

FrontDesigner 3.0



Times have changed and there is no need to keep your elaborate electronic project in an old cigar packet any longer. Today specialised dealers offer cases for almost all electronic applications you may think of. But still self-made devices often look quite incomplete, because of a missing front panel design. A simple inscription like ON/OFF made with a water-proof felt pen may be sufficient in some cases, but a logarithmic scale for a potentiometer seems to be an insoluble problem.



This is what FrontDesigner is there for. Use FrontDesigner to design good-looking front panels for your self-made devices and take advantage of the following features:

- Exactly fitting [symbols](#) and [text](#) labels
- Versatile functions allow fast changes to design and function
- Predefined and editable symbols give a professional outfit
- A [scale assistant](#) creates scales for switches, potentiometers and instruments
- Measures simplify the workout of the enclosure.
- A mirrored [printout](#) to transparent film produces a durable and scratch-resistant front panel layout.

For best results consider the following:

- Think about all controls that have to be mounted to the front panel (or rear panel)
- Select suitable controls, like switches, potentiometers, display, etc.
- Find a case that is big enough to seat all components
- Work out the front panel design

Make sure that all controls fit to their positions. Try to arrange controls in a way that they are easy to handle. Think also about fastening the controls. Assign inscriptions or symbols to all controls. Add shapes, logos or other creative elements, as you like. If necessary add measures for drillings, millings, etc.

There are several possible ways to manufacture a front panel. Please take a short look on some of them:

- [Front panels with self-adhesive films](#)
- [Front panels with laminates](#)
- [Front panels with millings, drillings and engravings](#)

But you may also find FrontDesigner useful for other applications, than for front panel design. Import symbols with other themes using metafiles or bitmaps from the Internet. Some of the new print options are also very helpful for [printing](#) stickers or labels.



We are hopeful that you realise a lot of successful projects with FrontDesigner. Feel free to send suggestions or other comments to fax (+49) 4222 946671 or email abacom.del@t-online.de. News and information is available from www.abacom-online.de/uk.

Improvements of version 2.0

The following list gives you an overview of the essential innovations of FrontDesigner 2.0:

- Projects may now contain more than one design, e.g. front panel and rear panel can be saved to one project file.
- Symbol libraries appear in alphabetic order. Lots of [symbols](#) have been added to the library.
- The copy function places a metafile [graphic](#) to the global clipboard. This makes it easy to copy objects to other applications like Word or Excel, that support metafiles.
- You may now [stretch](#) or distort objects independently in x- and y-direction.
- A new rotation tool allows the numeric entry of angles for stepwise rotations.
- The new 32-bit version offers convenient file dialogs with long file names.
- An automatic [backup function](#) saves your work regularly.
- Import and export of metafiles (*.wmf, *.emf) and bitmaps (*.bmp) for logos or symbols from the Internet.
- A [font manager](#) simplifies the administration of font properties.
- Drillings, millings and measures may be hidden if necessary.
- The new tile option repeats [printout](#) in x- and y-direction. Ideal for stickers and labels.
- Arcs can be closed with secants.
- A new function simplifies creation of regularly polygons.
- The edges of contours and outlines can be cut or rounded and [contours](#) may be interpolated.
- The new scale assistant creates linear and logarithmic scales and other objects for scales.

You will find further information in the corresponding chapters of this manual.

Improvements of version 3.0

Export functions:

- Improved graphic [export](#) with adjustable resolution, as well as export of JPEG files.
- Export of [HPGL machine files](#) for [drilling](#), [milling and engraving](#) (plot jobs).
- AutoCAD® SHX-font support for high quality plots of single-stroke and multi-stroke [fonts](#) suitable for milling and engraving.

Printing:

- Automatic multi-page [print](#) with cut marks for large front panels
- Combined with a magnification of 300%, this allows printouts up to 180x180 cm
- Independent print options for each front panel of a project saved together with the project file.

Scale assistant:

- Generation of space-saving low-profile-scales
- Adjustment of colours and fonts within the design process
- Load and save option of all [scale](#) parameters

General function:

- Simplified adjustment of properties for [pens](#), [brushes](#) and [fonts](#).
- Gradient fill function for front panel [background](#) and filled objects.
- Combination of polygons for poly-polygon structures.
- Improved undo/redo function
- Object list with [tree](#) structure gives comfortable access to objects, even within [groups and combinations](#) for all kind of manipulations.
- Dimensions, [grid](#), rulers and [measures](#) in inch or mm
- Adjustable [grid colour](#)
- New function distributes objects evenly over the front panel
- New tool allows numeric input of object [width and height](#)
- New function forces objects to grid
- Automatic creation of [panel meters](#)
- Engraving function and separate administration for [pens, milling tools and engraving tools](#).

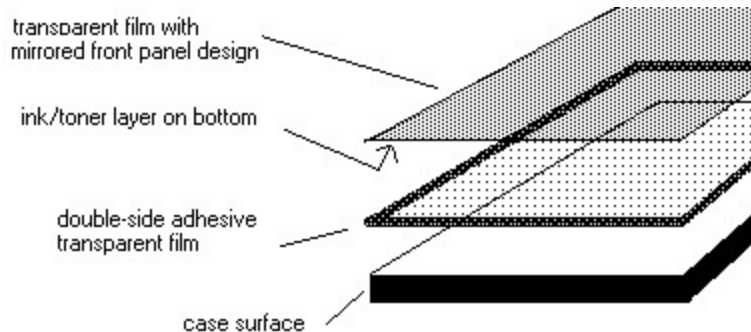
Front panels with self-adhesive films

This technique uses a double-side adhesive film, which is applied on the front panel to fasten another transparent film with the printout of the individual design.

- Make a [printout](#) of your design and check all measures and positions of components again. Transfer the measures to the case. For that purpose fix the printout on the case and lightly mark the positions of drillings, millings, etc. Drill, mill and cut the case carefully.
- Make a mirrored(!) printout of your design on a transparent film (available from office

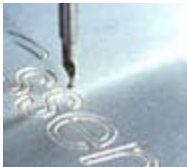
supplies). Test the printout with paper to save film material.

- Stick a double-side adhesive transparent film on the case. This material is available from specialised suppliers (e.g. Conrad Part-No. 529400-80)
- Now mount the transparent film with the front panel layout. Because of the mirrored printout, the toner or ink layer can be placed directly to the adhesive film. This protects the layout against dust and scratches.
- Cut off [drillings](#), etc. with a sharp knife.



You may also find single-side adhesive films, sold by some electronic suppliers, that can be used with printers. These films are applied directly on the front panel and finally protected with a second transparent, self-adhesive film.

Front panels with millings, drillings and engravings



[Milling and engraving](#) front panels is completely different from applying transparent films or laminates. This technique cuts the individual design out of the front panels material itself. Therefore specialised machines for milling and engraving are necessary, as well as good knowledge of machines, tools and material.

The design of the front panel must consider the manufacturing process at design time already, which means that you can not use all features of FrontDesigner you like.

You have to consider that not any colour is applied to the front panel with this technique, which means that all [brush](#) features (colour, gradient fills, hatches) are completely meaningless. Pictures like [bitmaps](#) or [metafiles](#) can not be milled or engraved as well.

The design can only consist of paths, the machine follows to remove material mechanically. While engraving tools only scratch the surface, milling tools will usually cut deeper into the front panel material or will even cut through the front panel.

In any case the machine will move along a pre-defined path – the design – with a certain tool. So the design consists of [lines](#), [circles](#), [polygons](#), [etc.](#), whose outline contour is cut by the machine. This fact is important to remember for [text objects](#) as well. Please read the chapter [FONTS](#) as well. After you have designed a front panel with millings or engravings with FrontDesigner, the necessary [machine files](#) can be exported in HPGL format. These files can be read and processed by most of all plotters.

Front panels with laminates

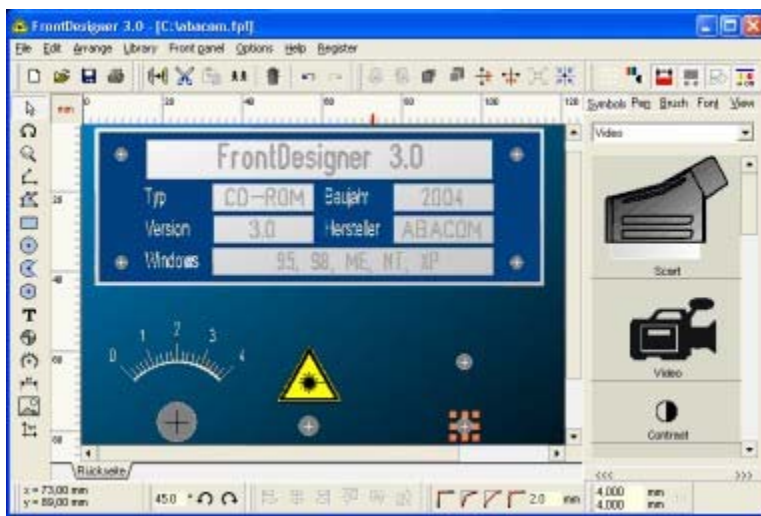


An alternative and cheap way to a self made front panel design are laminates. Therefore a high-quality [printout](#) is made on good sheet glossy or photo paper. This technique allows very individual design, because the printout covers the whole front panel.

The printout is then laminated, which means that it is weld together with a special laminate film under pressure and high temperature, well known from all kind of identity cards. Unfortunately a machine is necessary for that process. If you are not in possession of a laminate machine, any good copy shop will do this job for some change. In any case the ready-made laminate will have a professional look and is very though.

At least the laminate can fixed on the front panel with all-purpose glue very easily. Necessary [drillings](#) should be made before the laminate is applied on the front panel. The laminate can be cut of later with a scalpel. Otherwise distortion may appear on the laminate.

The editor



When the software has been started, it offers the following components:

- Mode selector with [edit functions](#) and [drawing functions](#) on the left.

Main menu with upper toolbar

Library with [symbols](#), [pens](#), [brushes](#), [views](#) and [fonts](#)

Front panel editor with ruler

Lower toolbar

FrontDesigner displays helpful hints to all switches and tools, when the mouse is moved to one of these elements.

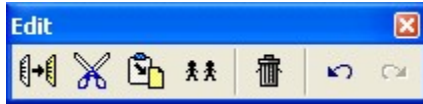
Docking tools

FrontDesigner allows individual changes to the toolbars (docking). Changes are saved automatically, when the software is terminated. So the software may look different from the figure above, when it is being restarted, and changes have been made to the toolbars.

The following tools are available in the toolbars:



Tool [FILE](#)
with the functions NEW, OPEN SAVE and [PRINT](#).



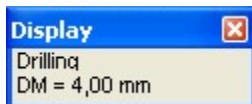
Tool [EDIT](#)
with the functions COPY, CUT, PASTE, DUPLICATE and DELETE.



Tool [ARRANGE](#)
with the functions GROUP, TO FRONT/TO BACK and MIRROR.



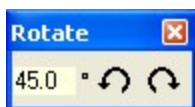
Tool [VIEW](#)
with the functions GRID ON/OFF, COLOUR / B&W and SHOW / HIDE for measures, drillings, millings and other elements.



Tool DISPLAY
to display symbol information and positions.



Tool ADJUST
with the functions LEFT, VERTICAL, RIGHT, TOP, HORIZONTAL and BOTTOM.



Tool ROTATION
for clockwise and anticlockwise rotation with the corresponding angle.



Tool [CONTOUR](#)

With the functions ORIGINAL, INTERPOLATED, CHAMPFER and ROUNDED and the corresponding value.



Tool WIDTH/HEIGHT

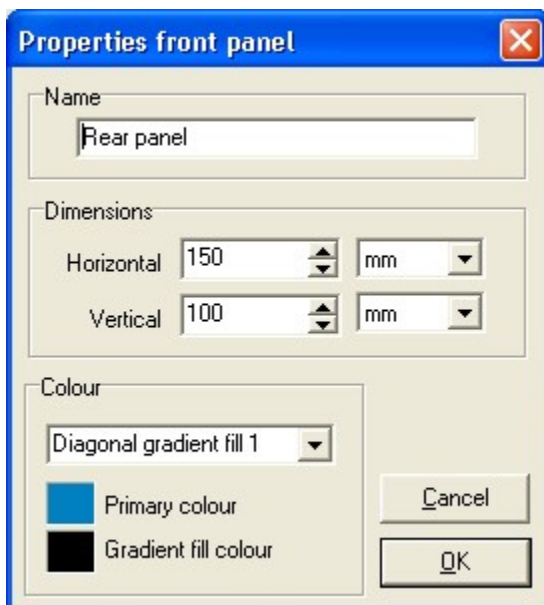
This tool allows you to enter the size of selected objects directly. If the switch 1:1 is down, the proportion of the objects is kept, when a new width or height is assigned. If you have not selected any objects, the dimensions refer to the front panel itself.

Two toolbars can be found on top and on bottom of the editor

There are two toolbars above and beyond the editor where the tools can be placed. The position of the tools within its toolbar is changeable and tools can be moved from one toolbar to the other. To do this, you find a small handle on the left of each group of tools. Click on the handle and move the tool to the preferred position, while holding the left mouse button down (drag). Drop the tool at the new position, by releasing the mouse button.

Tools can also be moved to the editor, where they are displayed in a small tool window. You may then close this tool window to hide the tool completely. Hidden tools can be found in the main menu. Select OPTIONS->SHOW TOOLS to restore hidden tools.

Front panel properties

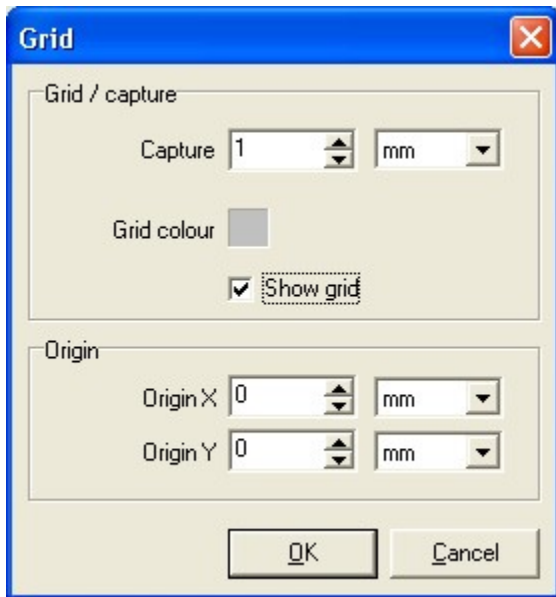


Call the PROPERTIES dialog from the FRONT PANEL item of the main menu. You can assign a NAME to the front panel. The name will appear in the register on bottom of the editor. This makes it possible to combine several panels (e.g. front panel and rear panel) to one single project. To select a front panel, click to one of the entries of the register. The DIMENSIONS can be entered in mm or inch, depending on the selected units. The front panel COLOUR can be a single colour or a gradient fill between two colours in several directions.

Confirm your specifications with OK and the front panel will appear with selected colour and dimensions. You may change properties whenever necessary, opening the dialogue again.

Grid, capture and origin

All edit functions are equipped with a grid capture. Use the corresponding toolbar to turn the grid on/off. The capture will remain active even if the grid is turned off. Call the GRID function from the OPTIONS menu to adjust the grid.



The capture is variable from 0.1 to 10 mm.

Depending on the zoom the number of displayed lines is reduced automatically to 1/10, if the distance between two lines becomes too small to be displayed correctly on the screen. This has no effect on the capture.

The default position of ORIGIN of the front panel is the top left position of the editor. You can set the origin to any other position on the front panel. This may be helpful if measures refer to another position, e.g. a [drilling](#).

You can enter the numeric values for the origin in the grid dialog or set the origin with a mouse click in the editor. Therefore Select ORIGIN from the OPTIONS menu. Now set the new position of the origin with a click to the front panel. This function is also available from the left toolbar.

To reach positions that are off the grid, hold down the SHIFT key of the keyboard, while editing the front panel.

Zoom

To zoom an area of the front panel, click on the zoom button (magnification glass) of the left toolbar. Move the mouse cursor to the front panel. A click with the left mouse button increases the magnification. A click with the right mouse button decreases the magnification. You can zoom in an area with a frame. Select the default edit mode (arrow) to terminate the zoom mode.

If the front panel is too big to fit the screen, you get scrollbars on the right and on the bottom of the editor. Use the scrollbars to scroll to the position you have to work on. Remember that the number of [grid lines](#) is reduced depending on the zoom. Increase the magnification to see all grid lines if necessary. FrontDesigner is equipped with a comfortable view administration, where different views of a project can be stored and recalled.

Click on the VIEW button to activate the view administration.



There are several switches to adjust the zoom:

- Increase magnification (+)
- Decrease magnification (-)
- Zoom all objects
- Zoom all selected objects
- Zoom whole front panel
- Scroll left, right, up, down

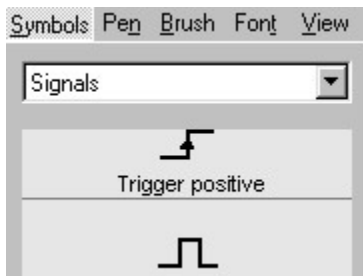
Below you find switches to administrate the views, you have saved to the list.

- Add current view to list
- Delete list entry
- Move list entry downwards
- Move list entry upwards
- List of stored views

Whenever you select a list entry, the stored view is being recalled. Double-click on an entry, to rename it.

Symbols

Symbols can be taken from the symbol library and can be placed anywhere on the front panel. The [library](#) offers a list of several pages of symbols. The library is activated with a click on the SYMBOLS button.

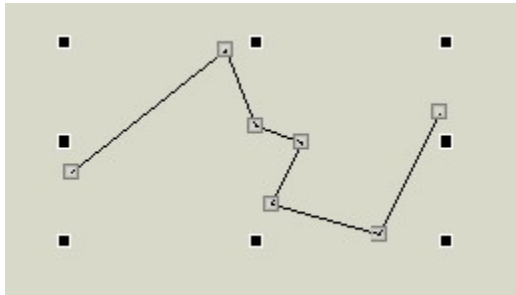


Libraries appear in alphabetic order in the list, which makes them easier to be found. To select a symbol, click to the symbol and move the mouse to the front panel. The symbol sticks to the mouse cursor until you place it on the front panel with another click. The process can be aborted with a click with the right mouse button. While the symbol sticks to the cursor, the mouse is captured to the front panel. (AutoScroll)

Edit functions

Select the edit mode (arrow) from the left toolbar. The edit functions comply with the windows standard: First select one or more objects and then call an edit function.

Selected objects are marked with eight tiny rectangles on the corners and edges for stretching. Single objects are selected with a click to the object. To select more than one object, hold down the SHIFT key on the keyboard. A click to a selected object deselects the object. You may also frame objects to select them. In that case all objects that cross the frame are selected. To deselect all objects click to an unused area of the front panel. The EDIT menu offers an additional function to SELECT ALL objects.



The corners of polygons, rectangles and lines (points) are marked with tiny rectangles as well, as long as one of these objects is selected. This allows you to move (drag and drop) points to another position. When the mouse cursor is moved on a point (cross cursor), a local popup menu (right mouse button) offers the functions DELETE POINT and ADD POINT.

Whenever you click on an object that has already been selected, FrontDesigner will toggle its mode between STANDARD and ROTATION.

You can perform one of the EDIT functions on the selected objects as well:

DELETE (also key DEL) deletes selected objects.

COPY copies the selected objects to the local clipboard

This function also copies the selected objects as metafile graphic to the global Windows clipboard. This makes it easy to paste objects in other applications that handle metafiles. (E.g. Word, Excel, etc.)

CUT performs the function copy and removes the selected object from the front panel.

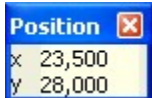
PASTE recalls the elements from the clipboard. You can place them like symbols from the library.

DUBPLICATE performs the functions COPY and PASTE in one step.

Edit functions may appear disabled if not available with selected objects. All edit functions are also available from the toolbar or from a local popup menu (right mouse button on front panel).

Any edit operation can be revoked with the function EDIT->UNDO. Undone operations can be recalled with the function EDIT->REDO.

MOVE objects while holding the left mouse-button down and release them at their desired position. Select edit mode (arrow) before. Hold down the SHIFT key on the keyboard, to reach positions that are off the grid, while moving objects.



You could use the tool POSITION as well, to enter object positions directly. POSITION is the centre point of the smallest surrounding rectangle that contains all selected objects. So the relative position of selected objects to each other is not changed. To change relative positions use [ADJUST](#) functions, or use position tool for each object individually. Having nothing selected, this function will do nothing at all.

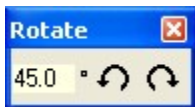
To **STRETCH** objects click to one of the tiny rectangles of selected objects. You can stretch objects independently in x- and y-direction (distortion).



You can use the tool WIDTH/HEIGHT as well to adjust object dimensions. If the switch 1:1 is down, the proportion of the objects is kept, when a new width or height is assigned. If you have not selected any objects, the dimensions refer to the front panel itself.

For **ROTATION** select the corresponding mode from the left toolbar. The tiny rectangles of selected objects will now appear as tiny circles. This indicates that rotation is active instead of stretching. Remember: Whenever you click on an object that has already been selected, FrontDesigner will toggle its mode between STANDARD and ROTATION as well.

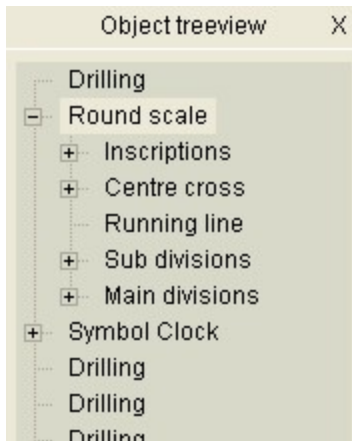
The rotation angle is captured to 45 degree. Hold down the SHIFT key on the keyboard, to turn off the capture temporary during rotation.



You can use the tool ROTATION as well, which allows you to enter an angle for clockwise and anticlockwise rotation in steps.

Object treeview

The objecttree view can be shown or hidden with the corresponding item of the OPTIONS menu. It appears on the right of the editor.



The treeview is a lists of objects of the front panel design. [Groups and combinations](#), like [scales](#) or [symbols](#), appear as a single entry at first, but will drop down when selected, to show the contents of the group.

A click on a list entry will select the object the same way as a click on the object itself in the editor. However the advantage of the treeview is, that objects are reachable that can not be reached with the editor. For example you can select objects out of a group, without having to split the group. This can be very helpful in case you have to manipulate a single object in a group. For example you can easily change the [colour](#) of a single line, which is part of a scale, etc.

As the front panel, the treeview offers a local popup menu (right mouse button) with an additional item RENAME. This allows you to enter a clear name for the object.

File functions

The FILE menu offers the functions SAVE, SAVE AS, OPEN, NEW, PRINT and QUIT, as well as [PRINT](#) and [EXPORT](#).

QUIT terminates the software. You may be asked to save your current project.

FrontDesigner saves the front panel to a file with the suffix *.FPL, which includes [dimensions](#), [symbols](#), [views](#), etc. of the front panel. These files are only editable with FrontDesigner. The name of the currently edited project file is displayed in the caption of the program.

Projects can contain more than one front panel (e.g. front panel and rear panel). The function SAVE saves the project to the file that is displayed in the caption. The name NEW_FRONTDESIGNER_PROJECT.FPL is assigned to new projects that have not been saved. In that case the function SAVE AS is called instead of SAVE. The function SAVE AS assigns a new file name to your project. The extension FPL is added automatically to the file name.

The function OPEN loads project files (*.FPL only!) into the editor.

The function NEW starts a new project. You are asked before, to save your current project.

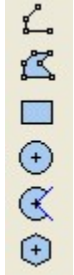


File functions are also available from the tool FILE.

Drawing functions

The basic drawing functions are LINE, RECTANGLE, CIRCLE, POLYGON, ARC and TEXT. Additional are [DRILLING](#), [SCALES](#) and [MEASURES](#). All these function are also valid to create [engravings or millings](#).

You can [import](#) metafiles (*.wmf, *.emf) or bitmaps (*.bmp, *.JPG) as well, but remember that these objects are not available for engraving an milling.



New objects are created with the parameters that are set for [PEN](#), [BRUSH](#) and [FONT](#). To simplify the adjustment, you can select an object that has already been placed on the front panel, before you select a drawing function. The parameters of the previously selected object are then assigned to the new object, as far as possible.

LINES

Lines are drawn from point to point. Simply click to the point of the line that you want to draw. Finish the line with a click with the right mouse button. When the line is finished the program returns to edit mode.

You can return quickly return from other modes to the edit mode with a click on the right mouse button.

You can assign different pens and colours to a line, but you can not assign a brush to a line. If you have to draw a filled object with a brush use one of the following functions:

RECTANGLE

A rectangle is drawn with two clicks. The first click marks the top left corner. The second click marks the bottom right corner.

CIRCLE

Circles are drawn with two clicks. The first Click marks the centre point. The second click determines the radius.

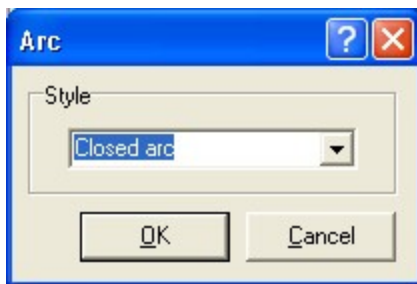
POLYGON

Polygons are drawn as lines, but are closed automatically, when the polygon is finished with the right mouse button.

ARC

Arcs are drawn with three clicks. The first click marks the centre point. The second click determines the radius and the start point from where the arc is drawn clockwise to the end point. The third click marks the end point.

Arc can alternatively be displayed as pies. Select an arc and call the property dialog from the local popup menu, which is available with the right mouse button. Select one of the options to close the arc. Arcs can be closed with a secant.



Contours

Contours that have been drawn with the functions [LINE](#), [RECTANGLE](#) or [POLYgone](#) can be changed with the tool [CONTUR](#).



ORIGINAL: The corners of the contour are connected with straight lines from point to point.

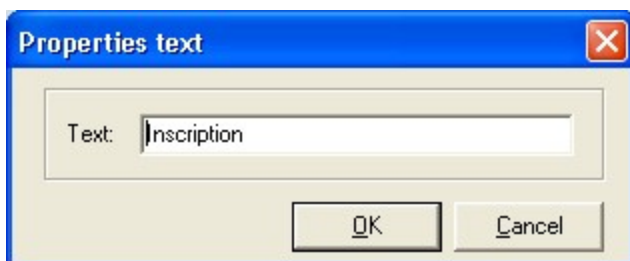
INTERPOLATED: The contour is interpolated with so called b-splines. The lines are used as tangents for the interpolation.

CHAMFER: The corners of the contour are flattened with chamfers. The numeric value determines the size of the chamfer.

ROUNDED: The corners of the contour are rounded. The value determines the distance between the corner and the start point of the rounding.

Text

Select the text mode and click to the text position. Enter the text for the label to the dialog.



Confirm your entry with OK to create the text label. If you have to change the text of an existing label, select the label and call the property dialog from the local popup menu, which is available with the right mouse button. Enter the changes to the dialog. Width and height are independently changeable with the stretch function. Use the font administration to assign [fonts](#) to text objects.

Fonts



FrontDesigner can display [text objects](#) with several different fonts, but it is very important to distinguish between two basic font families, which are based on completely different technology:

- Windows-True-Type fonts (TTF)
- AutoCAD® fonts (SHX)

The glyphs of Windows-TTF fonts are defined as a combination of one more polygons, where each polygon must be closed. For example the letter A consists of two closed polygons, where one describes the outer contour of the A, while the second is the inner contour of the A, which is a small triangle.

As a result of this a TTF defines two basic properties:

1. The contour of the glyph (outline) is drawn with a PEN, which has a certain WIDTH and COLOUR.
2. The inner space between the (closed) polygons can be filled with a BRUSH, which can be unicoloured, filled with gradient colours, hatched or invisible.

This makes TTFs suitable for graphic applications, when text is output to screen devices or printers.

AutoCAD®-SHX fonts on the other hand use a completely different technology. Most glyphs of these fonts consist of open polygons, so that they do not offer any BRUSH properties. SHX fonts are only drawn with a PEN.

This may appear as a disadvantage at first view, but it becomes a big advantage when characters are not printed or displayed on screen, but output to plotting devices (milling machines, etc.). Filling a TTF with a brush is a complicated and time-consuming process on devices like that, while a

plotter can easily follow the path of a glyph that was defined in SHX format.

Remember: As long as front panels are printed or displayed on screen, you can use both types of fonts as you like. If you plan to create plot files you should use SHX fonts only. Otherwise you should not be surprised to loose brush information, when a TTF is plotted.

To switch between TTF and SHX, FrontDesigner offers two corresponding switches in the font administration.

Any TTF font has the properties NAME, HEIGHT and STYLE. To define the colour of a TTF, you have to set the PEN properties for the outline contour, as well as the BRUSH that is used to fill the characters.

This is done – as for any other object – with the administration for [PEN and BRUSH](#), but you have to make sure that you have selected text objects exclusively. Otherwise changes to pen and brush parameters will change only objects that are not a text object. This is because you often need to modify lines within mixed [groups](#), like [scales](#), where [text](#) should usually stay as it is.

SHX fonts just have the parameters NAME and HEIGHT. Changing pen parameters is the same as for TTF. SHX fonts do not have any brush properties.

Often needed font settings (inclusive pen, brush, height,...) can be save to a list in the font administration. There are four buttons to add, delete and move entries. Each font family (SHX, TTF) has ist own list to avoid confusions. Fonts in the list that use an engraving tool or a milling tool instead of a pen are marked with a * for milling or a v for engraving. To recall a font setting simply select an entry of the list. A double click on an entry opens an edit box, where you can change name of the entry. The list is saved automatically so that the contents is available for any project that is edited.

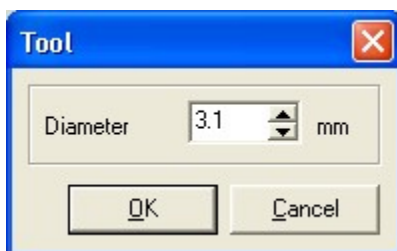
The internet offers a large range of fonts, which are often available for free (e.g http://www.datacad.com/ddn/fonts_down.htm). To install a new SHX font in FrontDesigner use the menu item INSTALL SHX FONT... from the options menu. Installed SHX fonts are located in the SHX directory in the installation path of FrontDesigner. During installation FrontDesigner de-compiles SHX fonts to shape format (*.SHP) and then save them in format of its own (*.FHX) for instant access.

In case you open a project that uses fonts that are not installed, FrontDesigner will use a default font instead until the missing font is installed or another font is assigned to text objects. The font information, which can be activated at any time (OPTIONS->FONT INFORMATION), will be opened automatically in case of a missing font. So if you are planning to give some of your projects (*.FPL) to others, it may be necessary to attach the font files the project uses.

New TTF files can be installed in the Windows system control.

Drillings

Select the drill mode from the left toolbar. Drillings are drawn with a single click to the drill position. Enter the drill diameter to the dialog.

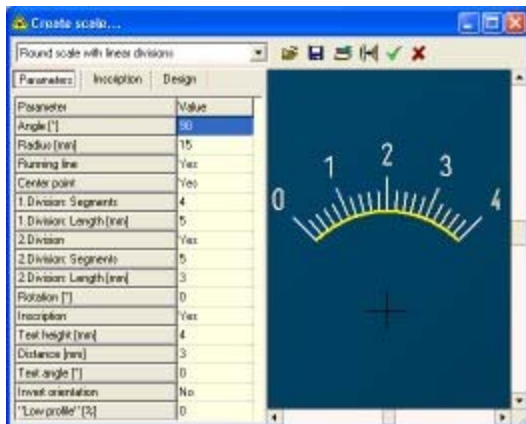


To change the diameter of an existing drilling, call the property item from the local popup menu, which is available with the right mouse button.

Drillings can be hidden with the tool [VIEW](#). Drillings, millings and engravings can be exported as [HPLG machine files](#).

Scales

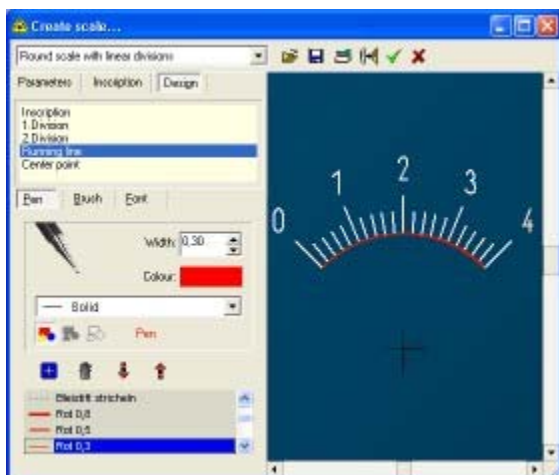
Select the scale mode from the left toolbar to activate the scale assistant. The scale assistant is a comfortable tool to create various types of scales for potentiometers, instruments, switches, etc.



The scale assistant creates straight and round scales with linear and logarithmic divisions and some other front panel objects.

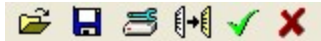
The listbox **STYLE** offers several basic styles of scales. Each scale type has an individual list of parameters with adjustable values. Enter numeric values with the keyboard. YES/NO values are controlled by the keys Y and N and can be toggled with the SPACE key or a double click. Parameters are adjustable in wide range. The result is displayed directly in the preview on the right. By the way, negative values of line length create scales with lines that point to the centre.

Some scale types can create text objects for **INSCRIPTION** automatically. A list allows you to enter individual text.



You can click on **DESIGN** to change [pen](#), [brush](#) and [font](#) of the scale individually. A list shows the components of the current scale (1. Division, 2. Division, Centre point, etc.). This list is used to select the components that you want to modify. You can select one or more entries of the list. (To

select more than one object, hold down SHIFT during selection.)



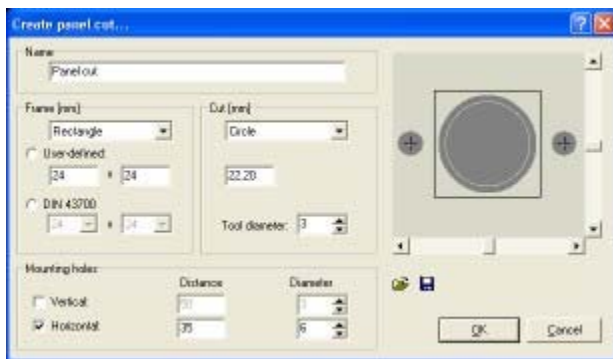
The toolbar offers the following additional functions;

- OPEN a scale setting file (*.SCL), current settings will be overwritten.
- SAVE current scale settings.
- RESET scale to factory settings.
- COPY scale to clipboard
- ADD scale to current project.
- CLOSE dialogue without adding scale to project.

Whenever the dialogue is closed, you will be asked to save your settings or not. It is recommended saving scale settings for further use.

Panel cuts

The function CREATE PANEL CUT from the OPTIONS menu may be helpful, if you have to add switches, meters, etc. to the front panel regularly.



This function creates a [group](#) which contains the frame for the component dimensions and the cut for the component. Circles and rectangles are available as shapes for the frame and the cut. Mounting holes can be added if necessary. The distance of these holes is measured between the centres of the holes.

All parameters can be saved to files with the suffix .CUT, so you can create your own little database of frequently used components. Surely this function will not fit to all components you can think of, but anyway it is very helpful in many cases, when switches, instruments or mains filter modules need to be drawn.

Width and height or diameter can be adjusted independently for frame and cut. While the option DIN43700 is activated, valid (rectangular) frame dimensions are selectable and the corresponding cut is calculated automatically. In that case the MOUNTING HOLE options are disabled.

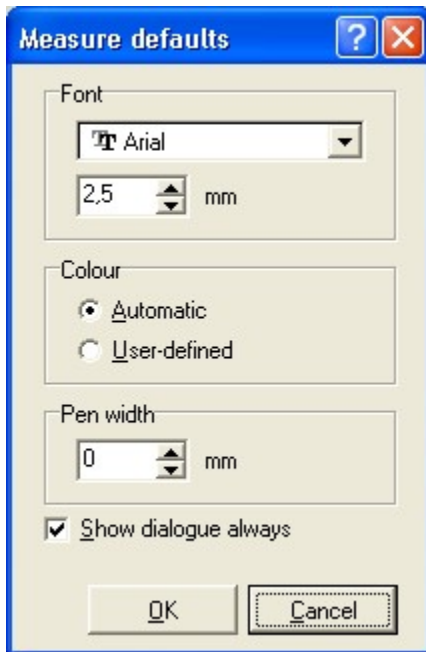
Otherwise you can enter USER-DEFINED dimensions for the frame and the cut. In any case you need to specify the machine tool diameter for the cut, which is essential for the automatic creation of the cut. Caution: Later modifications of the tool diameter in the editor, will result in new dimensions for the cut.

Measures

To draw measures, select the corresponding mode from the left toolbar.

Two clicks define the distance of two points to which the measure refers. FrontDesigner creates a measure object ([group](#)) that consists of the measure figure (text), lines and arrows. The line of the measure object and its arrows are always parallel to the imagined connection between the two points the measure stands for. The value appears readable along the way between point 1 and point 2. A third click determines the distance of the measure figure from this connection line.

The basic defaults for the new measure, such as FONT, COLOUR and PEN WIDTH, are adjustable in a dialogue. The dialogue is available from the menu OPTIONS-MEASURE DEFAULTS.



If the AUTOMATIC COLOUR is activated, FrontDesigner will select a colour for the new measure, that gives a good contrast on the front panel [background](#), otherwise you can select a certain colour with a click on the colour field. The dialogue will appear automatically as well, whenever you enter the MEASURE mode, while the option SHOW DIALOGUE ALWAYS is activated.

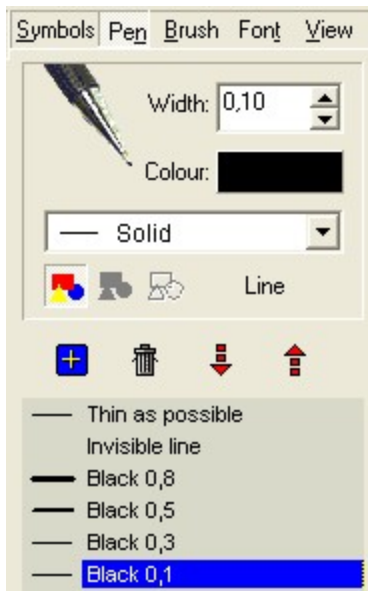
As long as you keep the measure object grouped, the value of the measure will be recalculated automatically when the measure is being stretched. The property dialogue allows you to enter a new value for the measure. The arrows are re-calculated with the new value automatically.

If you split the [group](#) of the measure object, you get the basic elements the measure consists of (text, lines, arrows). After that there is not any automatic active any longer.

The tool [VIEW](#) allows to show or hide measures if necessary.

Pens and brushes

FrontDesigner is equipped with a comfortable administration tool for pens and brushes.



Click on the PEN button in the upper toolbar to activate the pen administration.

Each pen has the three parameters COLOUR, WIDTH and STYLE. A click to the COLOUR field allows you to select the colour of the current pen. The edit field WIDTH adjusts the pen width. The list box offers several pen styles. Some pen styles are only available for straight lines, but not for circles, arcs, text and interpolated contours. Instead of a pen tool, you can select a [milling tool or a engraving tool](#) with the corresponding buttons as well. These machine tools only have one parameter WIDTH.

Often used pens can be stored to the pen list. There are four buttons to add, delete and move entries of the list. Whenever you click to an entry of the pen list, the pen is being recalled and assigned to selected objects of the front panel. Double click to an entry of the list, to enter a new name for the pen. The pen list is saved automatically, when the program is terminated, to make pens available in every front panel project.

The administration for brushes works the same way, but brushes only have two parameters: Colour and style. Fills can be uni-coloured, gradient fills, hatched or invisible. Note that only closed contours can be filled with a brush. Use the [drawing functions](#) for rectangles, circles and polygons to get objects with closed contours. Objects that have been drawn with the function LINE can not be filled. Remember that fillings are not visible in black & white mode. A list for favorite brushes is available as well.

Remarks on PEN and BRUSH parameters for text objects can be found in the chapter [FONTS](#).

Millings and engravings



Font panels often have cuttings for switches, instruments, etc.. You can assign a milling tool or an engraving tool – instead of a pen - to any contours that have been drawn with the [functions line, circle, rectangle, polygon, text etc.](#) This is done in the [PEN administration](#) with the three corresponding buttons.

Millings are always displayed in dark grey (as the background of the editor). The path the milling machine moves along is additionally displayed in light grey. The pen width of the contour represents the diameter of the milling tool.

Engravings appear white coloured and a grey line indicate the path of the engraving tool.

The tool [VIEW](#) allows you to show and hide millings, engravings and drillings if necessary. Millings, drillings and engravings can be exported as [HPGL machine files](#). See also: [Front panels with millings, drillings and engravings](#).

Arrange functions

Arrange functions are called from the main menu item ARRANGE or from the corresponding tool.

To front / To back

These functions control the z-position of objects. Example: A rectangle is overlapped by a circle. Select the circle and call the function TO BACK, which sets the circle behind the rectangle. The result would have been the same, if you had selected the rectangle and called the function TO FRONT. New objects that are added to the front panel appear in front position

Building groups

Objects can be combined to groups, which simplifies selecting, moving and editing objects. At least two or more objects are necessary to build a group and groups can contain other groups. The group function is available from the ARRANGE item.

Splitting groups

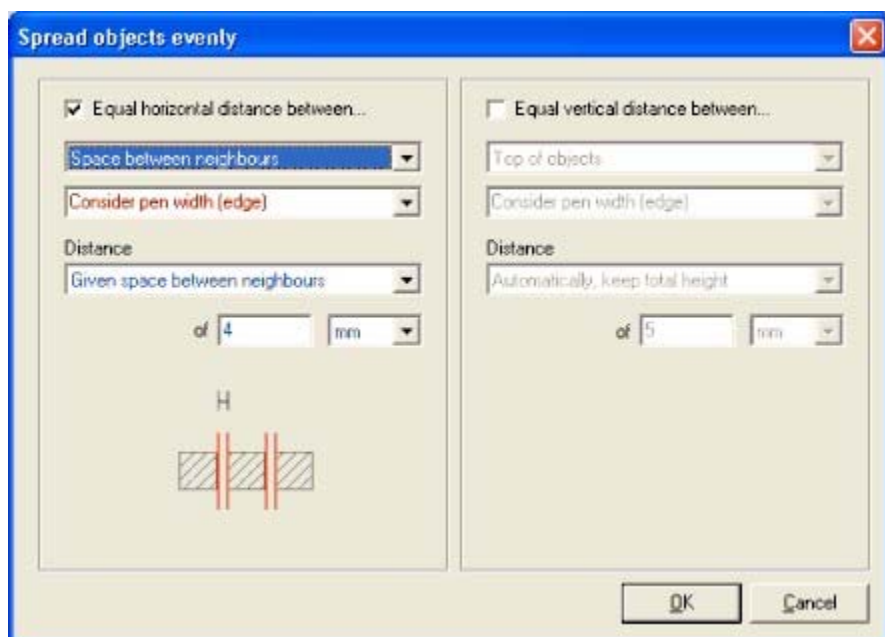
It may be necessary to split a group to delete or edit a certain member of a group. For that purpose select the group and call the SPLIT GROUP function from the main menu. Now you have access to each individual component of the group. As groups may contain subgroups it can be necessary to call this function for the subgroup again.

Combinations

Combinations are objects with and outline contour that is build from several closed polygons. Usually these objects have one large outer contour and one or more smaller inner contours, like a metal sheet with cuttings or a stencil. To create an object of that kind with FrontDesigner, you have to draw all its contours with the functions [LINE](#), [RECTANGLE](#), [POLYGONE](#) or [TEXT](#) first. After need to select all these elements and call the function ARRANGE->BUILD COMBINATION from the main menu, which combines the objects to one object with a complex outline. The function SPLIT COMBINATION undoes the function.

Spread objects

This functions distributes selected objects in equal distances over the front panel. To execute the function at least two or more objects need to be selected.



Some setting must be made for this function. Objects can be spread in horizontal and vertical direction. First of all you need to specify which distances shall be made equal:

- Equal distance between centre of objects
- Equal distance between left (top) edge of objects
- Equal distance between right (bottom) edge of objects
- Equal space between neighbours

The objects pen with can be considered or ignored for calculations.

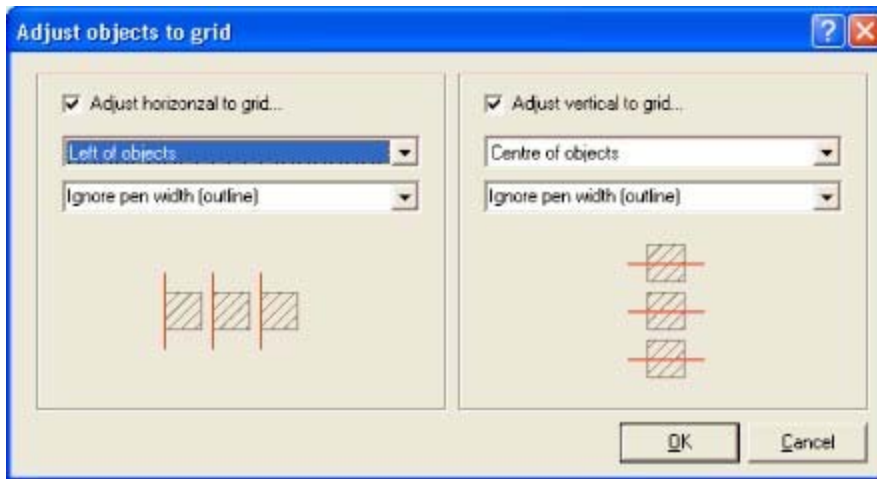
You also have to specify how the new distance between objects is calculated. Three options are available:

- The new distance is calculated automatically and objects are fitted into their original area.
- The user specifies a new total width/height. The new distance is calculated automatically.
- The user specifies the new distance. The new total width/height is calculated.

A schematic diagram in the dialog explains the selected options.

Adjust to grid

This function forces selected objects on the nearest [grid](#) point.



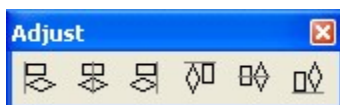
Adjustment can be made in horizontal or vertical direction. You need to specify which point of the object is forced on the grid: Left (top), right (bottom) or centre. The objects pen with can be considered or ignored for calculations. A schematic diagram in the dialog explains the selected options.



Essential arrange functions are also available in the tool ARRANGE.

Adjusting objects

Use the tool ADJUST to adjust simple elements of your drawing like [rectangles](#), [circles](#), [text etc.](#). Select all objects that have to be adjusted. The last selected object is the reference object, which will stay at its position. Then click to the ADJUST tool to select the direction of adjustment. The reference object can be a complex element like a group or component.



View options



GRID – Enables / disables the display of [grid](#) lines.

COLOURED / B&W - Usually the coloured mode should be activated. In some cases it may be helpful to switch to black & white mode. The black & white mode displays only the outline of objects. This makes it possible to reach objects that are overlapped completely in coloured mode.

SHOW / HIDE MEASURES – Usually all measure objects are displayed on the front panel. Optionally you can hide [measures](#). In that case measures are only displayed, if they were just added to the front panel or if a group is selected which contains measures.

SHOW / HIDE DRILLINGS / MILLINGS – Usually all [millings](#) and [drillings](#) are displayed. Optionally

you can hide them. In that case milling and drillings are only displayed, if they have just been added to the front panel or if a group is selected which contains cuttings.

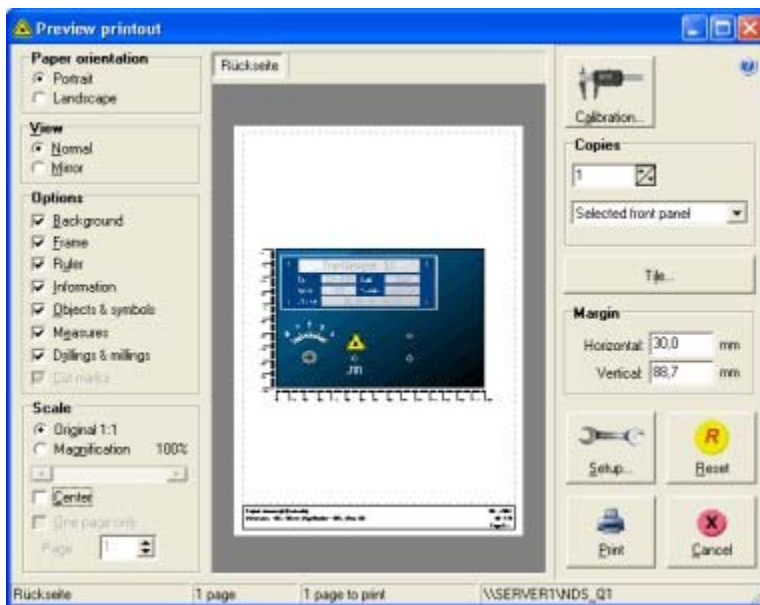
SHOW / HIDE [ENGRAVINGS](#)

SHOW / HIDE OBJECTS – This functions hides/shows all objects, except measures, millings, drillings and engravings.

Combine any of the view options you like, to create drilling plans, manufacturing hints or whatever. These options are also available for [printouts](#).

Printing

Select PRINT from the file menu to get a preview of the printout. It is recommended saving your project before printing.



The preview depends on the selected paper format of your printer. As long as the option CENTER is checked, the printout is adjusted to the centre of the paper automatically, otherwise you can drag and drop the printout in the preview to the desired position. The MARGIN values measure the distances between the left/top corner of the front panel (frame) and the physical paper edges. You can enter exact margin values to the edit fields as well, to determine the print position.

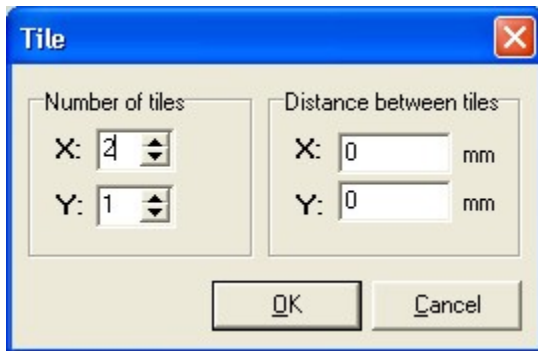
The PAPER ORIENTATION (LANDSCAPE or PORTRAIT) can be selected easily and is identical with the setting in your printer driver. Other settings of your printer driver are accessible with the button SETUP. These settings are different for each individual printer driver, as described in the printers manual.

Quite often it happens that a design does not fit on the paper format, so FrontDesigner will spread the printout over several pages automatically if necessary. In that case cut marks are generated, which makes it easier to fit pages together exactly after they were printed. If you do not want to print on several pages, check the box ONE PAGE ONLY and select the PAGE to be printed.

The printout can be mirrored, which is helpful to manufacture front panels with transparent films. In addition there are several OPTIONS that can be activated just as you like.

The button TILE opens a dialog, which allows you to print your design repeatedly side by side and one below the other. Enter the number of desired rows and columns to the dialog. You can also

enter the distance between the tiles, which is helpful if you print on specialised media, like stickers and labels. (Pre-defined formats for ZWECKFORM labels can be found in the directory ...\\Examples\\Zweckform\\... See also: Example "LabelPrint.FPL"). Please note that ruler and data are not printed, while the tile option is activated.



Magnification

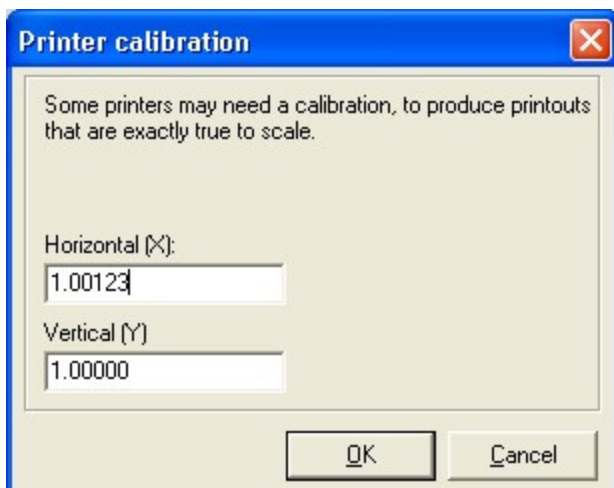
While the option ORIGINAL is selected, the printout is scaled 1:1. If SCALED is selected, you can adjust the scale from 10% to 300%. Use the slider to adjust the scale.

The COPIES section you can specify which front panels of the project are printed and how many copies you need. You either print all front panels of a project in one go or print only the front panel that is selected in the preview. Use the register on top of the preview to select a certain front panel for the preview. Each front panel has its own individual print options, so options can (and must) be adjusted for each front panel independently. All settings are saved with the project file, so that they have to be set only once.

A status bar on bottom of the dialogue informs about the selected printer, the number of pages needed for the current front panel, and the number of pages need for the whole print job.

The button RESET recalls the factory setting for the current front panel. The button PRINT starts the print job. The quality of the printout depends mainly on the printer and the installed printer driver. The printout should look like the preview, if not... well, try different printer drivers, even if printout with other applications seems to be correct!!!! Different drivers can be found on the Windows-CD or on the Internet.

Some printers produce slight distortions of scale. You can enter correction factors to minimise distortion in x- and y-direction.



Symbol library administration

You can customise the symbol library, by adding pages and [symbols](#), etc.

The library is saved to the LIB directory in the installation path of the software. The files LIB1.LIB...LIBx.LIB represent the pages of the library. Libraries are saved automatically, whenever you change the library page or the file functions are used or the program is terminated. We recommend creating a backup copy of the LIB directory in regular intervals.

Adding pages to the symbol library:

Select LIBRARY-> ADD PAGE from the main menu. Enter a name for the library page. The library now creates and shows the new empty page.

Deleting pages of the symbol library:

Select LIBRARY-> DELETE PAGE from the main menu. You will be asked to confirm the deletion of the current library page. Confirm with OK and the current page is gone forever.

Renaming pages of the symbol library:

Select LIBRARY-> RENAME PAGE. A dialog will show the name of the current library. Enter the new name for the library page.

These functions are also available from a local popup menu of the library. Move the mouse cursor to the library and press the right mouse to open the popup menu. The additional function TO TOP / TO BOTTOM can be used to change the order in which the symbols are sorted. You can also change the PROPERTIES of each symbol.

User editable symbols

FrontDesigner comes along with a collection of [symbols](#) from several themes. The design of symbols depends on the usage the symbol was designed for. You may prefer other sizes or colours for your purpose. It is recommended and very simple to customise the library with your own symbols. Whatever you have drawn with FrontDesigner can be added to the library.

A symbol is a combination ([group](#)) of the basic elements you are already familiar with: [Lines](#), [circles](#), [rectangles](#), [polygons](#), [pictures](#), [scales](#) and groups of these elements.

Think about the elements a symbol consists of. A simple arrow can be drawn with a polygon. After you have drawn the symbol, select all elements that belong to the symbol and call the function ADD TO LIBRARY from the library item of the main menu. You will be asked to enter a name for the symbol.

One or more objects can be added to the [library](#) simultaneously. If more than one object is selected, all selected elements are combined to a group. Symbols are equipped with a reference point (red point), which determines the relation between the symbol and the grid. The red point will be captured to the grid, when the symbol is added to a front panel.

Adjust the reference point with a single click to the symbol preview. Hold down the SHIFT key to reach positions that are of the grid. Mostly one of the position top left, bottom right, centre, etc. is sufficient. These general reference points are directly adjustable with the corresponding buttons of the symbol dialog. With the buttons OUTLINE and EDGE the reference point is set to the corresponding positions.

Modifying symbols:

If you want to modify a symbol, place it to an unused area of the front panel. Select the symbol and call the function [SPLIT GROUP](#). Now you can make your changes to the basic elements of the

symbol. If finished, add the symbol to the library as you learned previously.

Graphic import and export

FrontDesigner allows you to import and export picture files with the bitmap format (*.BMP, *.JPG) or with the metafile format (*.WMF, *.EMF). Import and export functions are called from the file item of the main menu.

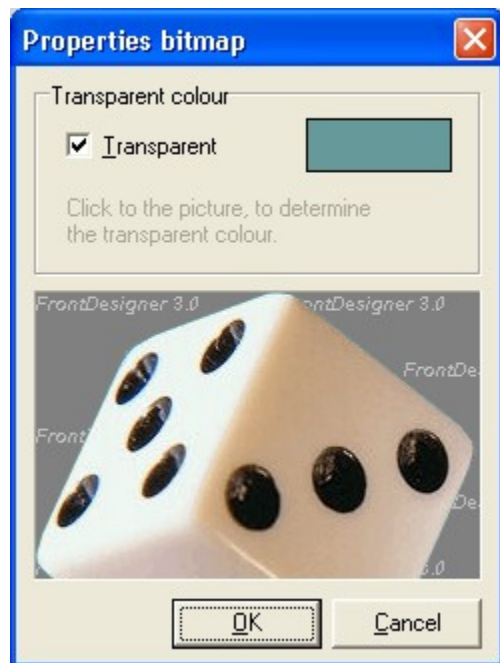
Graphic import

Select IMPORT from the FILE menu or from the left toolbar. A file dialog allows you to select the FILETYPE and to open an existing file. After opening the file, you can add the picture to the front panel. A single click determines the position of the bottom, left corner of the picture.

We recommend to use metafiles instead of bitmaps whenever possible. Metafiles offer higher quality with lower memory consumption. Symbols in metafile format can be found on the Internet by the way.

Some of the symbols in the library are also metafile pictures. Note that some edit functions are not available for bitmap and metafile pictures. For example you can not assign new colours to imported pictures. Rotation of pictures is limited to angles of 180 degree, except on modern Windows systems that allow rotation of bitmaps with any angle. Pictures that can not be displayed correctly appear as hatched rectangles.

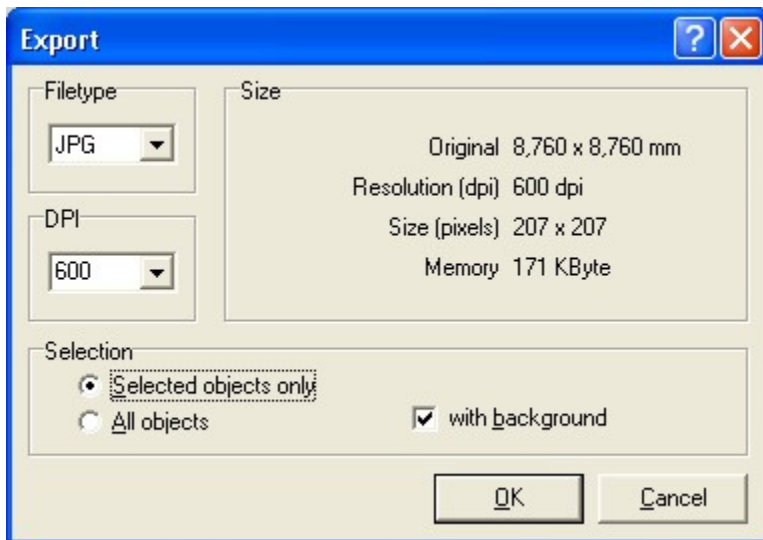
The property dialog of bitmaps allows determining a transparent colour for bitmap pictures. Click to a certain colour of the bitmap to make it transparent. This feature unfortunately only works with true colour bitmaps, but not with bitmaps that have indexed colour palettes



Graphic export

Use the export function only to create bitmaps (*.BMP, *.JPG) or metafiles (*.EMF) for other applications. The function is called from the FILE menu: EXPORT-> GRAPHIC. For normal saving use the functions SAVE and SAVE AS.

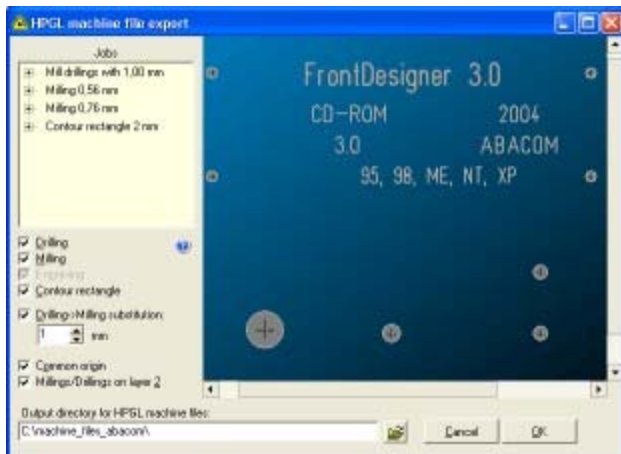
Call EXPORT from the file item of the main menu. You can export ALL objects or SELECTED objects with or without coloured background.



Exported files can be imported to other applications, like Word or Excel.

HPGL machine file export

FrontDesigner can export [drillings](#), [millings and engravings](#) to machine files in HPGL format. Therefore call the function EXPORT->HPGL MACHINE FILES from the FILE menu.



For file export all drillings, millings and engravings that use the same tool (diameter) are collected to one so-called job. The dialogue shows a list of all necessary jobs and the object that were collected for the job. You can check jobs that have to be exported: MILLING, DRILLING, ENGRAVING and CONTOUR RECTANGLE. The contour rectangle option creates a plot job that describes the outline rectangle of the front panel and considers the tool diameter. This is because you can not draw such a rectangle in the editor, because its co-ordinates are outside of the front panel.

If you wish to change the diameter of some jobs they are exported, you can click on the job with the right mouse button. A local popup menu with the entry MODIFY allows you to change tool diameters. The option COMMON ORIGIN adds a PD/PU (pen down/pen up) command at the physical origin (Point 0;0 = left/bottom corner of the front panel) to each plot job. This option may be helpful to adjust the origins, when several jobs are executed one after another.

It may be useful in some cases not to drill drillings with a drilling tool, but to mill these holes instead. In that case the diameter of the milling tool must be of course less than the minimum drill diameter appearing. Therefore the option DRILL-MILL SUBSTITUTION can be activated. You need

to specify the diameter for the milling tool that is used to cut the holes. All drill jobs will be replaced with a single mill job, when this option is checked.

The Option MILLING/DRILLING ON LAYER 2 adds a HPGL command "SP2" (select pen 2) to milling jobs and drilling jobs. This option does not have any effect on engraving jobs. Some software products use this option to cuts deeper into the material automatically, with milling/drilling tools.

The output directory in which the export files are generated is shown on bottom of the dialogue. The directory name is generated from the projects filename, and can be modified if necessary. Directories that do not exist will be created. A click on the EXPORT button will create a HPGL file with the name of the job and with the extension .PLT. When export is finished files are displayed in the Windows Explorer. HPGL files can be read and processed by almost any plotter device. HPGL viewer programs can be used to verify exported information. Some freeware viewers can be found on the Internet (e.g. <http://www.archmatic.com/d/>). See also: [Front panels with millings, drillings and engravings](#).

Autosave

The AUTOSAVE function is called from the FILE item of the main menu. Enter the interval, which is used to save your work regularly. While the backup function is activated, the current project file is saved to file with the extension .bak. The original file (*.FPL) is not being affected, i.e. a file SUPPLY.BAK will be created if you are working on the project file SUPPLY.FPL. The backup file contains the latest version of your project, if saving has been impossible for some reasons. Open the backup like a project if necessary.

