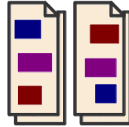


DiffPDF v 5 for Windows

Mark Summerfield

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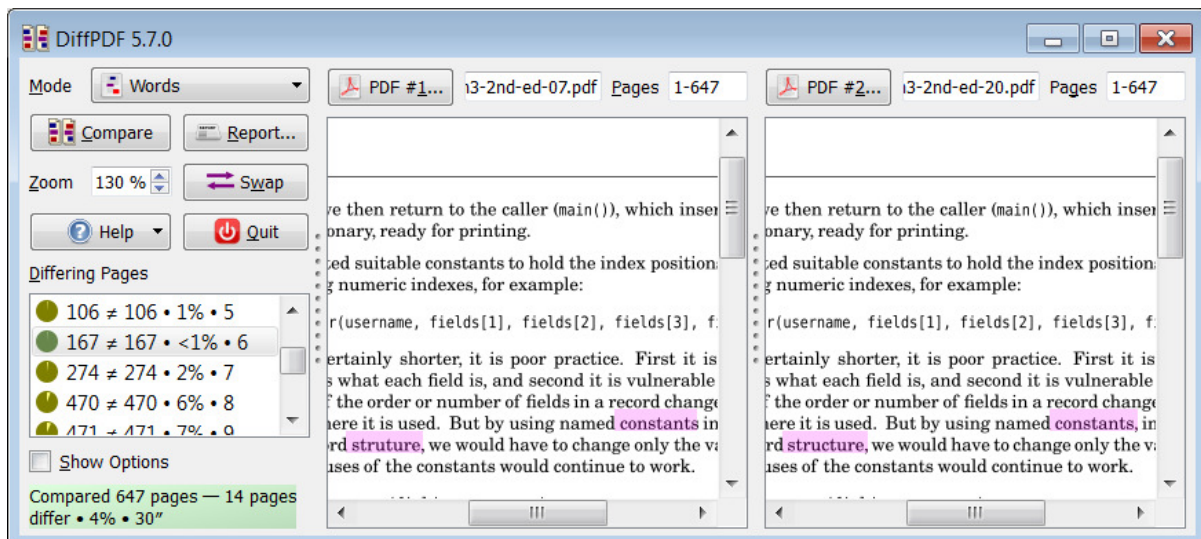


Abstract

DiffPDF is a GUI (Graphical User Interface) application for comparing two PDF files. Once the application has been installed and the license key registered, comparing PDF's is an easy three step process:

- (1) Click the PDF #1... button and choose the first PDF to compare;
- (2) Click the PDF #2... button and choose the second PDF to compare;
- (3) Click the Compare button.

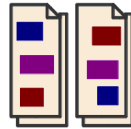
Naturally, specific aspects of the comparison can be customized—everything from comparing appearance vs. comparing text, down to the colors used to highlight differences, all of which is covered in this manual.



DiffPDF v 5 for Windows

Mark Summerfield

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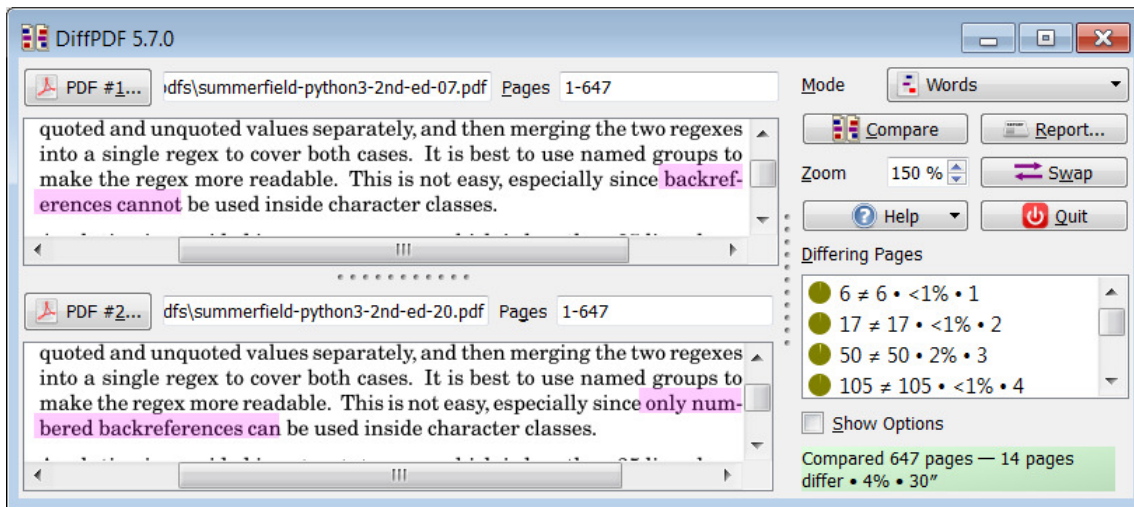
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Introduction

DiffPDF is a GUI (Graphical User Interface) application for comparing two PDF files. *DiffPDF* shows differences visually, as the screenshot below illustrates.*

* The screenshots are of various versions from 5.1.0 to the latest version, all taken on Windows. Naturally, later versions have more features and small cosmetic differences.



By default, for text comparisons, *DiffPDF* highlights deleted text in red, inserted text in cyan, and replaced text in magenta. Alternatively, plain highlighting can be used. The kind of highlighting and the colors used can all be changed (see [Controlling Highlighting](#)).

DiffPDF should prove useful to archivers, engineers, journalists, marketers, package designers, publishers, researchers, and others who want to compare one version of a document, report, book, or label with another. It can also be used by software testers who want to verify that software generated PDF files have the correct text or appearance and no unexpected differences. Numerous other uses are possible—for example, a translator might compare two PDFs to see what has changed so that they need only update their translation for the changed parts.

DiffPDF uses the same comparison engine as the command line *diffpdfc* program (www.qtrac.eu/diffpdfc.html). This engine provides three comparison modes. Appearance comparison mode means that each page is compared visually, pixel for pixel—so this mode is absolutely precise and accounts for any differences in text, fonts, colors, layout, indents, margins, spacing, diagrams, and images. The two text comparison modes are Characters and Words. These compare only the text, regardless of fonts, colors, layout, indents, margins, spacing, diagrams and images. Characters comparison mode means that each page's text is compared character by character. Words comparison mode means that each page's text is compared word by word.

Comparing PDF files is not necessarily straightforward: for example, do we consider two PDFs the same if they have the same words in the same order—but laid out differently (e.g., due to slightly different margins)? Comparing in Appearance mode would show such PDFs to be different, but using Characters or Words mode would show them—specifically, their text—to be the same. Sometimes, PDFs have a timestamp in the top or bottom margin or in a corner—*DiffPDF* allows us to exclude margins and/or corners from consideration when comparing (see [Excluding Corners](#) and [Excluding Margins \(How to Ignore Headers and Footers\)](#)). It is also possible to tweak the comparison engine when necessary (see [Comparison Algorithm](#)).

Installing

System Requirements

DiffPDF can be installed on all modern versions of Windows, providing the machine uses an x86-compatible processor (i.e., most desktop and laptop computers). However, since PDF comparisons are computationally expensive, it is best to use a machine with a fast multicore processor, ideally with a processor speed of at least 2GHz that has at least two cores. *DiffPDF* will take advantage of all available cores, so in general will run twice as fast on a quad core machine than on a dual core machine with the same clock speed—and faster still on machines with more and faster cores. The absolute minimum screensize for realistic use is 1024 × 800, but we recommend a size of 1920 × 1080 or better.

Obtaining and Installing *DiffPDF*

5.5

DiffPDF is provided with both 32-bit (e.g., `DiffPDF-5.5.0-win32.msi`) and 64-bit (e.g., `DiffPDF-5.5.0-amd64.msi`) Microsoft Installer files. The 32-bit version will run on modern 32-bit *and* 64-bit versions of Windows. The 64-bit version will run only on a 64-bit Windows, but does not have the 32-bit 2GB memory limit. In most cases the 32-bit version is fine to use, but doing Appearance mode comparisons on huge PDFs may need a 64-bit version (and lots of memory). The installers (and equivalent .zip files) can be downloaded from www.qtrac.eu/diffpdf.html. Once an installer has been downloaded, double-click it to start the standard Windows installer program and follow the on-screen instructions.*

Once the software has been installed, a valid license key must be registered for it to work. (This may not be necessary if upgrading from one minor version to another—see [Upgrading](#).)

DiffPDF will appear in the Window's Start button's All Programs menu. If you want to add it as a desktop icon or pin it to your taskbar, click the Start button, then All Programs, and then right click the *DiffPDF* item and choose from the pop-up menu.

Tiered price discounts are applied if you buy at least 10 license keys. When you're ready to buy, click the Register window's Buy Now button or visit www.qtrac.eu/buy?app=diffpdf either of which will take your web browser to the secure MyCommerce purchase page which shows the price tiers.

How to Register a License Key

Make sure that the person logged in is the person who is to use *DiffPDF*. The first time the application is run, or when you click the Register... button to go from a trial to a full license, or if you have an expired trial license key, *DiffPDF* will show the Register window:

* If both *DiffPDF* and *diffpdfc* are installed, they should be installed into separate directories. Their default installation directories are different, so this will automatically happen if the defaults are accepted.



To obtain a free trial license key click the Free Trial button—this should open your web browser at the free trial page. Alternatively, if you want to buy a full license key, click the Buy Now button—this should open your web browser at the MyCommerce ecommerce website where you can make the payment. If your security settings prevent *DiffPDF* from accessing the internet, these buttons won't work. In this case, open your web browser and visit www.qtrac.eu/diffpdf.html and obtain your license key from there.

Free trials are anonymous, but you are only allowed one trial per application per major version per computer. To get a free trial license key you must enter your *Computer ID* into the web form. The Computer ID is shown in the Register window—simply click the “Copy” icon beside it to copy it to the clipboard, then paste it into the web form, and then click the Issue Trial License Key button. The trial license key will then appear: copy and paste the key into the Register window's Key line edit and then press OK.

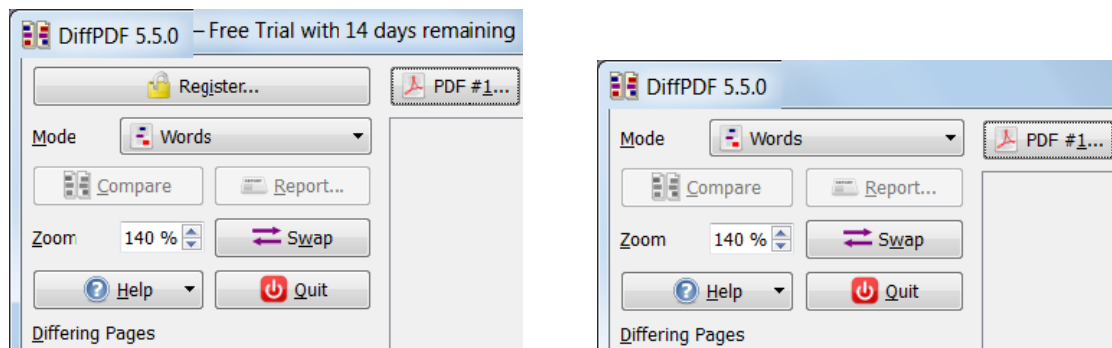
If you choose to buy, once payment has been accepted you will be shown the MyCommerce payment confirmation page. This page will show the text “Loading...” and then this will be replaced by a web page to visit to get your license key(s) from. You can go directly to the “Get Key” page at www.qtrac.eu/getkey but it is even more convenient to click the link in the confirmation email you are sent, since this includes your *Order ID*, which is needed to obtain your license key(s). To get a license enter the Order ID (unless it is already displayed) and the Computer ID (as shown in the Register window), and then click the web page's Get License Key button. The license key will then appear—copy and paste it into the Register window's Key line edit and then press OK. This process should be done on each computer for which a license has been purchased—or once if you are using a server (see the license).

For a full license key you only need to do this once (per program, per major version, per computer). For a trial license key you will need to register the trial license key, and later on, a full license if your trial license expires and you buy a full license. To register, just run the program and click the Register button to pop up the Register window, and enter the full license key from the www.qtrac.eu/getkey page. Because the key is long it is best to copy and paste it if possible.

Each license key is tied to the computer it is acquired on and is valid for the particular program it was bought for at its major version. For example, *DiffPDF*, all 5.x versions, Windows GUI (Graphical User Interface) on the machine the license was acquired on. Note that license keys are valid for both 32-bit and 64-bit editions so either can be used.

If you want to use a different product, such as the command line *diffpdfc*, or to upgrade to a new major version (e.g., 6.x), or to use the program on a different computer, you must buy a license for that program, major version, and computer. (However, on request, we will provide a free upgrade to anyone who has bought *DiffPDF* within 60 days of a new major version being released. Also, one license transfer is allowed within the first year—see the license for details.)

Once the registration is complete, the application's main window will appear. If you registered a trial license, a Register... button will be visible above *DiffPDF*'s main controls, as shown in the left screenshot.



If you decide to buy *DiffPDF*, click the Register... button and either enter the full license key, or click the Register window's Buy Now button to buy the license key and then register it, as described at the start of this subsection.

Once a full license key has been registered, the Register... button no longer appears, as shown in the right hand screenshot above.

Uninstalling

If you want to uninstall the program, you can do so in the usual way by going to the Windows Control Panel, choosing Uninstall Program, and then choosing *DiffPDF* and clicking Uninstall.

Upgrading

To upgrade from one minor version to another—say, from version 5.1.2 to 5.5.0—do the following. First, uninstall the old version as described in the preceding subsection ([Uninstalling](#)). Second, install the new version as described earlier ([Obtaining and Installing DiffPDF](#)). There is no need to re-register the license key—the new version will detect and use the one that is already registered.

To upgrade from one major version to another—say, from version 4.1.6 to 5.5, uninstall the old version and then install the new version as described above. Note though, that license keys are only valid for particular major versions, for example, for all 5.x versions or all 6.x

versions, so you will need to register the new version with a new trial or full license key as described above ([How to Register a License Key](#)).

Licensing

DiffPDF can be freely downloaded, but won't work unless a paid for full license key or a time-limited free trial license key has been registered with it. A full license is valid for a major version and all that version's minor and patch releases. For example, a full license for *DiffPDF* will work with *DiffPDF* 5.0, 5.1, 5.2, and so on for all 5.x.y versions—but not for *diffpdfc* or for *DiffPDF* 6.x or later.

Trial license keys are free, although only one per product per major version per system is allowed, and they are time limited. Full license keys must be paid for—see www.qtrac.eu/diffpdf.html for prices and to buy. The license text itself is shown when a license key is registered and can be viewed at any time by clicking the Help button and then clicking the License menu option.

The same executable is used for the trial and full license keys, so to switch from a trial to a fully licensed product simply buy a full license key and register the new full key with the existing executable by running the program and clicking the Register... button. However, if a minor or patch release has been issued in the meantime, feel free to download and use it—or any subsequent minor or patch release—since the key will remain valid (see [Upgrading](#)).

Licenses must be bought through the web site, with discounts available if 10 or more licenses (for a single product, i.e., *DiffPDF*), are bought at the same time.

Support

It is worth reading this manual once through to become familiar with what *DiffPDF* can do. (For example, to learn about the Pairs setting.) If the manual doesn't answer your question, then we'll happily try to answer.

If you believe you have found a bug, first check which version you are using by clicking the Help button and then clicking the About menu option. Then visit *DiffPDF*'s web site, www.qtrac.eu/diffpdf.html, to see if there is a newer version. If a new version is available, upgrade to it (see [Upgrading](#)), and then see if you still have the bug. If the problem persists, contact us and we will try to help.

Note that changes between versions are listed at www.qtrac.eu/diffpdf-changes.html.

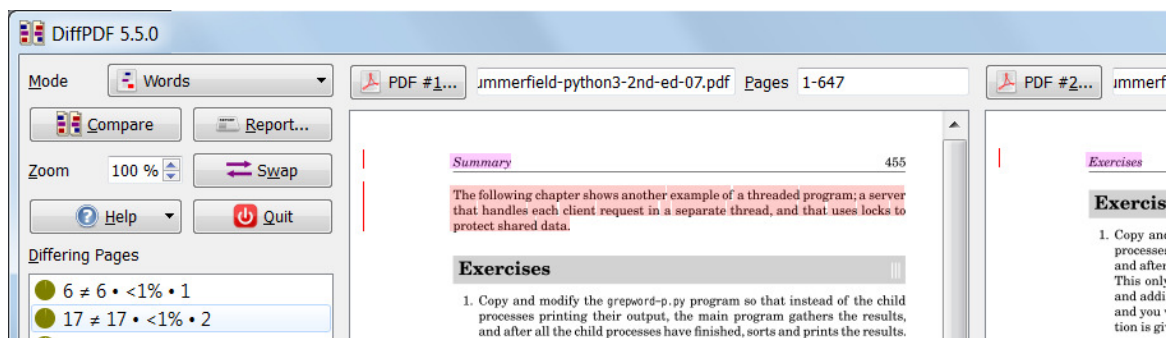
Email support is formally available for the duration of a trial license key and for the first 60 days of a full license key. However, in practice we will respond to a reasonable number of emails for a fully licensed product indefinitely. The support email address is support@qtrac.eu — be sure to contact us using the email address you used to obtain your license key, and to tell us what operating system you are using (e.g., “Windows 7”) and especially which version of *DiffPDF* you are using.

Using DiffPDF

To compare any two PDF files, follow this simple five step process:

- (1) Click the Mode drop-down list and choose which comparison mode to use—unless the one shown is already what you want—(see [Setting the Comparison Mode](#));
- (2) Click the PDF #1... button and choose the first PDF to compare (see [Choosing the PDFs to Compare](#));
- (3) Click the PDF #2... button and choose the second PDF to compare;
- (4) Click the Compare button (see [Comparing](#));
- (5) If the PDFs have differences, click or navigate using the keyboard (e.g., down arrow or spacebar) in the Differing Pages list to show each pair of pages' differences (see [Viewing Differing Pages](#)).

DiffPDF has a set of general controls to set the comparison mode and zoom (scale), and to perform the key actions of comparing, reporting, and quitting the application.



By default, *DiffPDF* will compare PDFs using Words mode with a Pairs setting of 1 (see [Pairs \(How to See Text Differences that Span Page Boundaries\)](#)). This will produce the best results in a wide range of situations. If we want to compare text written in a CJK language, we might be better off using Characters mode. And if we want to compare colors, fonts, diagrams, images, or text layout, we should use Appearance mode. (See [Setting the Comparison Mode](#).)

If we want to see changes that span page boundaries we can set Pairs to the page count of the longest PDF. One disadvantage of doing this is that comparisons take much longer because it is much more computationally expensive when Pairs is greater than one. Another disadvantage is that for some complex PDFs, comparing across page boundaries can produce unsatisfactory results.

But what if our PDFs have different numbers of pages or inserted or deleted pages? There are two approaches we can take. One is to use page ranges—see [Choosing Page Ranges](#). The advantage of using page ranges is that we can specify exactly which pages to match against each other and ignore any of the inserted pages that we don't need to consider.

Another approach is to set the Pairs to the page count of the longest PDF. This pushes the burden of detecting inserted or deleted pages onto *DiffPDF*—at the price of taking a lot longer. We recommend using page ranges wherever possible, but using Pairs may be necessary in some cases. If we use Pairs then we may be able to avoid having inserted or

deleted pages appear in our reports. See [Show Inserted/Deleted Pages](#) for how to do this and for an explanation of why it might be useful. 4.0

The default comparison algorithm should produce good results for single column PDFs, but for multi-column PDFs it is usually much better to use the multi-column comparison algorithm: see [Comparison Algorithm](#). 5.5

It is also possible to tweak the comparison algorithm itself by setting the Line Tolerance, and for the multi-column algorithm, Column Tolerance; see [Comparison Algorithm](#). 5.5

Setting the Comparison Mode

The comparison mode is set by clicking the Mode drop-down list and choosing Appearance, Characters, or Words.

Appearance mode means that each page is compared visually, pixel for pixel—so this mode is absolutely precise and accounts for any differences in text, fonts, colors, layout, indents, margins, spacing, diagrams, and images. In this mode, the Pairs setting ([Pairs \(How to See Text Differences that Span Page Boundaries\)](#)) is ignored—pages are compared one pair at a time—and differences are highlighted using Plain highlighting (see [Controlling Highlighting](#)).

The other two modes (Characters and Words) are both “text” modes. In these modes the comparison only considers text, regardless of fonts, colors, layout, indents, margins, spacing, diagrams and images.

Characters comparison mode means that each page’s text is compared character by character. Usually it is best to use Words mode for text comparisons, but in some situations (perhaps when comparing PDFs written in CJK languages), character by character comparisons (i.e., Characters mode), may work better. This mode is much slower than Words mode.

Words comparison mode means that each page’s text is compared word by word. This mode is best for comparing PDFs’ texts. Words mode is the fastest comparison mode.

Both text comparison modes can produce false positives—see [Comparison Algorithm](#) for details and how to fine tune to avoid these.

Comparison mode changes are left unapplied and will only take effect when the Compare button is clicked (see [Comparing](#)).

Choosing the PDFs to Compare

There are three ways to choose the PDF files to compare. One quick and easy way is to click the PDF #1... button and use the file chooser dialog that pops up to choose the first PDF, and then do the same for the second PDF using the PDF #2... button. Another easy way is to drag one or more PDF files (e.g., from Windows Explorer) and drop it or them on one of the PDF view panels. If dragging a single file, drop it on the left PDF view panel to make it the first PDF, or on the right PDF view panel to make it the second PDF. If dragging more than one file, drop them on either panel—the first PDF will become the first (left panel) PDF, the second the second (right panel), and any others will be ignored. It is also possible to simply enter the name of a PDF file in the filename text entries.

Whenever a PDF file is chosen, apart from showing its first page (see [Controlling Application Settings](#)), this change is left unapplied and will only take effect when the Compare button is clicked (see [Comparing](#)).

If a chosen PDF is password protected you will be prompted to enter the password. Only if the correct password is entered will the PDF be viewable and comparable.

5.6

Comparisons are made on the basis that the left PDF is the “original” version and the right PDF is the “new” version to be compared with the original. If you want to compare the other way around, click the Swap button to swap the filenames, then click Compare.

4.1

Choosing Page Ranges

When a PDF file is chosen, *DiffPDF* automatically sets the page range (that is, the pages to be compared) to all the pages in the PDF. So, for example, if a 358 page PDF is chosen, the page range will automatically be set to 1-358.

Sometimes we want to compare two PDFs where the newer one has had one or more pages inserted. So we want to ignore the inserted pages and just compare those that we know are common to both. This can be done by using a page range. For example, if we have an old 7 page PDF and a new version with 8 pages (where page 6 is an inserted page), we can compare their common pages using page ranges of 1-7 for the old PDF (i.e., all of its pages), and 1-5,7-8 for the new PDF. This will cause pages to be compared in the pairs: (1, 1), (2, 2), (3, 3), (4, 4), (5, 5), (6, 7), (7, 8).

Multiple page ranges can also be specified—for example, if an old PDF with 22 pages is compared to a new one of 25 pages where pages 3, 18, and 19 are inserted, the page ranges would be, 1-22 for the old PDF, and 1-2,4-17,20-25 for the new PDF.

Page range changes are left unapplied and will only take effect when the Compare button is clicked (see [Comparing](#)).

Comparing

The Compare button is enabled when two PDFs have been chosen. Click this button to start the comparison. If the comparison takes more than a few seconds this button becomes a Cancel button which can be clicked to stop the comparison from completing.

The progress of long-running comparisons, and a summary at the end is shown in the status area (see [Application Status](#)).

Many changes (e.g., to highlighting colors) are applied immediately, but some are left unapplied and are only applied when the Compare button is clicked. (See [Application Status](#).)

Zooming

The zoom spinner control is used to set the scale at which the different pages are viewed. In addition, visual reports (i.e., reports output in PDF format) use the same scale.

The “scaling” is achieved by increasing the resolution (i.e., the image quality), so increasing the scale (e.g., to 150%) improves the quality of the images shown in the PDF view panels (and those used in PDF reports). A scale of 150% doubles the resolution, and a scale of 200% quadruples the resolution. The trade-off for improved image quality is slower on-screen rendering and slower report generation.

The maximum zoom increased to 800% in version 5.6.8 (the previous limit was 400%). Scaling beyond 400% is only recommended on a fast computer with lots of RAM and using a 64-bit version of *DiffPDF*.

Zoom changes are applied immediately.

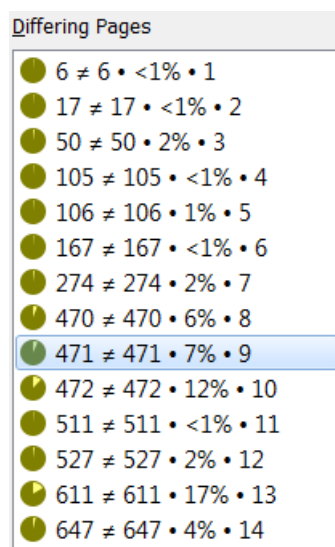
See also [Controlling Appearance Mode Settings](#), and in particular the [Compare Zoomed](#) subsection.

If the Appearance tab's Compare Zoomed checkbox is checked, the appearance mode comparisons are done at the same scale as the Zoom setting. Normally such comparisons are made at 100% which is fast, but in some rare cases it is necessary to zoom to 150% or 200% and check the Compare Zoomed checkbox to avoid false negatives.

5.6.5

Viewing Differing Pages

If a comparison reveals one or more pairs of different pages, these are listed in the Differing Pages list:



Each item in the list has the form: miniature pie chart indicating approximately how different the pages are, left (PDF #1) page number, ≠ (not equal symbol), right (PDF #2) page number, • (bullet separator), approximately how different the pages are (as a percentage), • (bullet separator), pair number.

4.1

The miniature pie chart derives the two colors it uses from the plain highlighting color ([Controlling Highlighting](#)).

4.1

The page numbers are always logical page numbers counting from 1. The pair number is just a count of the pairs of different pages, again starting from 1.

The pages shown on-screen with differences highlighted, are those of the item highlighted in this list. To show a different pair of pages, click the item you want to see. For example, if you wanted to see the first different pages in the list shown in the screenshot, you would click the “6 ≠ 6 • 1” entry.

It is also possible to navigate the list using the keyboard. Click Alt+D to give the keyboard focus to the list (if it hasn't got it already—by default the list gets the keyboard focus automatically if a comparison produces differences). To navigate to the next different pair of pages press the down arrow key (↓), or press Space (i.e., the spacebar). Or to jump forward press the PageDown key. To navigate to the previous different pair of pages press the up arrow key (↑), or or jump backward press the PageUp key.

In addition, from version 3.1.2, it is possible to navigate to the previous different pair of pages by pressing F5, or to the next different pair by pressing F6. (Navigating using these

3.1.2

function keys works regardless of where the keyboard focus is and doesn't change the keyboard focus.)

Changing the pages to view, results in the PDF view panels being updated immediately.

Application Status

Status information is provided in the *DiffPDF* window's bottom left corner, just below the Show Options checkbox (see [Customizing Comparisons](#)).



When there are unapplied changes the warning symbol is shown (as seen on the right of the left hand screenshot). And when all changes have been applied, that is, when a comparison has been completed, information about the comparison is shown (as seen in the right hand screenshot).

The status area is also used to show progress when a long-running comparison takes place. (You can always cancel a comparison by clicking the Cancel button—which is what the Compare button changes into during comparison processing; see [Comparing](#).)

Copying Text to the Clipboard

3.4

To copy text from a PDF page to the clipboard, simply draw a selection rectangle around the text and then click:

1. Shift+Click (i.e., click while pressing the Shift key) one corner of the rectangle (it doesn't matter which one).
2. Move the mouse to the rectangle's opposite corner. As the mouse is moved, a selection rectangle will follow the mouse to show the current selection. (There is no need to drag, i.e., no need to keep the mouse key pressed.)
3. Once the rectangle covers the text to be selected, Click, and the text will be copied to the clipboard.

Reporting

The Report... button is only enabled once a comparison has been made. When clicked it pops up a file save dialog: choose a filename with a suffix of .pdf to get a PDF report, a suffix of .csv to get a CSV report, a suffix of .json to get a JSON report, or a suffix of .xml to get an XML report. A summary report that just provides basic information with no details is also available if you use a suffix of .log (e.g., summary.log).

4.1.2

Note that for most versions of Windows, trying to write a file (e.g., a report) to the root directory (C:\) will silently fail.

A PDF report is a PDF file which shows each pair of pages with the differences highlighted exactly as shown in the user interface, and with the addition of a header that identifies the files and their (logical) page numbers. (Logical page numbers always count from 1; even in PDFs that have initial Roman numeral page numbers.)

A CSV report is a comma separated variable file which details the differences between the two PDFs. CSV files can be read directly by most spreadsheets and databases.

A JSON report is in JavaScript Object Notation which some web tools can handle.

An XML report can be handled by any general XML tool.

For text reports, when doing a text mode (Characters or Words) comparison, if the highlight mode is Plain (the default), the report will list the filename, page number (counting from 1), bounding box (as $x1, y1, x2, y2$ coordinates), and text of each difference. If the highlight mode is Changes, the report will also list the kind of change (insertion, deletion, replacement). When doing an Appearance comparison the report will list the filename, page number and bounding box of each difference.

By default, for visual (i.e., PDF) reports, the differences are shown in a single PDF file with each page in landscape format showing the differences for each corresponding pair of pages from the original PDFs. It is also possible to have portrait format reports showing the differences just for the first PDF or just for the second PDF (see [Controlling Reports](#)). If the highlight mode is Plain differences are shown highlighted in a single color; if the highlighted mode is Changes, insertions, deletions, and replacements are highlighted in different colors.

In addition to choosing a report filename, it is possible to control some aspects of report output; see [Controlling Reports](#).

Reports are output immediately based on the last applied changes (i.e., ignoring any unapplied changes).

Getting Help

Clicking the Help button pops up a little three option menu. The first option is Help, which if clicked opens this manual assuming that a PDF reader is installed. The second option is About which provides some basic information on *DiffPDF*'s version, who it is licensed to, and some information about the computer and its operating system—information that is useful to provide if you send an email to support@qtrac.eu. The third button is License which shows the license text (the same text that appears in the Register window).

Quitting

Click the Quit button or the application's close button (X) to finish.

If a comparison is in progress, it will be halted, but any report being output will complete before the program finishes. All the control settings (mode, zoom, corners, margins, etc.), as well as the window's size and position are remembered: they will be restored when you next use *DiffPDF*.

Running *DiffPDF* Within Other Programs

It is possible to run *DiffPDF* from within another program. A tiny Visual Basic example function is shown in the file rundiffpdf.bas which is in *DiffPDF*'s doc directory, usually, C:\Program Files (x86)\Qtrac\DiffPDF\doc\rundiffpdf.bas.

See also [Command Line Usage](#).

DiffPDF provides many options for customizing the comparison, and a few for customizing the user interface. All these are covered in the following sections.

Customizing Comparisons

Comparisons can be customized in two kinds of ways: cosmetic customizations that affect highlighting, zoom, and similar; and comparison customizations that affect how the PDFs are compared.

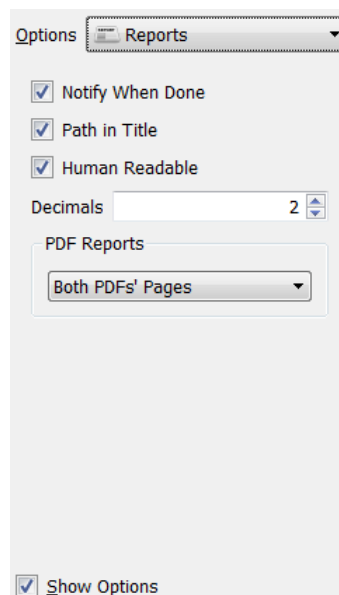
Cosmetic customizations are applied immediately. For example, if you start changing the width of the change bar, the effect will be immediately visible.

The most common cosmetic customization is to change the zoom, and like all cosmetic customizations, changes to the zoom are applied immediately. (See [Zooming](#).)

Comparison customizations are not applied immediately. This is because it is computationally expensive to compare PDFs and if *DiffPDF* started to recompute the differences every time you changed how you wanted the comparison to be done, it would slow things down considerably and be very inconvenient. Instead, when you apply comparison customizations (for example, changing the comparison mode, or changing a corner or margin exclusion), *DiffPDF* simply updates the status area to show that there are unapplied changes (see [Application Status](#)). Then, when you have finished doing comparison customizations, simply click the Compare button to make *DiffPDF* perform a fresh comparison based on your preferences. (See [Comparing](#).)

The most common comparison customizations are to change the comparison mode or the [Comparison Algorithm](#). Like all comparison customizations, changing the mode or the algorithm will simply cause the status area to show that there are unapplied changes. You must click the Compare button to make a mode or algorithm change—or any other comparison customizations—take effect.

DiffPDF has many other cosmetic and comparison customizations that can be applied. These are accessed by checking the Show Options checkbox, which then reveals the Options combobox and an associated panel, through which these customizations can be applied.



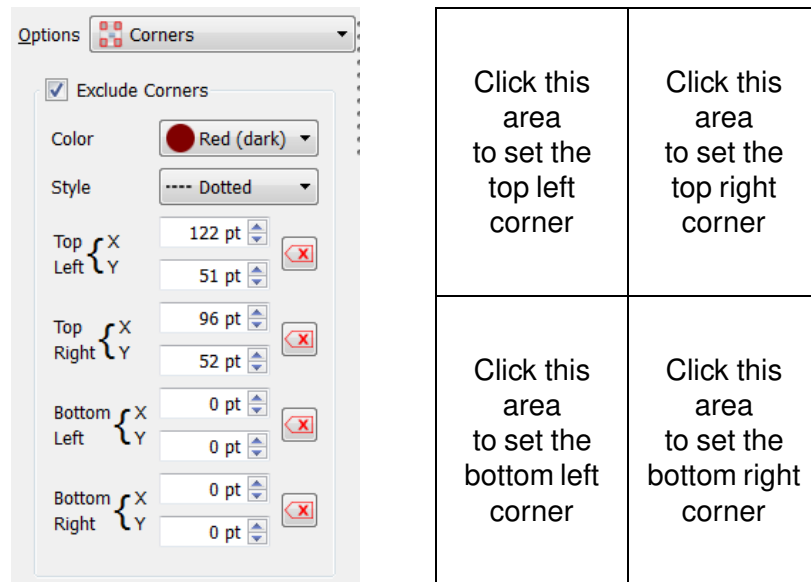
The screenshot shows the Options combobox (and the Show Options checkbox), with the Reports panel visible.

Excluding Corners

It is sometimes useful to exclude one or more corners from the comparison. For example, when comparing engineering diagrams that have a timestamp and version number in one corner. (It is also possible to exclude margins and arbitrary rectangles as well as or instead of corners; see [Excluding Margins \(How to Ignore Headers and Footers\)](#) and [Excluding Rectangles](#).)

To exclude one or more corners, check the Exclude Corners checkbox and leave the Corners panel visible.

There are two ways to set a corner to be excluded. The easiest way is to click on one of the PDF view panels. For example, in the above screenshot, one of the PDF panels was clicked to exclude the title and first sentence. See the diagram below right for where to click to exclude particular corners.



If you click in the wrong place, simply click again (and again, as necessary). Or, alternatively, set the corner's coordinates manually using the spinner controls shown in the screenshot on the left.

If you no longer wish to exclude a particular corner, click its erase left button (✕). And if you no longer wish to exclude *any* corners, uncheck the Exclude Corners checkbox—this will work even if some corners have nonzero coordinates.

Use the Color drop-down list to choose the corner lines' color, and the Style drop-down list to choose the lines' style.

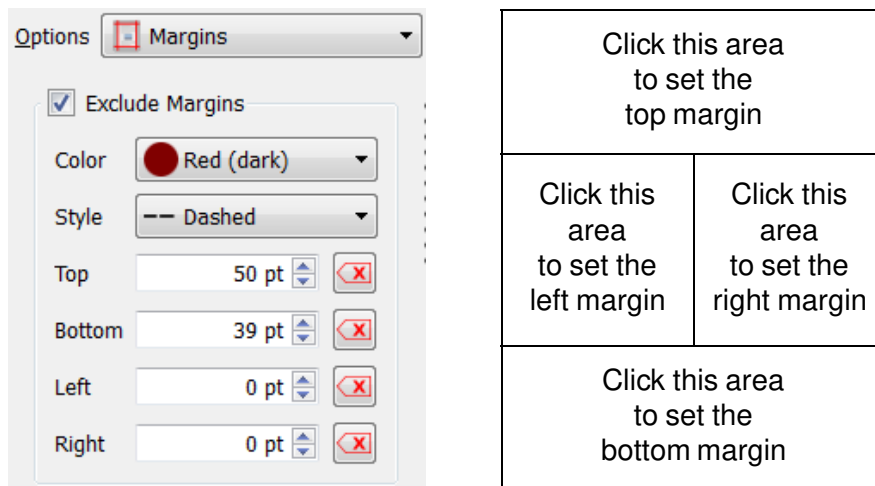
Changes to the corner color and style are applied immediately. Changes to the corners themselves (including switching corner exclusion on or off) are left unapplied and will only take effect when the Compare button is clicked (see [Comparing](#)).

Excluding Margins (How to Ignore Headers and Footers)


It is sometimes useful to exclude one or more margins from the comparison. For example, when PDFs have a timestamp in their header or footer, or if you want to ignore margin notes. (It is also possible to exclude corners and arbitrary rectangles as well as or instead of margins; see [Excluding Corners](#) and [Excluding Rectangles](#).)

To exclude one or more margins, check the Exclude Margins checkbox and leave the Margins panel visible.

There are two ways to set a margin to be excluded. The easiest way is to click one of the PDF view panels. For example, in the above screenshot, one of the PDF panels was clicked to exclude the right margin. See the diagram below right for where to click to exclude particular margins.



If you click in the wrong place, simply click again (and again, as necessary). Or, alternatively, set the margin's coordinate manually using the spinner controls shown in the screenshot on the left.

If you no longer wish to exclude a particular margin, click its erase left button () **X**). And if you no longer wish to exclude *any* margins, uncheck the Exclude Margins checkbox—this will work even if some margins have nonzero coordinates.

Use the Color drop-down list to choose the margin lines' color, and the Style drop-down list to choose the lines' style.

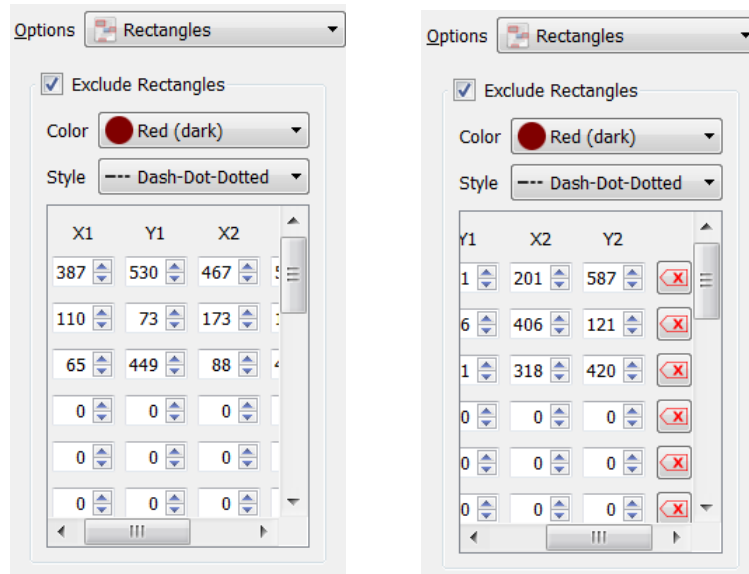
Changes to the margin color and style are applied immediately. Changes to the margins themselves (including switching margin exclusion on or off) are left unapplied and will only take effect when the Compare button is clicked (see [Comparing](#)).

Excluding Rectangles

It is sometimes useful to exclude one or more arbitrary rectangles from the comparison. (It is also possible to exclude corners and margins as well as or instead of rectangles; see [Excluding Corners](#) and [Excluding Margins \(How to Ignore Headers and Footers\)](#).)

To exclude one or more rectangles, check the Exclude Rectangles checkbox and leave the Rectangles panel visible.

There are two ways to set a rectangle to be excluded. The easiest way is to click one of the PDF view panels where you want the top-left corner of the rectangle to be, and then click again where you want the bottom-right corner to be.



If you no longer wish to exclude a particular rectangle, or if you made a mistake, click the rectangle's erase left button (✖). And if you no longer wish to exclude *any* rectangles, uncheck the Exclude Rectangles checkbox—this will work even if some rectangles have nonzero coordinates.

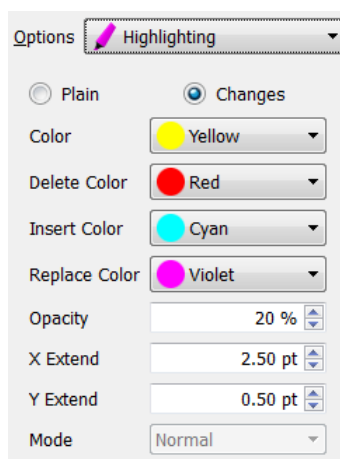
Use the Color drop-down list to choose the rectangle lines' color, and the Style drop-down list to choose the lines' style.

Changes to the rectangle color and style are applied immediately. Changes to the rectangles themselves (including switching rectangle exclusion on or off) are left unapplied and will only take effect when the Compare button is clicked (see [Comparing](#)).

Controlling Highlighting

Highlighting can be controlled in two different ways: the kind of highlighting to do and the visual appearance of the highlighting.

Highlighting is applied like a highlighting pen, that is, a semi-transparent color is painted over the differing words, characters, or areas.



In Appearance mode, differences are shown by highlighting them using the Color color. This color is also used as the basis for deriving the two colors used in the miniature pie charts ([Viewing Differing Pages](#)).

In a text comparison mode (Words or Characters), either of two kinds of highlighting can be used. Plain highlighting uses the Color color to highlight any kinds of differences in the text. Changes highlighting distinguishes between differences and highlights deletions using the Delete Color, insertions using the Insert Color, and replacements using the Replace Color.

The Opacity sets how transparent the highlighting is: the higher the percentage the less transparent (and the more difficult to see through to what has been highlighted).

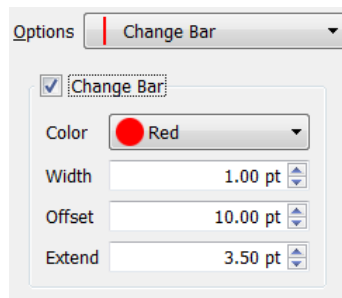
The X Extend is a measure of how far highlighting should extend to the left and right beyond the actual difference. Similarly, the Y Extend is a measure of how far highlighting should extend above and below. These help to join adjacent differences together into a single highlighted unit which can make differences easier to understand.

The highlighting Mode is used to specify the kind of highlighting to use for Appearance comparisons. The default Normal mode highlights differences on both pages. All the other highlighting modes show the PDF #1 page as-is and show the PDF #2 page's differences by contrast. (This is much easier to see than to describe, so it is best to try it out.)

Changes to highlighting colors, opacity, extends, and mode, are applied immediately. Changing the highlighting mode (to or from Plain or Changes) is left unapplied and will only take effect when the Compare button is clicked (see [Comparing](#)).

Controlling the Change Bar

When text mode (Words and Characters) comparisons are used—but not Appearance mode comparisons—it is possible to have a change bar shown in the left margin parallel to any changes. This can make it much easier to scan pages to see where small differences are.



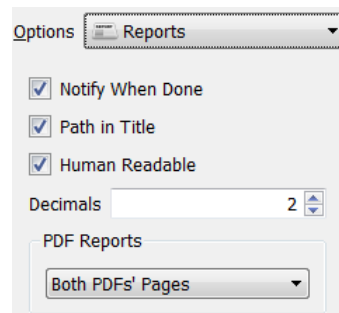
A change bar is shown only if the Change Bar checkbox is checked. The change bar's color can be set using the Color drop-down list, and the change bar's width can be set using the Width spinner control. How far from the left the change bar appears is set using the Offset spinner control, and how far above and below the change to which the change bar is parallel is set using the Extend spinner control.

Change bar changes are applied immediately.

Controlling Reports

DiffPDF can produce both textual and visual reports on the differences it finds (see [Reporting](#)).

Reports are normally output using the new high quality renderer. However, to account for the rare cases where the old renderer produces better output it is possible to use the old renderer instead. See [Controlling Application Settings](#).



Notify When Done

When the Report... button is clicked (see [Reporting](#)), and a report file chosen, *DiffPDF* creates the requested report. For textual reports (CSV, JSON, or XML), this process normally completes immediately, but a PDF report may take several seconds to complete. During this process, *DiffPDF* can be used normally, so there is no need to wait. Once the report has been written to disk a message is shown in the status area ([Application Status](#)). However, the message is easy to miss, especially if you have started doing something else (e.g., another comparison).

If the Notify When Done checkbox is checked, in addition to showing a message in the status area when a report is written to disk, *DiffPDF* will also pop-up a message box.

Path in Title

5.6.5

If the Path in Title checkbox is checked (the default), *DiffPDF* will output the filename of each report in the report’s title (for those report types which have titles), including the file’s full absolute path. If the Path in Title checkbox is unchecked, then only filenames will be included in report titles, without their paths.

Human Readable

Text reports in JSON or XML format can be read both by humans and by software. If the Human Readable checkbox is checked, these formats are output with indentation and newlines (“whitespace”) to make them more easily readable by humans. However, if reports in these formats are only needed for machine processing, then there is no need to include any unnecessary whitespace—in which case this checkbox can be unchecked.

Decimals

Text reports include numbers (i.e., the coordinates of the rectangles where differences have been found). This spinner control can be used to set how many decimal places to output for these numbers. We recommend using 4 or fewer.

PDF Reports

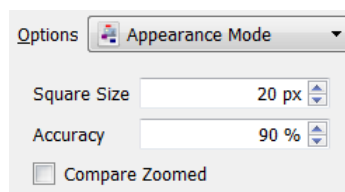
When “Both PDFs’ Pages” is selected (which is the default), for PDF reports, the differences are shown in a single PDF file with each page in landscape format showing the differences for each corresponding pair of pages from the original PDFs.

From version 3.1 it is possible to choose to produce a portrait format PDF report with only the first (left) PDF’s different pages—this is done by selecting “Only PDF #1’s Pages”. Similarly it is possible to produce a report with only the second (right) PDF’s different pages by selecting the “Only PDF #2’s Pages”.

3.1

Controlling Appearance Mode Settings

DiffPDF’s Appearance Mode tab is used to control a more specialized aspect of how Appearance mode comparisons are done.



Square Size

The Square Size only applies to Appearance mode comparisons.

To compare pages by their appearance, *DiffPDF* in effect “photographs” each corresponding pair of pages and compares the two images. If the images are the same, the pages are the same, but if the images are different, *DiffPDF* chops the images up into little squares

and compares each square and highlights any that are different. The Square Size spinner control is used to set how big each little square is. The bigger the square size the faster the comparison—but the coarser the result. The default of 10 points represents a good compromise between speed and fineness.

By default the squares are compared exactly, but this can be changed by using the Accuracy setting discussed next. 4.3

Square size changes are left unapplied and will only take effect when the Compare button is clicked (see [Comparing](#)).

Accuracy 4.3

The Accuracy setting only applies to Appearance mode comparisons.

For appearance mode comparisons, each pair of corresponding squares is compared. If accuracy is set to 100% (the default), the squares are considered the same only if every pixel is identical. This is the default behavior.

In some situations it is helpful to accept small differences (often ones that humans wouldn't even notice). This can be achieved by lowering the accuracy. For example, reducing the accuracy to 98% means that every pair of squares that are compared can be up to 2% different and still be considered “the same”.

Accuracy changes are left unapplied and will only take effect when the Compare button is clicked (see [Comparing](#)).

Compare Zoomed 5.6.5

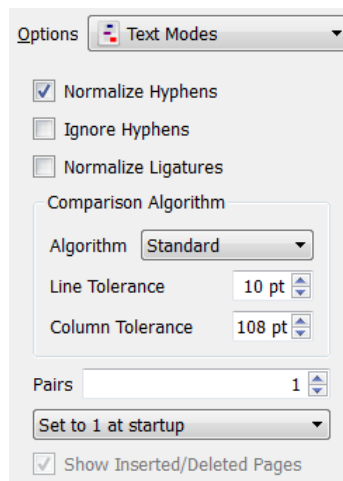
The Compare Zoomed setting only applies to Appearance mode comparisons.

By default, this checkbox is unchecked, in which case Appearance mode comparisons are made at a zoom factor of 100%. Usually, this is fast and accurate. However, in some rare cases this can produce false negatives—that is, differences can be missed. If this problem arises, check this checkbox and set the Zoom to, say, 150% or 200% and retry the comparison.

Compare Zoomed changes are left unapplied and will only take effect when the Compare button is clicked (see [Comparing](#)).

Controlling Text Modes' Settings

DiffPDF's Text Modes tab's settings are used to control more specialized aspects of how text comparisons (Characters and Words comparisons) are done.



Normalize Hyphens

This only applies to text mode (Words and Characters) comparisons.

When the Normalize Hyphens checkbox is checked (the default), all the different kinds of hyphens (i.e., all hyphens in the Unicode “punctuation dash” character category, including the hyphen, en-dash, and minus sign), are treated as if they were the same.

And in addition to normalizing hyphens, non-standard double quotes (Unicode code points U+0093 and U+0094) are considered to be identical to U+201C (“) and U+201D (”) for the purposes of comparison.

If the checkbox is unchecked, no normalization is done.

Normalize hyphens changes are left unapplied and will only take effect when the Compare button is clicked (see [Comparing](#)).

Note that whitespace is always normalized, that is, any kind of whitespace (space, non-breaking space, etc.), is treated as a space (i.e., as a word separator). 4.0.3

See also [Ignore Hyphens](#).

Ignore Hyphens

This only applies to text mode (Words and Characters) comparisons.

When the Ignore Hyphens checkbox is unchecked (the default), hyphens are treated like regular characters. However if the checkbox is checked, hyphens are ignored. When hyphens are ignored it means that, for example, *one–two* is treated as *onetwo*. This works even if *two* is on the next line.

This option was added in version 5.7.8. We recommend that it is always used with [Normalize Hyphens](#) checked.

Normalize Ligatures

This only applies to text mode (Words and Characters) comparisons. 5.5

When the Normalize Ligatures checkbox is unchecked (the default), ligatures are considered to be different from their spelled out forms: for example, **fi** ≠ **fi**, and **fl** ≠ **fl**. If this checkbox is checked, ligatures and their spelled out forms are considered to be the same.

Comparison Algorithm

5.5

This only applies to text mode (Words and Characters) comparisons.

For any given comparison we recommend trying the following in order:

- *Standard algorithm with a Line Tolerance of 10 points.* This produces the best results (few or no false positives) for most situations. These are the default settings.
- *Standard algorithm with a Line Tolerance of 9 or 8 or fewer points.* Try this as an alternative that can produce fewer false positives in some cases where lines are close together (e.g., inside tables), or when different sized fonts are used.
- *Special algorithm with a Line Tolerance of 10 points.* Try this as an alternative that can produce fewer false positives in very rare cases. 3.2
- *Multi-Column algorithm with a Line Tolerance of 9 or 10 points and a Column Tolerance of 108 points.* This is recommended for comparing multi-column PDFs. 5.5

When comparing PDFs using one of the text modes (Words or Characters), *DiffPDF* must read the text from each corresponding pair of pages and compare it. If *DiffPDF* gets the sequence of words (or characters) wrong, this can lead to a false positive, that is, *DiffPDF* may show a word (or character) as deleted in one PDF view and inserted in the other in the same place. (A deletion and an insertion of the same text means that the text has moved.)

The Line Tolerance is the vertical difference in position to allow while considering characters or text to be on the same line. *DiffPDF* is more accurate if there is adequate vertical space between lines.

The Column Tolerance is the horizontal difference in position to allow while considering characters or text to be in the same column. It may be worth trying higher or lower values than the default of 108, e.g., 72, 36, 144, or 176, to see if these produce better results. (This setting only has an effect when using the Multi-Column comparison algorithm.) 5.5

Changes to the comparison algorithm, line tolerance, and column tolerance are left unapplied and will only take effect when the Compare button is clicked (see [Comparing](#)).

Pairs (How to See Text Differences that Span Page Boundaries)

This only applies to text mode (Words and Characters) comparisons.

This spinner control sets how many pairs of pages to compare as a unit.

The default is 1 which means that both PDFs' page 1s are compared then their page 2s and so on. A value of 2 means that two pairs of pages are compared as a unit, i.e., both PDFs' page 1s and 2s as if they were a single long page, then their page 3s and 4s, then 5s and 6s and so on. Similarly a value of 3 means that three pairs are compared as a unit, pages 1, 2, and 3; then 4, 5, and 6, and so on. The advantage of comparing two or more pairs at a time is that differences that span page boundaries are handled more gracefully.

Comparing more than one pair of pages as a unit is computationally expensive. Furthermore, Characters mode is typically 5× more expensive than Words mode. Nonetheless, from version 3.0.2 the maximum has been increased to 1 000, and from 5.2.0 to 5 000.

3.0.2

If you have a large PDF (e.g., a book or long report), we recommend setting pairs to the number of pages and letting the program run for ten minutes. After this time the percentage done should be a good guide to how long it will take to complete. And you can always cancel (e.g., click Cancel), and then try again with a lower number of pairs (e.g., one chapter's worth of pages). Be aware that in some cases using a pairs value greater than 1 can produce unsatisfactory results.

5.2

(Note that this option is concerned with how many pages are compared as a unit; this is a separate matter from concurrency. *DiffPDF* is smart enough to automatically utilize all the processors/cores available whenever concurrent processing is possible and leads to performance improvements.)

Pairs changes are left unapplied and will only take effect when the Compare button is clicked (see [Comparing](#)).

Controlling the Pairs Setting

3.5

By default the [Pairs \(How to See Text Differences that Span Page Boundaries\)](#) is always set to 1 when *DiffPDF* starts up. It is also possible to have *DiffPDF* remember the pairs setting when it is terminated and to restore this setting at startup. Or, *DiffPDF* can be told to automatically set pairs to the page count of the longest PDF being compared.

Show Inserted/Deleted Pages

4.0

This setting only applies in text modes when Pairs is greater than one (see [Pairs \(How to See Text Differences that Span Page Boundaries\)](#)).

If checked (the default), when comparing PDFs with different numbers of pages or with inserted or deleted pages, any inserted pages are shown with every word (or character) highlighted as inserted. Similarly, any deleted pages are shown with every word (or character) highlighted as deleted.

If unchecked, deleted or inserted pages are not shown at all, so long as *DiffPDF* can detect them. In general, *DiffPDF* can spot inserted or deleted pages if their text is very different from the corresponding page's text, but can't detect them if their text is similar.

Not showing deleted or inserted pages is useful when you know that pages have been inserted or deleted and just want to see the pages that have changed. If deleted or inserted pages are shown then a changed page might be shown opposite a deleted or inserted page with the corresponding changed page ahead or behind.

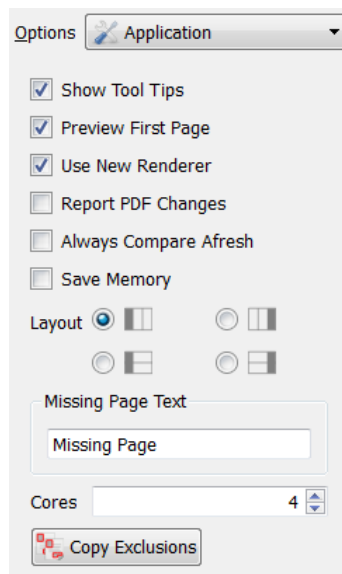
We recommend using page ranges where possible, but if Pairs is used, it might be helpful to compare twice, once with this option checked (the default), and again with this option unchecked to see which produces the most useful results for the particular PDFs being compared.

Customizing *DiffPDF*'s User Interface

A few aspects of *DiffPDF*'s behavior and user interface can be customized.

Controlling Application Settings

DiffPDF shows tooltips to provide reminders about what controls do and how to use them. It also shows the first page of a PDF when a PDF is chosen. Normally, *DiffPDF* uses the new high quality renderer for showing different pages and for visual (i.e., PDF) reports.



Tooltips can be switched off by unchecking the Show Tool Tips checkbox. And showing the first page of a PDF when a PDF is chosen can be prevented by unchecking the Preview First Page checkbox.

DiffPDF uses the new high quality renderer by default, both for showing different pages on-screen and in visual (i.e., PDF) reports. However, in rare cases the old renderer produces better results. Uncheck the Use New Renderer checkbox to immediately see the results produced by the old renderer—and check the checkbox to see what the new renderer produces.

If the Report PDF Changes checkbox is checked—it is unchecked by default—then *DiffPDF* will watch the PDF files and if one or both changes will report this in the status area and show the unapplied changes warning symbol (see [Application Status](#)). 5.6

If the Always Compare Afresh checkbox is checked—it is unchecked by default—then *DiffPDF* will not cache its results, and will perform every comparison from scratch. This is useful if one or both of the PDFs being compared is changed between comparisons. 5.6.3

If the Save Memory checkbox is checked, then *DiffPDF* will only read each PDF's meta-data and the page data as needed, so as to minimize memory use. In some rare cases this can cause comparisons to fail because pages do not render correctly, which is why the default is *unchecked*. 5.6.1

Only *check* the Save Memory checkbox if you are routinely comparing large (thousands of pages) PDFs, and then only if memory is tight. 5.6.2

Note that after changing the Save Memory checkbox, *DiffPDF* must be quit and restarted for the change to take effect.

By default, the main window shows the Control Panel on the left, and the two PDF viewers in the middle and right, as illustrated below:

Controls Options Status	PDF #1	PDF #2
-------------------------------	--------	--------

It is possible to choose a different layout, for example, if you prefer the controls to be on the right, or if you are comparing PDFs that are wider than they are tall. Here are two of the three other possible layouts:

PDF #1	PDF #2	Controls Options Status	Controls Options Status	PDF #1
				PDF #2

Simply click the appropriate Layout radio button to set the layout you want.

When two PDFs are compared that have a different number of pages, or when page ranges are used that compare different numbers of pages, pages missing from the end of the shorter PDF are represented by blank pages with the text “*DiffPDF* Missing Page”. The “Missing Page” part of the text can be replaced by setting the Missing Page Text to any non-empty text.

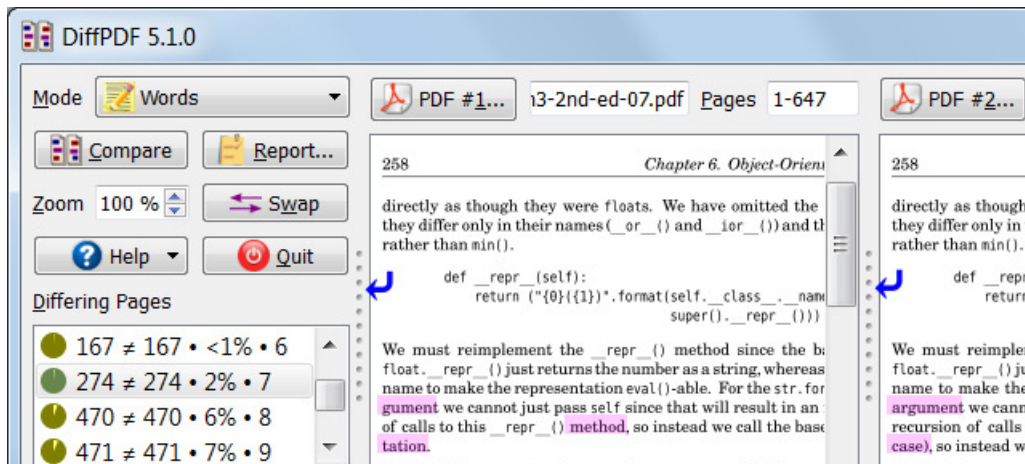
By default, *DiffPDF* automatically detects how many cores the computer has and spreads the work over all of them so as to complete each comparison as quickly as possible. However, when running *DiffPDF* from within another process or on some Windows server operating systems, it is possible that the core auto-detection will fail. The Cores spinbox allows the number of cores to be specified manually when auto-detection fails.

Click the Copy Exclusions button to copy the excluded corners, margins, and rectangles to the clipboard, ready to be pasted directly into a *diffpdfc* .dpc configuration file.

Controlling What’s Visible

DiffPDF divides its main window into three regions: the the Control Panel (Controls, Options, Status), and the PDF #1 and PDF #2 View Panels.

In some situations it might be desirable to hide the Control Panel to give more space to viewing the PDF pages, or to hide one of the View Panels. This can be done by using the “splitter” controls that separate each region.



In the screenshot, the two splitters are indicated by blue curved arrows.

To use a splitter, hover the mouse over it until the mouse indicator changes from a pointer (often \blacktriangleright) to a splitter symbol (often $\blacktriangleright\blacktriangleleft$), then left click the splitter, and with the mouse button held down, drag the splitter left or right (or up or down for a horizontal splitter), to resize the regions on either side of it. If dragged far enough left the region to the left will disappear—and similarly if dragging to the right, or up, or down. To make a hidden region reappear, simply drag its splitter until the region becomes visible again.

Command Line Usage

3.3

Since *DiffPDF* is a GUI tool it is normally invoked by double-clicking it in the Start menu, or by clicking it in the taskbar if it has been pinned there.

However, some users use the command line *diffpdfc* program (www.qtrac.eu/diffpdfc.html) to compare PDFs, and for those that differ they want to invoke *DiffPDF* with the different PDFs so that they can compare them interactively. *DiffPDF* has two command line modes of operation to support this kind of use. And from version 3.4.4, *DiffPDF* supports a new option (`--quit-on-same`) which makes it practical to use *DiffPDF* alone from within another program. (See also [Running DiffPDF Within Other Programs](#).)

3.4.4

From *DiffPDF* 3.4.4 a `-h` or `--help` command line option is supported which shows the available options and terminates.

3.4.4

Note that the paths shown in the following subsections may need to be changed if you installed *DiffPDF* in a different folder.

Load Only

This is the command line to use to start *DiffPDF* and have it load two PDF files ready for comparison.

```
C:\Users\mark\>"C:\Program Files (x86)\Qtrac\DiffPDF\diffpdf" file1.pdf file2.pdf
```

This will result in the first page of each PDF being shown (assuming the Preview First Page checkbox is checked—see [Controlling Application Settings](#)). To actually compare the files, click the Compare button (see [Comparing](#)).

Load and Compare

This is the command line to use to start *DiffPDF* and have it load two PDF files and immediately compare them.

```
C:\Users\mark>"C:\Program Files (x86)\Qtrac\DiffPDF\diffpdf" mode file1.pdf file2.pdf
```

The *mode* must be `-a` or `--appearance` to perform an Appearance comparison, or `-c` or `--chars` to perform a Characters comparison, or `-w` or `--words` to perform a Words comparison. (For an explanation of the different comparison modes see [Setting the Comparison Mode](#).)

This will result in both PDFs being loaded, after which the specified comparison will be carried out immediately.

From *DiffPDF* 3.4.4 it is possible to force *DiffPDF* to automatically terminate if the two PDFs are the same. To do this add an additional command line argument, `-q` or `--quit-on-same`.

3.4.4

```
C:\Users\mark>"C:\Program Files (x86)\Qtrac\DiffPDF\diffpdf" -q -w file1.pdf file2.pdf
```

Here, the two files will be compared using Words mode and if they are the same *DiffPDF* will terminate; otherwise it will remain open showing the differences.

Troubleshooting

Register Window “Invalid key code” Error

When a license key is acquired from the “Get Key” page at www.qtrac.eu/getkey, the license key that is issued is tied to the Computer ID that’s used. In other words, each license key is tied to the computer it is acquired on, and in particular, to the computer’s motherboard and CPU.

If—within one year of purchase—a license key is acquired for the wrong computer by mistake, or if the computer it was acquired for is scrapped or replaced or has its motherboard or CPU changed, the license key can be transferred to another computer. Contact support@qtrac.eu with the original Order ID if a transfer is required.

If a license key is acquired as one class of user (e.g., Administrator), and then used by another class of user (e.g., User), even though they are on the *same* machine, the acquired license key may not be visible to *DiffPDF* and so result in an “Invalid key code” error. If this is the case, in the User account, use `regedit.exe` to change (or add) the registry key: `Computer\HKEY_CURRENT_USER\Software\Qtrac Ltd.\DiffPDF\key5` and give it the value of the license key that was acquired by the Administrator for this computer.

False Positives

In some circumstances, *DiffPDF* will report differences that are not visible to the human eye. In some cases these are genuine differences (for example, two different kinds of hyphens that look the same), and in some cases these are false positives.

By default *DiffPDF* normalizes hyphens (i.e., treats all the different hyphen kinds as the same), but does not normalize ligatures (although it can if told to). To control these, see [Normalize Hyphens](#) and [Normalize Ligatures](#).

False positives are usually caused by very narrow interline spacing, or by text which mixes Latin text (e.g., English) with non-Latin text (e.g., Japanese), and in some cases by tables. In many cases these false positives can be eliminated—or minimized—by reducing the Line Tolerance. For example, try reducing the line tolerance from the default of 10 points to 9 points or to 8 points. (See the [Comparison Algorithm](#).)
