4-Heights™
PDF Web Viewer

Version 2.9.0

PDF/A conform

PDF-TOOLS.COM
Premium PDF Technology

Contents

1 Introduction

1.1 Description

The 4-Heights™ PDF Web Viewer is a compact, highperformance, high-quality viewer for PDF documents, offering a multitudeof navigational and display options. It runs entirely in a web browser or JavaScript/WebAssembly container.

1.2 Features

- Navigate manually (user action) or programmatically through a document
- Select fit mode: actual size, fit to width, fit to height
- Rotate the page display
- Show thumbnails and use them for navigation
- Show outlines (bookmarks) and use them for navigation
- Change language of the GUI (currently English and German supported)
- Create, edit and delete annotations
  - Sticky-note annotations
  - Ink annotations (free-hand drawings)
  - Text stamp annotations (Draft, Approved, etc.)
  - Image stamp annotations
  - Free-text annotations
  - Text highlight annotations (highlight, strike out, underline, squiggly)
  - Rectangle and ellipse annotations
- Touch handling for mobile devices
- Enter password to open encrypted PDF documents
- Read document from file, memory, URL, or blob
- Support storing annotations in the Forms Data Format (FDF)

1.3 Supported Input and Output Formats

- PDF 1.x (PDF 1.0, …, PDF 1.7)
- PDF 2.0
- PDF/A-1, PDF/A-2, PDF/A-3
- FDF

1.4 Conformance

Standards:

- 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)

1.5 Supported Browsers

- Chrome 63+
- Firefox 55+
- Edge 41+
- Safari 11.0.3+

'+' indicates the minimum supported version.

2 Installation and Deployment

The 4-Heights™ PDF Web Viewer comes as a ZIP archive, whose content is as follows:

Sub-Directory	Description
`doc`	License terms and this manual
`webapp`	▪ `index.html`: An example HTML that uses the 4-Heights™ PDF Web Viewer ▪ `.htaccess`, `web.config`: Server configuration files for Apache and Windows IIS
`webapp/pdfwebviewer`	Web viewer files: ▪ `pdf-web-viewer.js` ▪ `pdf-web-veiwer.css` ▪ `PdfViewing.data` ▪ `PdfViewing_Main.js`, `PdfViewing_Main.wasm` ▪ `PdfViewing_Worker.js`, `PdfViewing_Worker.wasm` Source code mapping files for development: ▪ `pdf-web-viewer.development.js` ▪ `pdf-web-viewer.development.map.js`

To deploy the 4-Heights™ PDF Web Viewer proceed as follows:

1. Download the ZIP archive from the "Licenses and Product Kits"-area of your account at https://www.pdf-tools.com/. If the 4-Heights™ PDF Web Viewer is not listed there, please contact pdfsales@pdf-tools.com to obtain an evaluation license.
2. Extract the ZIP archive to a suitable location.
3. Add your license key in `index.html` at the designated location.
4. Deploy the `webapp` sub-directory to your web server. The development files `webapp/pdf-web-viewer.development.js` and `webapp/pdf-web-viewer.development.map.js` should be removed.

2.1 Changing the Default Folder Structure

If you want to change the location of the `pdfwebviewer` directory with respect to `index.html`, then do the following changes to `index.html`:

▪ Adapt the path to `pdf-web-viewer.js`.
▪ Adapt the path to `pdf-web-viewer.css`.
▪ Adapt the `window.PDFTOOLS_FOURHEIGHTS_PDFVIEWING_BASEURL` variable to point to the correct destination, e.g:
  ▪ `"./new/path/to/pdfwebviewer"` (relative to `index.html`)
  ▪ `"file:///e:/electron-app/pdfwebviewer"` (absolute file path)
  ▪ `"http://myserver.org/file/viewer/pdfwebviewer"` (absolute file path)

2.2 Setup Windows IIS

To serve the 4-Heights™ PDF Web Viewer on a Windows IIS web server, copy the contents of the `webapp` folder into the desired directory on the web server.

The configuration file `web.config` contains the MIME types mapping for the types used in the web viewer. Apart from `web.config` there is also `%SYSTEMROOT%\System32\inetsrv\Config\applicationHost.config` and depending on the IIS version this file already contains some of the MIME type mapping entries. In this case the duplicate entries should be removed from `web.config`.

2.3 Setup Apache

To run the viewer on an Apache web server, copy the contents of the `webapp` folder to the document root of the target web server. The file `.htaccess` contains the caching settings for the viewer files.

2.4 License Keys

The 4-Heights™ PDF Web Viewer requires a valid license in order to run. This key must be passed as a second argument to the `PdfWebViewer` constructor. (See `index.html`.)

A license key is bound to a specific domain, e.g. `example.com`. This domain is checked at runtime by the 4-Heights™ PDF Web Viewer and compared against the license.

2.4.1 Troubleshooting

License Key Cannot Be Set

If the license key cannot be set, the call to the `PdfWebViewer` constructor results in an error.

Possible Causes:

- There is a typo in the key.
- A copy-paste operation has altered the symbol characters in the key, such as the commas.
- The key has a wrong format.
- The key belongs to a different product.
- The key is an evaluation license key and it has expired.

Solution:

Make sure the key is issued for the 4-Heights™ PDF Web Viewer and has the following format:

```
<4H,V2,VIEWWEB,XXXXXXXXXXXXXXXXXXXX>
```

If an evaluation license key has expired and you would like to extend the period of evaluation, then please contact pdfsales@pdf-tools.com for a new evaluation license key.

License Check Fails at Runtime

In this case, the license can be set and the call to the constructor `PdfWebViewer` is successful. But later, when opening a PDF document, an error is generated with the message: "The current license does not permit running the product on this domain."

Possible Causes:

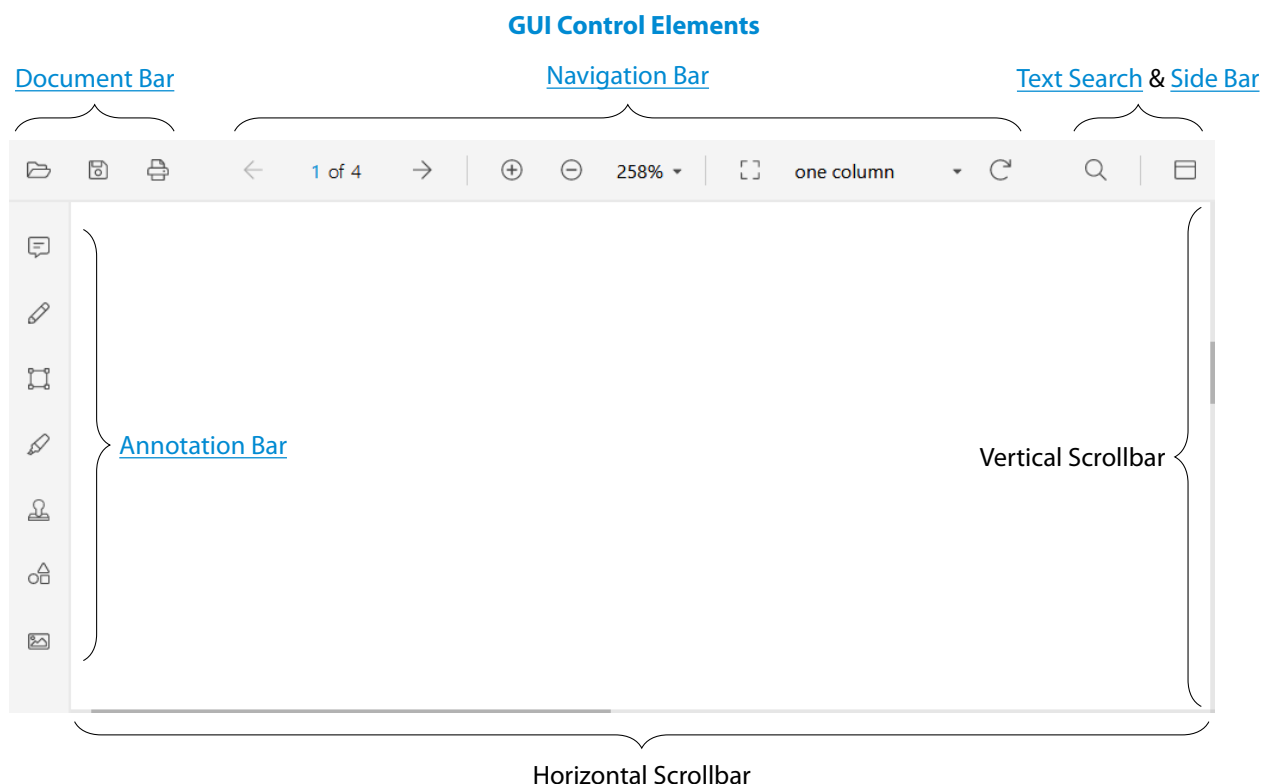- The license key is not meant to be used with the current domain.

Solution:

Make sure that the domain on which the 4-Heights™ PDF Web Viewer is running matches the domain to which the license key is registered.

3 User's Guide

3.1 Graphical User Interface

Once a PDF is opened, the graphical user interface of the 4-Heights™ PDF Web Viewer presents itself as depicted below.

GUI Control Elements

3.1.1 Document Bar

This bar comprises the following document-level operations:

- Open a new document. The 4-Heights™ PDF Web Viewer also allows to open a document by drag-and-drop.
- Save the currently displayed document. This triggers the browser-specific download action.
- Print the currently displayed document. A print dialog appears that lets the user select the pages to print. The selected pages are then rendered into images an handed over to the browser's print dialog.

> **Modified Documents:** When trying to open a new document without saving the currently modified document, a dialog is shown to let the user choose whether to save or discard the current document.
> When closing the web browser (tab) or navigating in the browser history, no such dialog is shown.

> **Printing:** The rendering-based printing architecture has the following implications:
> - The time and memory used while preparing the print depends on the number of selected pages.
> - Certain elements such as text and vector graphics can turn out slightly blurred on the printout, because the printer's resolution can exceed the rendering resolution, which is set to 150 DPI.

3.1.2 Navigation Bar

This bar comprises navigation and viewing operations.

Page Navigation

A document's pages can be navigated by:

- The arrow buttons in the navigation bar.
- A scrolling action triggered by operating the scroll bars, the mouse wheel, or a swipe gesture on touch devices.
- The thumbnails, outline items, or annotation comments displayed in the side bar.

Page Display

Zoom

The view's zoom factor can be adjusted by:

- The "plus" and "minus" buttons.
- The zoom selection drop-down button.
- The "CTRL and mouse wheel" action or a pinch gesture on touch devices.

Fit Mode

The view can fit a document's page, and thereby change the zoom factor and the scroll position, by selecting one of the following fitting modes:

Actual size   Set the zoom factor to 100%.

Fit width   Set the zoom factor such that width of the current page fits the width of the view.

Fit page   Set the zoom factor such that the current page fits into the view.

Page Layout

The page layout can be chosen among the following:

- Continuous display: The scrollable area comprises all pages of a document.
  One column   Display the pages in a single column.
  Two column left   Display the pages side by side with odd-numbered pages on the left and even-numbered pages on the right.
  Two column right   Display the pages side by side with odd-numbered pages on the right and even-numbered pages on the left.
- Single page display: The scrollable area is confined to a single page or two facing pages.

Single page   Display a single page.

Two page left Display two pages side by side with the odd-numbered page on the left and the even-numbered page on the right.

Two page right   Display two pages side by side with the odd-numbered page on the right and the even-numbered page on the left.

Rotation

The page display can be rotated by means of the "rotate" button. This does not modify the document.

3.1.3 Text Search

Text can be searched in the document by clicking on the search button, which opens a text search area.

Text search is incremental: As soon as a text is typed into the search field, the first resulting hit is highlighted.

Hits can be navigated by the arrow buttons or by pressing "enter".

The search can be configured by clicking on the wrench button as follows:

Case sensitive   Toggle the searche's case sensitivity.

Wrap search   Toggle whether navigating through the search hits wraps from the end of the document to the beginning.

3.1.4 Side Bar

The side bar's visibility is toggled by clicking on the side bar button. When visible, this bar offers three tabs.

Thumbnails

When activating the "Pages" tab, then thumbnails of the document's pages are shown in the side bar. Clicking on a thumbnail navigates to the respective page.

Outline

When activating the "Outline" tab, then the document outline is shown in the side bar as a tree of potentially expandable outline items, also known as "bookmarks".

Clicking on an outline item navigates to the destination associated with this item. Depending on the type of destination, this may not only change the active page but also the zoom factor.

Note that not all documents have an outline.

Annotations

When activating the "Annotations" tab, then an overview of the document's annotations is shown in the side bar.

In this overview, every annotation is listed with the following constituents:

Icon   Equivalent to the icons shown in the Annotation Bar, additionally colored by the annotations main color.

Author   Only shown if set for this annotation.

Date and time   Indicates when the annotation was created.

Subject   Only shown if set for this annotation.

Text   This is the text associated with the annotation.

3.1.5 Annotation Bar

Annotations are remarks placed on a document's pages by a reader of the document. They are not part of the actual page content and can easily be removed.

The annotation bar contains buttons for creating new annotations. The following annotation types are supported:

- Sticky Note Annotation
- Ink Annotation
- Free-Text Annotation
- Highlight Annotation
- Rectangle and Ellipse Annotations
- Stamp Annotation

Once a button is selected, the viewer goes into a mode in which clicking onto a page starts the creation of the selected type of annotation.

All annotation types support the entry of a text to be shown in a popup or—in the case of Free-Text Annotations—directly on the page. An annotation popup is a small window that shows the text, the author, the date and time of creation and the subject. A popup can have two states: closed (invisible) or open (visible).

Every annotation has a primary color.

Annotations can be stored directly in a PDF or outside of a PDF in an additional FDF file.

The remainder of this section describes the supported annotation types.

Sticky Note Annotation

A sticky note consist of an icon placed on a page.

Ink Annotation

An ink annotations consists of free-hand lines drawn onto a page. The line color and thickness can be adjusted.

All lines pertaining to a single annotation are contained on the same page and have the same color and thickness.

Free-Text Annotation

Free-text annotations are the only annotations which do not have an annotation popup. The annotation text is drawn in a rectangular area directly on the page.

Free-text annotations support basic text formatting.

Highlight Annotation

A highlight annotation is used to highlight text by either of the following methods:

- Overlay with a color
- Underline
- Underline with a squiggly line
- Strike through

Rectangle and Ellipse Annotations

Rectangle and ellipse annotations are used to draw rectangles and ellipses in a specified color onto the page.

Stamp Annotation

Stamp annotations are used to place a predefined text or image onto the page.

Text Stamp Annotation

The following predefined texts can be selected from:

- "Approved" (default)
- "Not Approved"
- "Draft"
- "Final"
- "Completed"
- "Confidential"
- "For Public Release"
- "Not For Public Release"
- "Void"
- "For Comment"
- "Preliminary Result"
- "Information Only"

In contrast to other annotation types, text stamp annotations come in fixed predefined colors.

Image Stamp Annotation

When clicking on the image stamp annotation button, a file selection dialog opens for the user to select an image file.

The following image file formats are supported:

- BMP (1, 2, 4, 8, 24 bit)
- GIF (2 to 8 bit)
- JBIG2 (lossless compression)
- JPEG, JPEG2000 and JPEGLS (Grayscale, RGB)
- PBM and PNG (1 to 8, 24 bit)
- TIFF:
    - Bitonal : uncompressed, CCITT G3, CCITT G32D, CCITT G4, LZW, ZIP, Packbits
    - Grayscale, RGB and CMYK: uncompressed, LZW, JPEG, JPEG (old), ZIP, Packbits

3.1.6 Touch Handling

When the viewer is used on a mobile device, touch handling is enabled. The following is an overview of the touch handling in different contexts.

Touch Gestures on Document

Tap   A short tap on a menu item or context menu executes the equivalent of a mouse click.

Touch Move   A touch and move with one finger scrolls the document up and down or left and right.

Two Touches   Two fingers can be used to adjust the zoom by pinching or stretching the distance between the fingers.

Two Touches Move   A touch and move with two fingers move the document in any direction.

Touch Gestures on Annotation

Tap   A short tap on a annotation opens a context menu for the given annotation type.

Touch Move   After selecting an annotation with a tap, a touch and move on the annotation (except highlight annotations) moves the position of the annotation.

Touch Gestures While Creating Annotation

Sticky Note   After selecting the sticky note from the annotation bar, a tap places the sticky note at the tapped location.

Free-Text Annotation   After selecting the free-text annotation from the annotation bar, touch and drag defines the annotation's rectangle.

Text Stamp Annotation   After selecting the text stamp annotation from the annotation bar, touch and drag defines the stamp's size while preserving the correct aspect ratio for the selected text.

Highlight Annotation   Text is selected with a touch and drag on the text.

Ink Annotation   Touch and drag is used to draw the lines of an ink annotation.

3.2 Options

The 4-Heights™ PDF Web Viewer provides many options to be configured in `index.html`. Currently, these options are undocumented but should be easily understood from inspecting `index.html`.

3.3 Viewing-Only Edition

The 4-Heights™ PDF Web Viewer comes in a "viewing-only" edition, which is configured in the license key. This edition has the following limitations:

- Saving the PDF results in an error.
- Creating annotations results in an error.

Because of these limitations it is recommended to disable these functionalities by doing the following:

- Set `viewer.permissions.allowSaveFile = false`
- Remove all the modules from the options, i.e. remove all entries from the `modules` list.

Currently the user interface allows to move, delete, and edit annotations. Saving the document is, however, not possible.

3.4 Range Requests

When opening a PDF with the `openUri` method, the 4-Heights™ PDF Web Viewer is capable of using "HTTP range requests" to load only those parts of the PDF needed for the current display. This feature can cut down initial load times for large PDFs considerably.

Range requests must, however, be supported by the host that serves the PDF. Otherwise, the 4-Heights™ PDF Web Viewer needs to download the complete PDF prior to start displaying.

A web server needs to set the following flags to allow range requests:

Range Request Settings

Key	Value	Comment
`Access-Control-Expose-Headers`	`Content-Length` `Accept-Ranges` `Content-Range`	These headers have to be contained in a response from the host in order to allow range requests.

`Access-Control-Allow-Headers`	`range`	The request from the viewer has to be allowed to contain range in the request header.

3.5 General Limitations

Due to the restrictions given in the web environment, there are some limitations to the capabilities of the 4-Heights™ PDF Web Viewer, as listed below.

3.5.1 Color Management

The 4-Heights™ PDF Web Viewer uses an RGB color space for rendering. There may be some noticeable differences when printing a document that uses CMYK color spaces.

Effect: The colors of non-RGB content can differ slightly from the original when printing.

3.5.2 System Fonts

A font referenced in a PDF can be either embedded in the PDF or it is assumed to be present on the host system. Due to browsers protection mechanisms, downloaded JavaScript such as the 4-Heights™ PDF Web Viewer is not allowed to directly access system fonts. The 4-Heights™ PDF Web Viewer analyzes the referenced fonts and replaces them with one of the standard fonts packaged with the 4-Heights™ PDF Web Viewer. Due to this replacement, glyph shapes can be altered or not rendered at all, e.g. for CJK, Cyrillic or other alphabets.

Effect: Texts that use non-embedded fonts which use special glyphs may be rendered distorted or not at all.

> **Note:** This issue can be avoided by converting a PDF to PDF/A before viewing. This ensures that all fonts are embedded.

4 Licensing, Copyright, and Contact

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

PDF Tools AG 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.

Licensing and Copyright   The 4-Heights™ PDF Web Viewer is copyrighted. This user's manual is also copyright protected; It may be copied and given away provided that it remains unchanged including the copyright notice.

Contact

PDF Tools AG
Brown-Boveri-Strasse 5
8050 Zürich
Switzerland
http://www.pdf-tools.com
pdfsales@pdf-tools.com