printing Preferences" of the PDF Producer optionally a stamp file can be defined. This stamp file is an XML file defining one or multiple stamps that are to be added onto the pages of the created PDF document. The stamps can consist of text or images or both and can be applied to selected pages.



There are two separate stamp files: one for the foreground and one for the background.

4.3.1 Stamp file syntax

For each `Tag` there is a separate table below, where the `Attribute-Names` and the `Attribute-Values` are described.

`ps:pdfstamps` The **Root Tag** for the PDF stamps. The tag may contain multiple stamps.

`xmlns:ps`

`http://www.pdf-tools.com/pdfstamp/`

`ps:stamp` **Stamp**

`page` The pages to which the stamp is to be applied. Comma-separated combinations are allowed.

`first` First page.

`last` Last page.

`odd` Only odd pages including first page and last page in case it is odd.

`even` Only even pages including last page in case it is even.

`all` All pages.

`not_first` First page excluded.

`not_last` Last page excluded.

`ps:rotate` Applies to stamp content defined within this tag.

`angle`

n Rotate by n degrees counter-clockwise, e.g `90`

origin

x y Set the origin of the rotation in points, e.g `100 100`

ps:translate **Coordinate Translation:** Applies to stamp content defined within this tag.

offset

x y The x (horizontal) and y (vertical) offset in points. A translation by `x y` is equal to a transformation by `1 0 0 1 x y`.

ps:transform **Coordinate Transformation**: Applies to stamp content defined within this tag

matrix

a b c d x y The transformation matrix, to scale rotate, skew, translate, etc the stamp, e.g:

- Identity: `1 0 0 1 0 0`
- Scale by factor 2: `2 0 0 2 0 0`
- Translate 50 points left, 200 up: `1 0 0 1 50 200`
- Rotate by x: `cos(x) sin(x) -sin(x) cos(x) 0 0`
  For 90° (= $\pi/2$) that is: `0 1 -1 0 0 0`

ps:filltext **Add Filled Text**

color

r g b The color as RGB value, where all values must be from `0` to `1`, e.g:

- Red: `1 0 0`
- Green: `0 1 0`
- Black: `0 0 0`
- Gray: `0.5 0.5 0.5`

position

x y The position in points in the stamp, e.g. `200 300`.

With the default align values (`align="left top"`), `position` defines the left top corner of the text.[1]

font

path The path to the font that is to be used, e.g. `C:/Windows/Fonts/Arial.ttf`

size

n The font size in points, e.g. `12`. If set to `0`, the size is chosen such that text fits stamp size (not allowed if operator is within transformation operator).

text

text The text that is to be written, e.g. `text="Hello World"`

Multi-line text is supported by using the newline character `
`, e.g. `text="1st line&\#10;2nd line"`.

ps:stroketext **Add Stroked Text** (Outlined Text): For parameters see `ps:filltext`.

[1] Prior to version 4.4.31.0 of the 3-Heights® PDF Producer, `position` specified the origin of the first character. When upgrading, add `0.75*size` to the value of y.

linewidth

f Set the linewidth in points, e.g. `1.0`.

color

r g b See `ps:filltext`

position

x y See `ps:filltext`

font

name See `ps:filltext`

size

n See `ps:filltext`

text

text See `ps:filltext`

ps:image **Add Image**: In order for the stamp to conform to PDF/A, the image's color space must match the document's output intent.

rect

x y w h The rectangle where the image is to be placed at. `x`, `y` correspond the the location (origin at lower left corner), and `w`, `h` to width and height, e.g. `100 200 50 50`

filename

path The path to the file, e.g. `C:/pictures/image1.jpg`

compression

value By default bi-tonal images are compressed with `CCITTFax`, continuous tone images with `DCT`. To explicitly set the compression use this property.

Supported values are:

- `Flate`: Flate encoded
- `DCT`: DCT (JPEG) encoded
- `CCITTFax`: CCITT G4 encoded

4.3.2 Examples

```
<?xml version="1.0" encoding="UTF-8"?>
<ps:pdfstamp xmlns:ps="http://www.pdf-tools.com/pdfstamp/">

  <ps:stamp page="first">
    <ps:rotate angle="90" origin="100 100">
      <ps:image rect="100 100 50 25" filename="c:/images/img1.jpg"/>
    </ps:rotate>
  </ps:stamp>

  <ps:stamp page="even">
    <ps:transform matrix="1 0 0 1 0 0">
      <ps:filltext color="1 0 0" position="200 300"
```

```
font="C:/Windows/Fonts/Arial.ttf" size="12" text="Hello, World"/>
    </ps:transform>
  </ps:stamp>

  <ps:stamp page="all, not_last">
    <ps:translate offset="20 20">
      <ps:stroketext linewidth="1.0" color="0.3 0.3 1.0" position="200 300"
font="C:/Windows/Fonts/Arialbd.ttf" size="11" text="Watermark"/>
    </ps:translate>
  </ps:stamp>

</ps:pdfstamp>
```

5 Configuration of the 3-Heights® TIFF Producer

5.1 Printer properties

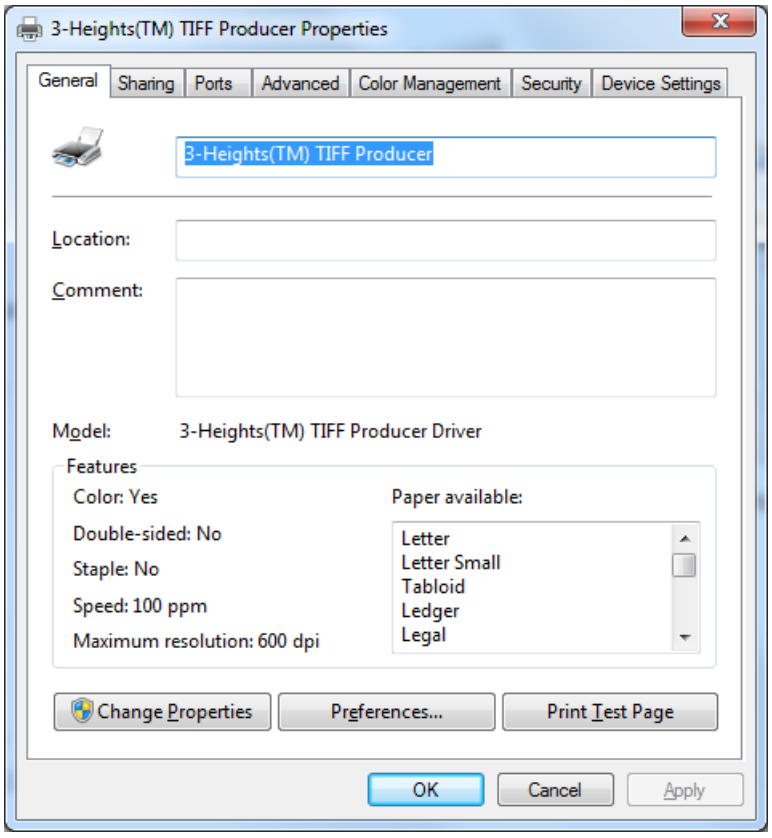
In the printer properties dialog box, the tabs “General”, “Sharing”, “Port”, “Advanced”, “Color Management”, “Security” and “Device Settings” are available.

5.1.1 General

Set the name of the printer and optionally a location and comment.

Pressing the button “Printing Preferences…” opens the current user’s document settings.

Pressing the button “Print Test Page” prints a 1-page test page to the TIFF Producer.



5.1.2 Sharing

See chapter Sharing for the 3-Heights® PDF Producer.

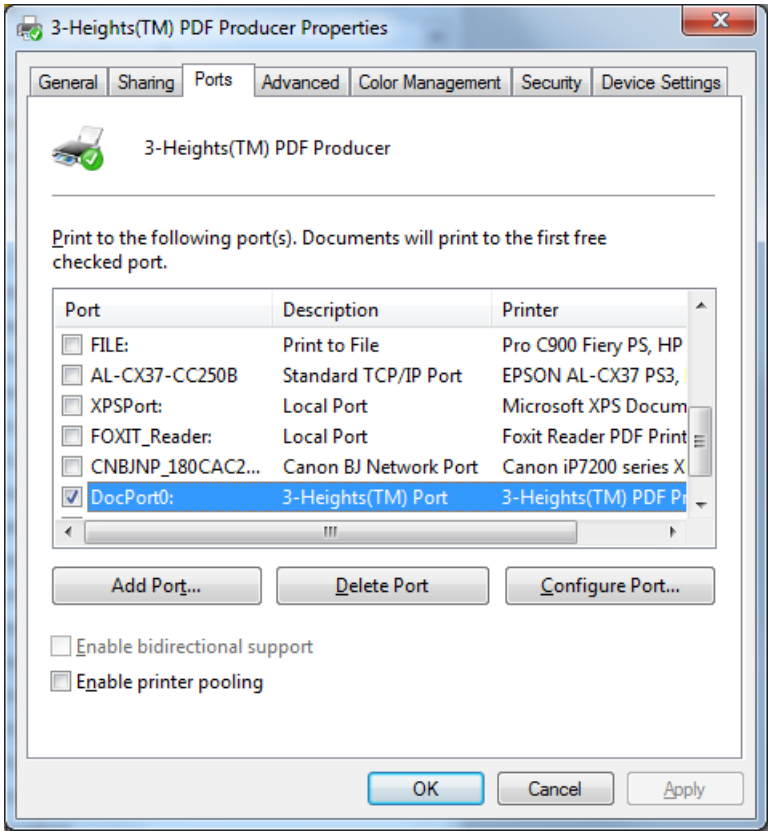
5.1.3 Ports

The installation process automatically installs the 3-Heights® Port Monitor if not already installed and creates a new port of this type. The port has the name that was defined during the installation. For example `C:\Documents and Settings\All Users\Documents\OutBox\`

The port monitor handles any document that is sent to a port of the type “3-Heights(TM) Port”.

To change the port, check another port, e.g. `FILE`:

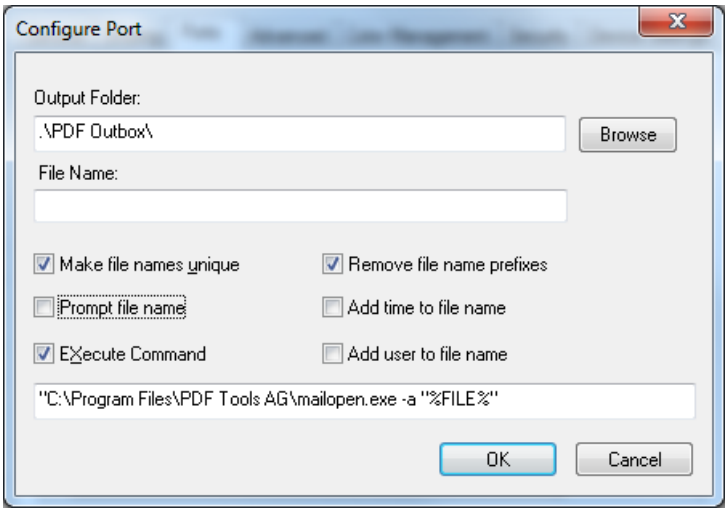
Click “Configure Port...” to view the settings of the port.



3-Heights® port

The port name cannot be changed after the installation.

By checking “Make File Names Unique” documents with the same name are automatically renamed, by adding a number in brackets to the file name. If it is not checked, output files with the same name overwrite each other.



By checking the box “Execute Command”, a command can be provided, which is executed after a TIFF document is created. For further information, see the corresponding chapter Execute program after creation of PDF in the PDF Producer section.

5.1.4 Advanced

See chapter Advanced for the3-Heights® PDF Producer.

5.1.5 Color management

Not supported at this time.

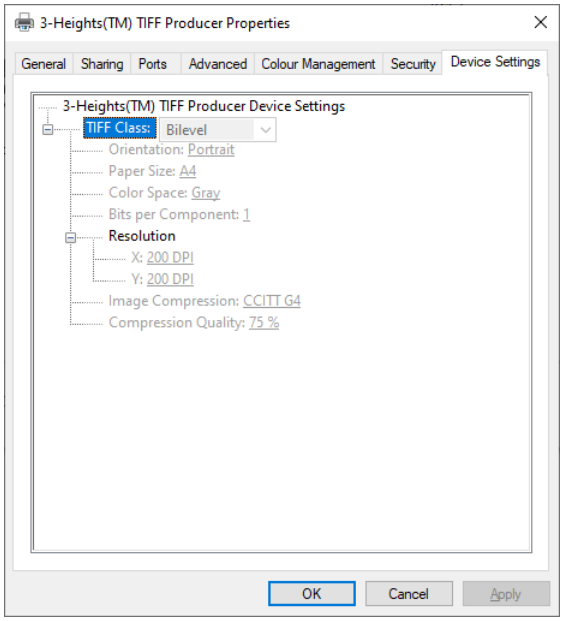
5.1.6 Security

Set the Windows standard permissions that you can allow and deny for users and groups.

5.1.7 Device settings

The tab Device Settings shows the factory defaults of the document settings.

They are read-only.



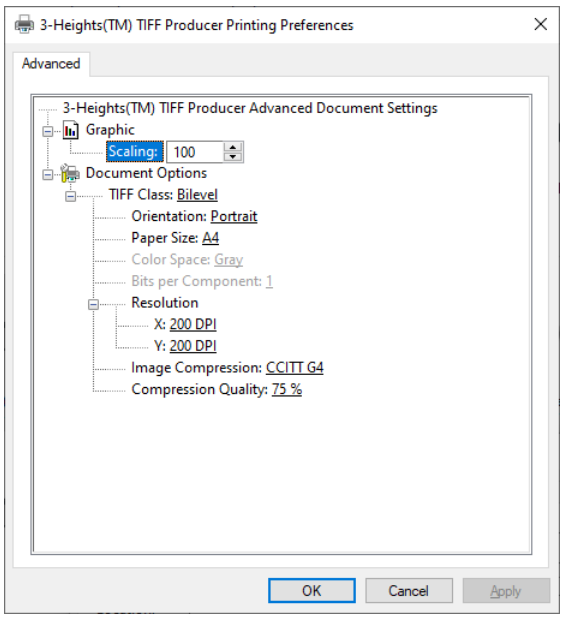
5.2 Document settings

Document settings define how a TIFF document is to be produced. For example it defines the resolution, color depth, or what type of image compression is applied, etc.

Document settings can be set for all users or for the current user.

- To configure the current user's settings: In the tab "General", press the button "Printing Preferences...".
- To configure the default settings for all users: In the tab "Advanced", press the button "Printing Defaults...".

Doing either will show the graphical interface for the 3-Heights® TIFF Producer Printing Preferences.



There are default profiles available for the various TIFF Class: Fax Standard, Fax High Res, Bilevel, Grayscale and Color. The default values of these profiles are listed in the table Default profiles.

Each default profiles has default values for color space, orientation, bits per component, resolution and compression. Some of the values can be modified, some cannot. e.g. when selecting Fax Standard, the default compression is CCITT G4, but it can be altered to CCITT G3, G3-2D, all other settings cannot be altered.

The TIFF class profile Custom allows for individually adjusting any settings. Note that not all combinations are allowed, e.g. a G4 compression always requires 1 bit per component.

The table below shows the default TIFF Class profiles. A value on a gray background indicates it cannot be altered while that specific profile is active, a bold value indicates it can be altered.

Default profiles

Parameter	Color Space	Orientation	Bits per Comp	Resolution	Compression
`Fax Standard`	Gray	Portrait	1	204 x 98	**CCITT G4**
`Fax High Res`	Gray	Portrait	1	204 x 196	**CCITT G4**
`Bilevel`	Gray	Portrait	1	200 x 200	**CCITT G4**
`Grayscale`	Gray	Portrait	8	150 x 150	**LZW**
`Color`	RGB	Portrait	8	150 x 150	**LZW**
`Custom`	any	any	1/4/8	any	**any**

Orientation Set the orientation of the paper (the TIFF) to either Portrait or Landscape.

Paper size Select one of more than 100 paper sizes.

Color space Select from Gray, RGB and CMYK color space.

Bits per component Select the color depth. Available values listed in the table below:

Bits per component

Bits per Component	Color Space	Bits per Pixel
1	Gray (1)	1
4	Gray (1)	4
8	Gray (1)	8
8	RGB (3)	24
8	CMYK (4)	32

Resolution X, Y Set the resolution in dots per inch (DPI). Typical values are 150 DPI for color and 200 or more dpi for bi-tonal images. Fax Tiffs have always a horizontal resolution of 204 DPI and a vertical resolution of either 98 DPI (Fax Standard) or 196 DPI (Fax High Res).

Compression All available types of compression and color space combinations are listed in the table TIFF Formats.

> **Compatibility note:** In versions prior to 2.0.22.0, the JPEG compressions had different names. "JPEG" was named "JPEG (old)" and "JPEG Technote #2" was named "JPEG".

Compression quality The value can be set from 1 (lowest) to 100 (highest). The default is 75.

TIFF formats

Color Space	Compression	3-Heights® PDF Viewer Pro 1.8	Photoshop 8	Acrobat 7	Microsoft Office 12: Picture Manager	Kodak Imaging for Windows (W2000)	Windows Picture and Fax Viewer (XP)	Paint 6.0 (Vista) Paint 5.1 (XP)	Windows Photo Gallery (Vista)
Bitonal	**None**	✓	✓	✓	✓	✓	✓	✓	✓
	CCITT G3	✓	✓	✓	✓	✓	✓	✓	✓
	CCITT G3-2D	✓	✓	✓	✓	✓	✓	✓	✓
	CCITT G4	✓	✓	✓	✓	✓	✓	✓	✓
	LZW	✓	✓	✓	✓	✓	✓	✓	✓
	Flate	✓	✓	✓					

TIFF formats

Color Space	Compression	3-Heights® PDF Viewer Pro 1.8	Photoshop 8	Acrobat 7	Microsoft Office 12: Picture Manager	Kodak Imaging for Windows (W2000)	Windows Picture and Fax Viewer (XP)	Paint 6.0 (Vista) Paint 5.1 (XP)	Windows Photo Gallery (Vista)
	Packbits	✓	✓	✓	✓	✓	✓	✓	✓
Grayscale	None	✓	✓	✓	✓	✓	✓	✓	✓
	LZW	✓	✓	✓	✓	✓	✓	✓	✓
	JPEG (Technote #2)	✓	✓	✓					
	JPEG	✓			✓	✓			✓
	Flate	✓	✓	✓					
	Packbits	✓	✓	✓	✓	✓	✓	✓	✓
RGB	None	✓	✓	✓	✓	✓	✓	✓	✓
	LZW	✓	✓	✓	✓	✓	✓	✓	✓
	JPEG (Technote #2)	✓	✓						
	JPEG	✓			✓	✓			✓
	Flate	✓	✓	✓					
	Packbits	✓	✓	✓	✓	✓	✓	✓	✓
CMYK	None	✓	✓	✓	✓	✓	✓	✓	✓
	LZW	✓	✓	✓	✓	✓	✓	✓	✓
	JPEG (Technote #2)	✓	✓	✓					
	JPEG	✓			✓				
	Flate	✓	✓	✓					
	Packbits	✓	✓	✓	✓	✓	✓	✓	✓

6 How to print from a Windows application

Once the 3-Heights® PDF Producer is installed, it can be used as any other printer driver. However instead of printing to a physical printer device, it creates PDF documents.

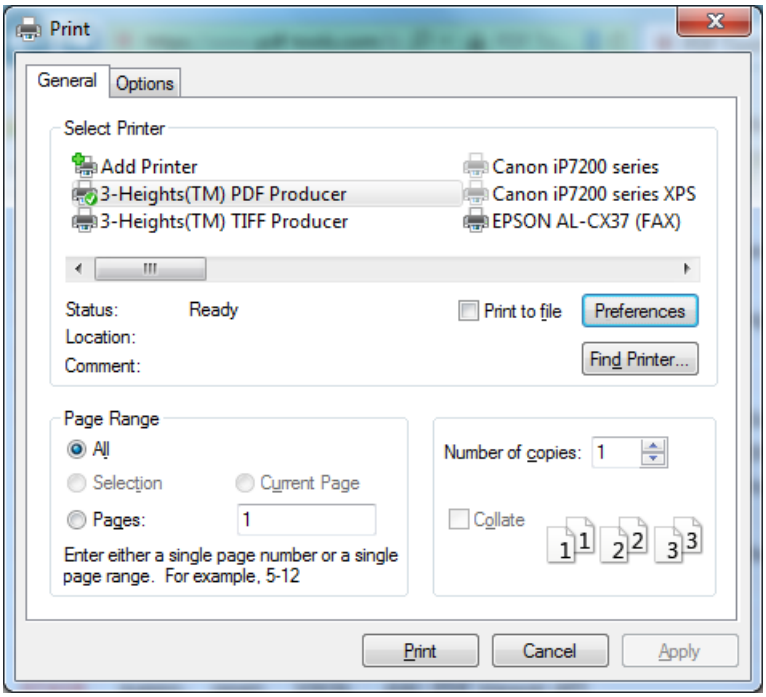
If not defined differently, the default values are applied, see chapter Printing defaults. It is possible to adjust these default values when printing from an application by configuring the document settings.

Document settings can be configured at the time a document is printed. They can be set individually for each print job. (Print job in this case means producing a PDF document.)

In order to configure the document settings, do the following steps:

1. From the Windows application select the print function.
2. Select the printer driver with the name “3-Heights(TM) PDF Producer”.
3. Press the button “Properties”.

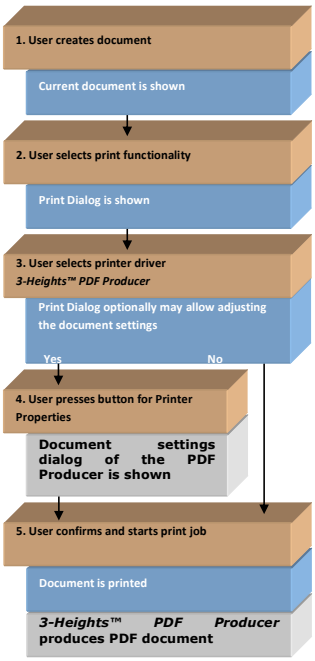
The window of the printer dialog is provided by the application and is therefore different for each application. As an example a screenshot of the Microsoft Word dialog is shown here:



A description of the available features that can be configured is available in the chapter Document Settings.

Here is a description of the work flow when a user prints a document from a Windows application using the 3-Heights® PDF Producer.

1. A user creates/opens a document using a Windows application, e.g. Microsoft Word
2. He uses the print functionality of the application to print the document. The print dialog is provided by the application and therefore looks differently for different applications.
3. In the print dialog the printer driver "3-Heights(TM) PDF Producer" is selected. Optionally the print dialog may allow to modify the document settings.
4. If document settings can be edited, the document settings dialog of the 3-Heights® PDF Producer is shown. The default values are the user document settings.
   If modifying document settings is not allowed by the application printer dialog, the default values (i.e. the user document settings) are used for the print job.
5. The user confirms and initiates the print job.
   The application prints the document.
   The 3-Heights® PDF Producer creates a PDF document.





7 Document conversion accuracy

The PDF Producer has been designed to map the printed appearance of the source document's pages into an accurate representation in the PDF document. This is one of the reasons why the PDF Producer has been implemented without any dependencies to existing drivers such as the PostScript driver with its known limitations.

However, there are inherent limitations regarding conversion accuracy which are given by the Windows spooler architecture, in particular the limitations of the GDI and EMF interface specification.

Furthermore, some settings influence the conversion accuracy.

7.1 Known issues of the GDI and EMF spooler system

7.1.1 Direct printing vs. spooling

Direct printing produces the PDF output file synchronously during the print operation which means that the PDF file creation finishes at the same time as the print operation completes. Spooling produces an intermediate EMF spool file which is converted asynchronously meaning that the print operation terminates earlier than the PDF file creation. Direct printing produces more accurate results than spooling in general. The following operations are not supported by GDI when choosing spooling:

- Pattern brushes to stroke lines
- Certain types of bitmap operations

7.2 Conversion accuracy settings

7.2.1 Back buffer

Usually a printer driver (e.g. the PostScript driver) assumes that the target page is a paper sheet. Thus, complex graphics features such as transparency blending is not supported. In general, all raster operations which require "reading" from the target surface are not supported.

Enabling the back buffer performs all complex raster operations in memory before sending the result to the target surface, in this case the PDF page. If simple raster operations are used which do not require a back buffer, it is not used.

Enabling the back buffer increases conversion accuracy but makes the resulting PDF file in general bigger.

7.2.2 Downsample images

If the resolution of a raster image is higher than the desired resolution (see print quality), then the number of samples is reduced to match the desired resolution.

Downsampling reduces the quality of the image (usually only visible when zooming) but reduces the size of the resulting PDF file in general.

7.2.3 Print quality

This setting defines the resolution of the target page. Although PDF is a resolution independent format, the print quality influences how coordinates are rounded to integers. This has an impact on the positioning of bitmaps, graph-

ics and text. Furthermore, if down-sampling is enabled then the print quality defines the resulting resolution of the image.

Finally, the print quality defines the resolution of the back buffer if it is enabled.

7.2.4 Rasterize page

This setting converts the page description in a single raster image which constitutes the page of the resulting PDF file. This setting has a similar effect as using the back buffer but rasterizes all content independent whether the back buffer is required or not. This setting is mainly used to protect the page content from being extracted - the document cannot be searched anymore.

Rasterizing the page significantly increases the file size in general.

7.2.5 JPEG quality

The JPEG compression reduces the size of raster images at the price of inaccurate visual details which are usually not observed in photographic images. This setting defines a trade-off between the loss of visual accuracy and compression ratio.

7.3 GDI specification coverage

The creation of PDF files with the 3-Heights® PDF Producer is accomplished by printing a document to a special printer driver that produces a PDF data stream instead of a printer hardware specific PostScript or HPPCL data stream. In order to do so, applications must use the Windows GDI (graphics device interface) and the printer spooler functions.

The GDI specification has been extended with each new version of the Microsoft Windows operating system. The 3-Heights® PDF Producer printer driver is based on the GDI specification for Windows 2000 and newer systems (XP, Windows 2003 Server, VISTA). All required printer driver functions including alpha blended, parallelogram shaped, color keyed and masked bitmaps as well as gradient fills have been implemented and will produce high quality PDF renderings. The printer driver capabilities are:

- 24-Bit device surface
- Constant alpha, per pixel alpha (transparency is replaced with white if conformance is PDF/A-1b)
- Gradient rectangles, Gradient triangles
- Alternate and winding fills of shapes
- Arbitrary opaque brushes for text background rectangles
- Bézier curves
- Vector fonts: TrueType, OpenType and Type1
- Geometric wide strokes
- Fonts that have an inherent vertical writing direction
- JPEG compressed bitmaps

The following capabilities are not yet implemented but planned in future releases:

- CMYK color space
- ICM color management

7.4 Conversion accuracy testing tool

PDF Tools AG provides tool to test the conversion accuracy of the PDF and TIFF producer.

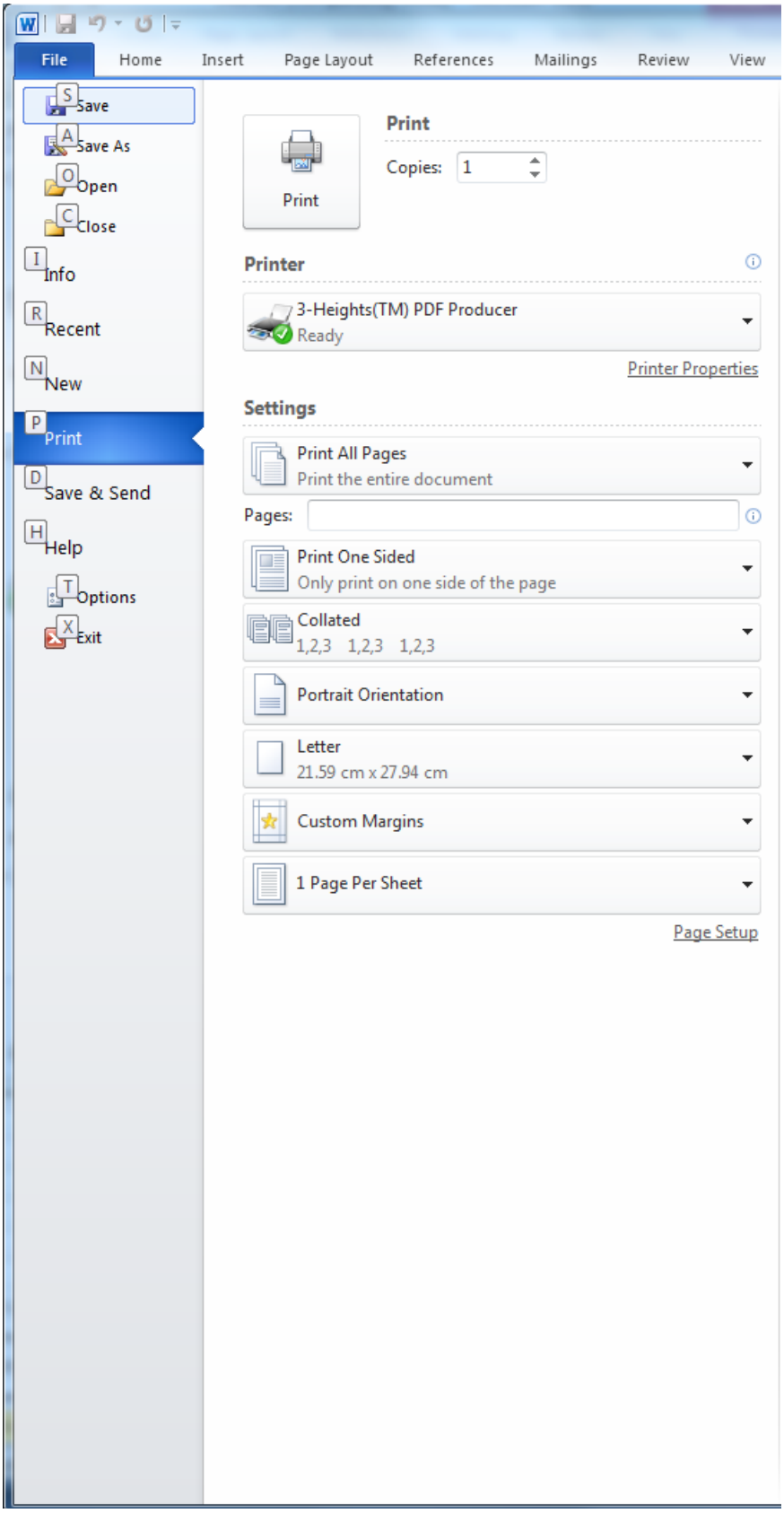
It can used to experiment with various settings and compare the PDF and TIFF producer with products from other vendors (e.g. the PostScript driver).

8 Convert from Office document to PDF

Note: The steps to convert an office document to TIFF -using the "3-Heights(TM) TIFF Producer" printer driver- are analogue to those in this section.

From an Office application run the "Print" command. The common print dialog of the application will be shown.

As the Microsoft Word printer dialog is shown here:



- As printer driver name select the “3-Heights(TM) PDF Producer”.
- Click on “Properties” in order to adjust the settings.

- Make sure “Print to file” is unchecked if such a checkbox is available (In Microsoft Office 2010/2013, “Print to File” is at the bottom of the list of “Printers”).
- Press “Print” to print the document to a PDF and to start the “3-Heights(TM) PDF Producer Application Runner”.

8.1 The 3-Heights(TM) PDF Producer application runner

Is a user-friendly tool to commit the created PDF directly to an other application for further processing.

The “Application Runner” starts if in the “3-Heights(TM) PDF Producer” port configuration (see section Ports) the option “Prompt file name” is checked. Otherwise the created PDF document is saved in the “Output folder”.

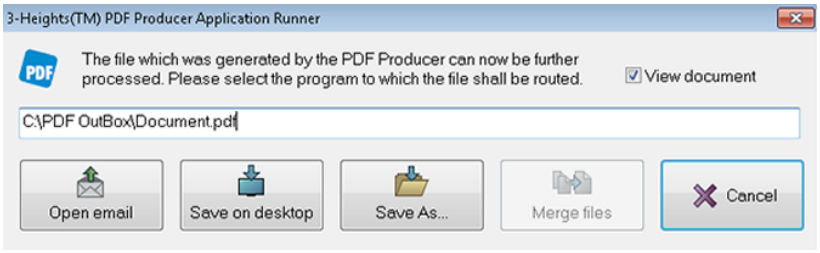
Open email Opens a new email message with the attached PDF document.

> **Note:** Works with any MAPI mail program such as Microsoft Outlook.

Save on desktop Saves the created PDF document on the Desktop.

Save As.. Save the PDF document in the file system. The default directory is specified in the “3-Heights(TM) PDF Producer” port configuration, see Ports.

Merge files Additional software is required.



8.2 Convert Microsoft Excel tables

When sending an Microsoft Excel table to the 3-Heights® PDF Producer it is important to ensure the print quality of the document is not set to “High”. The print quality mainly influences the quality of images, but it also sets the precision of text positioning. When converting Excel Tables this should be set to “Low” or “Medium”. Otherwise the creation of the PDF takes a lot of memory and is time consuming.

To apply this setting to an Excel document:

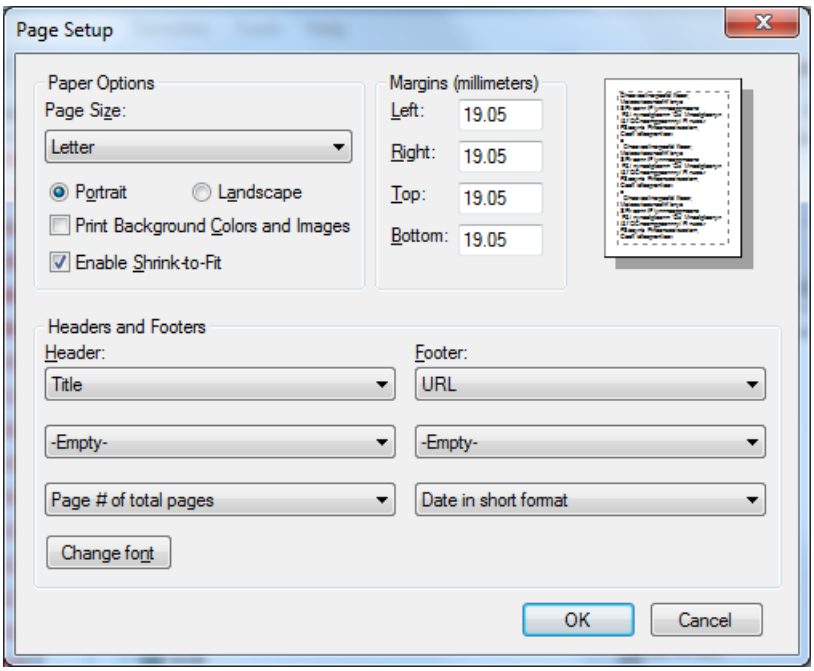
- Open the document in Microsoft Excel.
- Click on the print button or select “Print” from the menu.
- The “Print” dialog opens. Select the “3-Heights(TM) PDF Producer”, click on the button “Properties”.
- The “3-Heights(TM) PDF Producer Document Properties” windows opens. In the menu “Graphics”, set “Print Quality: Low”.
- Save the document.

8.3 Print from the Internet Explorer

Using the Microsoft Internet Explorer 6, it is suggested to use the following steps in order to receive a good result:

From the “File” menu, select “Page Setup…”.

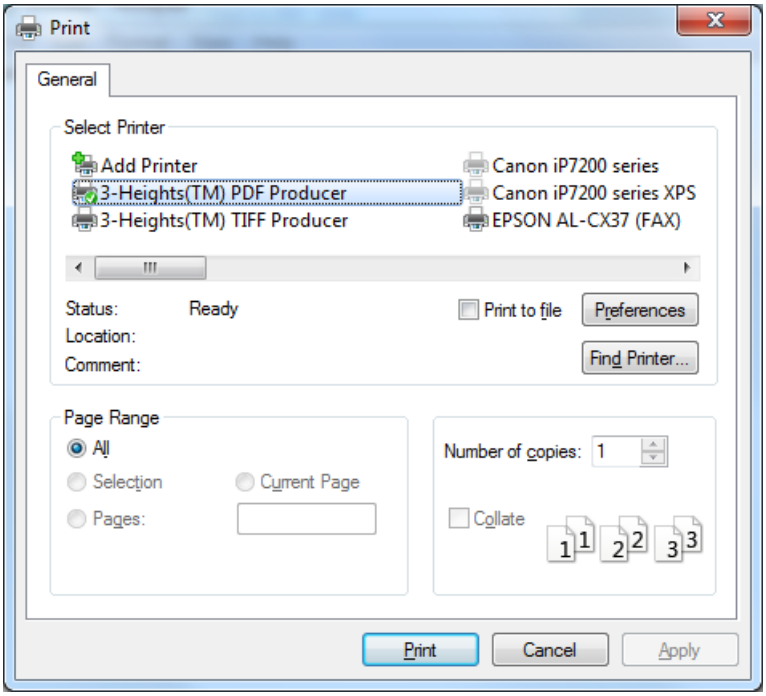
Press the button “Printer…” and select the “3-Heights (TM) PDF Producer”.



Press the button “Properties…” to set the document settings.

When done press “OK” to close the dialog.

From the menu “File”, select “Print”, select the “3-Heights (TM) PDF Producer” and print the document.



8.4 Create a print job using Windows calls

There is a C example available at `samples/sample.c`, that shows how to print “Hello World”. The relevant steps are:

- Open the printer driver “3-Heights(TM) PDF Producer” using the call OpenPrinter().
- Get the document settings.
- Create device context for the printer.
- Begin a print job, and thereby set the document relevant information such as document name, output path and data type.
- Begin a page.
- Create a font, taking into account the resolution.

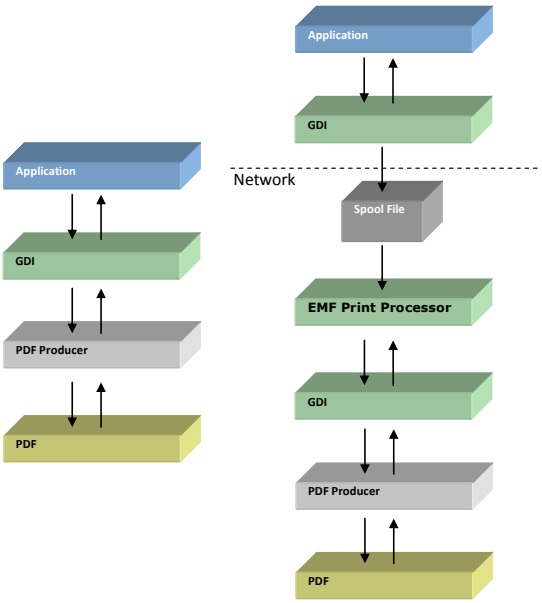
- Write the text “Hello World”.
- Cleanup the page.
- Terminate the page and the print job.
- Cleanup the document.

9 Client and server data flow

On a client system, the 3-Heights® PDF Producer works like this:

- The Windows application makes calls to the Graphics Device Interface (GDI)
- These GDI calls are interpreted by the printer driver, the 3-Heights® Producer
- The 3-Heights® PDF Producer creates a PDF document

In a network environment, the structure is very similar. However the output of the GDI is an enhanced metafile (EMF). The EMF is a spool file and sent over the network. It is played back on the server system, interpreted by an EMF Print Processor and changed to non-EMF. The 3-Heights® PDF Producer is installed on the server where the PDF document is produced.



10 Version history

10.1 Changes in versions 6.19–6.27

- **Update** license agreement to version 2.9

10.2 Changes in versions 6.13–6.18

- **Removed** Entry character encoding from property page
- **Removed** Entry subset fonts from property page
- **Removed** Entry TrueType font from property page
- **Removed** Entry indexed from property page
- **Removed** Entry fill order from property page
- **Removed** Choice G3 and LZW from PDF compression
- **Changed** Choice ZIP to Flate
- **Changed** Microsoft Office to MAPI mail program
- **Removed** Office Add-In from MSI installation
- **Removed** SDK feature from MSI instlalation

10.3 Changes in versions 6.1–6.12

No functional changes.

10.4 Changes in version 5

- **New** additional supported operating system: Windows Server 2019.

10.5 Changes in version 4.12

- **New** support for encryption according to PDF 2.0 (revision 6, replaces deprecated revision 5).
- **New** HTTP proxy setting in the GUI license manager.

10.6 Changes in version 4.11

- **New** support for the creation of output files larger than 10GB (not PDF/A-1).
- **Improved** font subsetting of CFF and OpenType fonts.

10.7 Changes in version 4.10

- **Improved** installation process (msi).
- **New** support for adding XMP Metadata File through the document options (DEVMODE).
- **New** support of DEVMODE files for predefined configurations in automated installations.

10.8 Changes in version 4.9

- **New** support for color profiles (Output Intent).
- **New** support for OpenType font collections in installed font collection.
- **Improved** metadata generation for standard PDF properties.

10.9 Changes in version 4.8

- **New** feature: Images used for stamping may now have any color space, even if it differs from the output file's output intent.
- **New** feature: Control data can be embedded as metadata and used for post processing (e.g. mail dispatch).
- **Improved** creation of annotation appearances to use less memory and processing time.
- **Added** repair functionality for TrueType font programs whose glyphs are not ordered correctly.

11 Licensing, copyright, and contact

Pdftools (PDF Tools AG) is a world leader in PDF software, delivering reliable PDF products to international customers in all market segments.

Pdftools provides server-based software products designed specifically for developers, integrators, consultants, customizing specialists, and IT departments. Thousands of companies worldwide use our products directly and hundreds of thousands of users benefit from the technology indirectly via a global network of OEM partners. The tools can be easily embedded into application programs and are available for a multitude of operating system platforms.

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