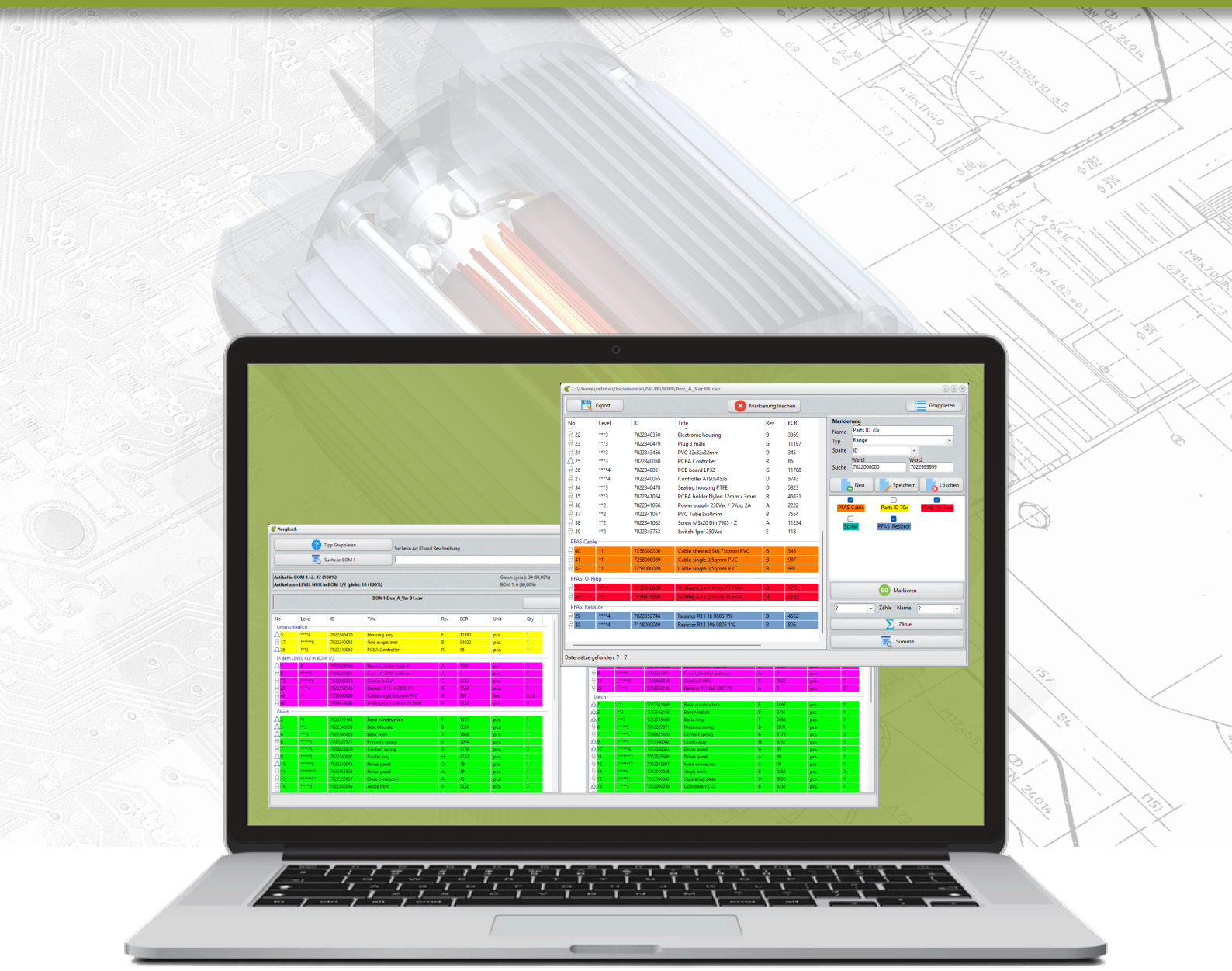


PALIX

Analyze professionally bill of material.

1. Introduction

Analyze complex bills of materials (BOM) of any kind professionally and efficiently with PALIX: whether production or design BOMs. ECAD, MCAD or a combination of these. Devices or assemblies BOMs with one or multiple levels.

With PALIX you can quickly recognize

- differences in direct comparison of material usage across multiple BOMs incl. revision (matrix output),
- Ideal for variants or differences in BOM revisions
- cost drivers by adding up the number of items and lengths for cables, hoses, etc. for identical parts across all items and comparing them across several BOMs.
- items as well as the comparison across several parts lists (matrix output)
- differentiated in complex multi-level BOM structures (component A in BOM 2 not available in level 3)
- all designs used on an assembled PCB in a summary (PCBA)

With PALIX you can quickly create

- the order data for the electrical assembly (14x capacitor 0µ1, 20x R10k 1% etc.)
- a BOM Review: Show me all PFAS relevant articles using keywords such as “O-ring”, “cable” or “PTFE”

PALIX also helps

- better recognize the level structure of the parts lists
- sort and color-code deviations in BOM
- export the results
- express the deviations in figures

Convince yourself of the performance: A free demo version with all comparison functions is available in our download area.

1.1 How it works?

- Export the bill(s) of material from your CAD, PDM, PLM or ERP / SAP system.
  - Formats CSV, XLS or XLSX
- Select the bill of materials (BOM) files in PALIX
- Assign the columns of the BOM files to the PALIX defaults
  - If necessary, deactivate columns that are not present in the BOM file
- Start desired analysis
- Export results if required

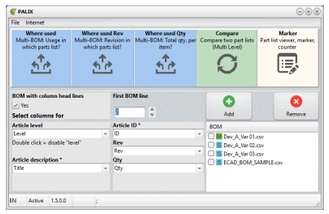
2. Operation

2.1 Screen „Home“

The ”Home” screen is the control center:

- Select parts lists files (BOM)
- Start BOM analysis
- Assign BOM file columns
- Open program setup
- View help file

2.1.1 BOM analysis

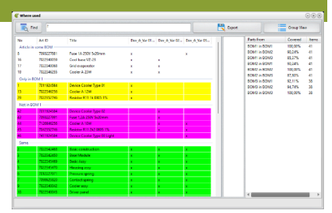


Via the 5 big buttons in the upper half of the program you start a BOM analysis.

Please note: The “Where used” and “Comparison” functions require at least 2 selected parts lists.

Tip: The “Where Use”, “Comparison” and “Marker” comparisons are each output via a separate window. All 3 windows can be opened in parallel and work with them.

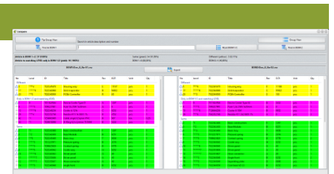
Function **"Where used"**



Groups identical articles to one position and shows in which BOM the article is used in a matrix. The function "Where Used" compares all selected BOM listed under BOM list. As result differences are special highlighted in colour and grouped if desired. At least 2 BOM are required. Types of function “Where used”

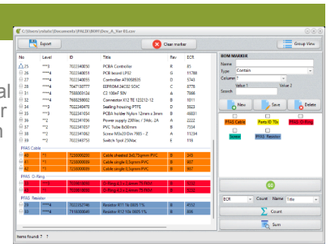
- Where used: An "X" (Art ID exists in BOMx) indicates the usage of the article
- Where used Rev: The item "Revision" indicates the usage. An article with different Rev in the BOMs are special coloured
- Where used Qty: The function summarises article qty. (screw, resistor,...) or length (cable, hose,...) and displays I for each item. The sum shows the BOM usage. Deviated sums are coloured special.
-

Function “**Compare**"



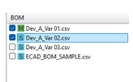
Comparison of two multi level BOM parts lists level wise incl. Title, Rev, Quantity.

Function **”Marker”**



Function quickly identifies and sorts certain components or article types (e.g. all screws or item types (e.g. all screws or items from an item no. range) from individual individual BOM. There is also a counting function (e.g. how many 0µ1 capacitors) or the calculation of totals for identical articles with the number per occurrence / length for cables, hoses.

2.1.2 Select BOM files



Add BOM files to the list via the "Add" button. Depending on the selected analysis method, one or more BOMs will be used. Allowed formats are CSV, XLS and XLSX, select one in the file dialogue screen.

To remove a BOM from the list, select the file by mouse click and choose the "Remove" button. By double-clicking in the field of BOM files you delete the complete file selection.

Notes

- PALIX saves the last 20 files for a quick re-evaluation.
- The BOM from the first file is called BOM1, the one from the second BOM2 and so on. You can use Drag&Drop to reorder the list.
- After loading the BOM file, assign the columns to the defaults, like the article ID to the corresponding column of the BOM file. See next chapter.

2.1.3 Assign columns

For the correct function, the correct assignment of the columns is important. The following applies:

- **Article level** : column with the level of the item/assembly. Level 0 is the TOP level (column optional).
  - Double-click on selection box deactivates use if BOM without article "Levels".
- **Article ID** : Column with unique article number (mandatory field).
- **Article description**: column with title of the article (mandatory field)
- **Rev.** : column with revision to article (optional).
  - Double click deactivates usage => function "Usage Rev" deactivated
- **Qty** : column with quantity / length specification for the article (optional)
  - Double click deactivates the usage => "Usage Qty" deactivated

Note: PALIX saves the assignment so that evaluation can be started immediately if the BOM format remains the same.

2.1.4 BOM Parameter

- **First BOM line:** Line number where the BOM file names the first article, usually the device/module (TOP level).
- **BOM with column head lines:** Enable the option, if the BOM file contains headings to the columns. The headings are located in the line "First BOM line" -1.

2.1.5 Home screen footer

The footer displays:

- the set / recognised language for user interface (DE, EN)
- The version of the software
- Further information, as the number of articles found

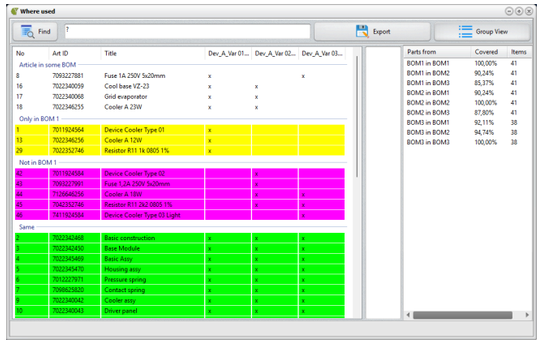
2.1.6 Program menu

Via the menu in the header the following functions are available:

- **File**
  - Setup: Display program setup
  - Close: Quit the program
- **Internet**
  - Help: View PDF from web (PDF viewer required)
  - Homepage: View the PALIX homepage in your default browser

3. Functions

3.1 Screen „Where used”



The matrix shows article usage across all BOMs:

- Compares any number of parts lists
- Y-axis names articles
- X-axis names the parts lists
- Matrix combines multiple used articles in one position
- Matrix shows the usage in the parts lists via an "X
- Statistics shows coverage
- Colour markers identify deviations
- "Grouping" summaries all deviations as a block
- Search result, e.g. all screws, summarised as an article group
- Export of the result (XLSX, CSV)
- Search by article ID or description
- Column sorting by article ID or line number

3.1.1 Procedure

- Select BOM files and assign the columns
- Select the "Where Use" button
- The matrix is displayed
- Press the "Group view" button to group the deviations together

3.1.2 Colour marking

The comparison marks the article line as follows:

- **Green: Articles are included in all parts lists (selected BOM files)**
- **White: Articles are not included in all parts lists**
- **Yellow: Articles only in BOM 1 (first BOM column) *)**
- **Pink: Articles are not included in the first part list BOM 1 *)**

*) Use Drag&Drop to change the order of the parts lists on the "Home" screen.

Using the "Group view " function, the articles are grouped according to the colour code and shown at the top of the BOM display.

3.1.3 Group view

The "Group view" function groups the colour-coded articles together as blocks. To group, press the button of the same name. Press it again to return to the list view.

3.1.4 Statistics

The statistics on the right side shows in % the match between the BOMs as well as the number of items per BOM.

3.1.5 Find

Search via article ID and article title:

- Enter the search term in the text field. Then press the "Find" button
- The "Search result" frame, between matrix and statistics, shows the line numbers of the articles for the search results
  - Click on a number to jump to the article

Tip:

- "Group view" also displays the search results as a block of articles at the end of the list. For example, enter screw and all articles with the designation will be grouped as a block.
- **To end the search, select the BOM analysis function again in the Home window.**

3.1.6 Sorting by the item ID

Click on the "Art ID" column in the header to sort the view alternately in ascending and descending order. Click on the "No" column to return to the usual sorting by line number.

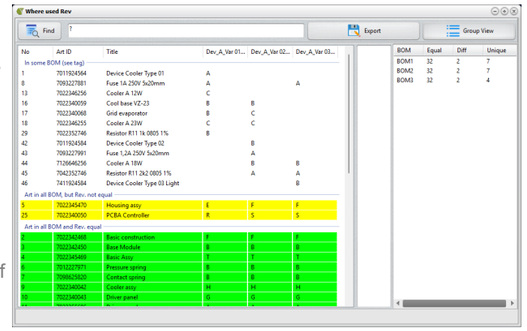
3.1.7 Copy article ID to clipboard

Double-click on the line number “No” to copy the article ID to the clipboard.

3.1.8 Export

Use the "Export" button to save the grouped result to an XLSX or CSV file. Each group starts with its heading.

3.2 Screen „Where used Rev“



The matrix shows article usage via revision to article across all BOM files:

- Compares any number of parts lists
- Y-axis names articles
- X-axis names the parts lists
- Matrix summaries multiple used articles in one position
- Matrix shows the usage in the BOM via the "revision" of the article
- Statistics shows coverage
- Colour markers identify discrepancies
- Grouping" summaries all deviations as a block
- Export of the result (XLSX, CSV)
- Search by article ID or description
- Column sorting by article ID or line number

3.2.1 Procedure

- Select BOM files and assign the columns
- Select the "Where Use Rev" button
- The matrix is displayed
- Press the "Group view" button to group the deviations together

3.2.2 Colour marking

The comparison marks the article line as follows:

- **Green: Article present in all parts lists with identical revision**
- **Yellow: Article present in all parts lists, but with different revision**
- **Pink: Article present in all parts lists, but revision is missed!**
- **White: Article only present in the BOM whose line shows a revision.**

Using the "Group View" function, the articles are grouped according to the colour code and shown at the top of the BOM display.

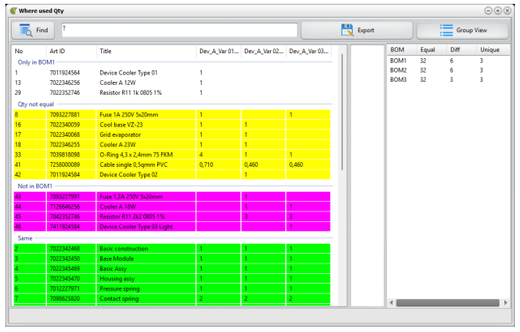
3.2.3 Statistics

The statistics on the right show how many parts are identical, have an unequal revision as well as only occur in a certain BOM.

3.2.4 Grouping, search, export…

Corresponds to the description as under "Where Used".

3.3 Screen “Where used Qty”



The matrix shows the usage per article in the BOM via the total number of pieces or length :

- Compares any number of parts lists
- Y-axis names articles
- X-axis names the parts lists (BOM files)
- Matrix summaries multiple used articles in one position
- Matrix shows the sum of the summarised articles as "number" or "length", like for screw or cables
- Statistics shows coverage
- Colour markers identify deviations
- “Grouping" summaries all deviations as a block
- Export of the result (XLSX, CSV)
- Search by article ID or description
- Column sorting by article ID or line number

3.3.1 Procedure

- Select BOM files and assign the columns
- Select the "Where Used Qty" button
- The matrix is displayed
- Press the "Group view" button to group the deviations together

3.3.2 Colour marking

The comparison marks the article line as follows:

- **Green: Article present in all parts lists with identical number of pieces / length.**
- **Yellow: article present in all parts lists, but with different quantity / length**
- **Pink: Article NOT found in the first parts list BOM1 *)**
- **White: Article only found in the first part list BOM1 *)**

*) Use Drag&Drop to change the order of the parts lists on the "Home" screen.

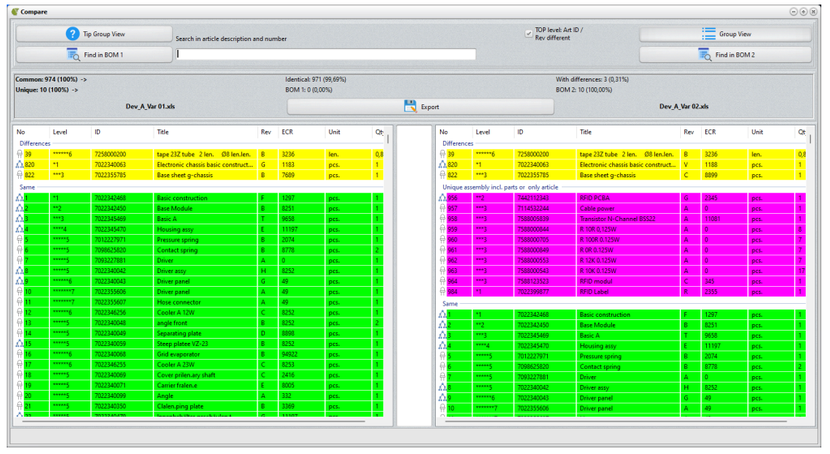
3.3.3 Statistics

The statistics on the right side show how many parts are identical (green mark), have an unequal revision (yellow mark) as well as only occur in a certain BOM (white mark)

3.3.4 Grouping, search, export…

Corresponds to the description as under "Where Used".

3.4 Screen Compare (Multi Level)



This method shows differences in two BOM files. If available, the level structure is observed as it is common in the design BOM (Level device-assembly-article). For example, it is considered a deviation if component A is used in BOM 1 at level 2 and is used in level 3 in BOM2:

- Comparison of two multi-level BOM with respect to the level structure
- Compares all columns of the BOM
- Icon shows whether the item is an assembly or a part
- Detail view shows deviations to the article in the BOM columns
- Column sorting by article ID, article title, article revision, article number, ECR no. or line number
- Statistics shows coverage
- Colour markers identify deviations
- Grouping" summaries all deviations as a block
- Export of the result (XLS, CSV)
- Search by article ID or description

3.4.1 Procedure

- Select BOM files and assign the columns
- Select the "Compare" button. Note: Only the first 2 BOM files are compared. Use BOM Drag&Drop to change the sequence
- The two parts lists are displayed: On the left the first parts list BOM 1 and on the right the second one BOM2
- The function "Grouping" is active and summaries the deviations in colour

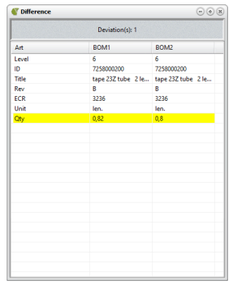
3.4.2 Colour marking

The comparison marks the article line as follows:

- **Green: Article in the parts lists identical (Level, title, Rev, Qty, ECR…)**
- **Yellow: Article in the parts lists different, such as title, rev, or number,...**
  - **Open the detailed display for the deviation by clicking on the line number (see below).**
- **Pink: Part / assembly is missing in the other part list**
- **White: Marking from “Article cross-link” search, see next page.**

Using the "Group view " function, the articles are grouped together according to the colour code and shown at the top of the BOM display.

3.4.3 Screen Difference



Deviations of the in BOM 1 and 2 yellow tagged article. different characteristics are shown in a separate window, when you click on the line number (column No) in BOM 1 or 2 view. The differences are here yellow tagged too.

3.4.4 Statistics

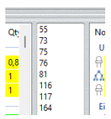
The statistics in the header area shows how many parts are identical and different as well as included only in the left or right BOM.

3.4.5 Article Cross-Link

By clicking on the line number (column NO) in the left or right BOM view, PALIX searches for the item in the same level (assembly) in the respective other BOM. The found line is marked in white.

3.4.6 Find

Use the search field to enter the text you want to find in the left or right BOM. To search in the left one, press "Search in BOM 1" and in the right one "Search in BOM 2".



The rectangle between the tables shows the line number(s) where the search term was found in the respective selected BOM. If several line numbers are shown, the search term was used several times. Clicking on a line number jumps to the position in the BOM.

3.4.7 Copy article ID to clipboard

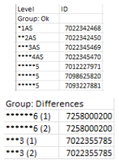
Double-click on the line number (column No) to copy the article ID to the clipboard.

3.4.8 Group view

The "Group view" function groups the colour-coded articles together as blocks. To group, press the button of the same name. Press it again to return to the list view. Grouping affects both parts lists.

3.4.9 Export

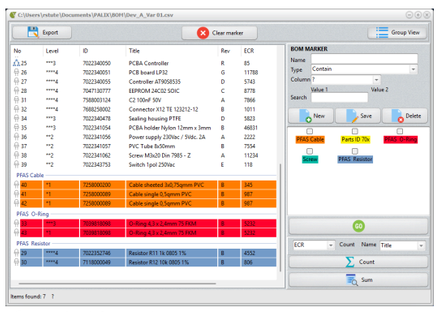
Use the "Export" button to save the grouped result to an XLSX or CSV file. Each group starts with its heading. Assemblies are also marked in the "Level" column with the abbreviation *AS* for Assembly.



Different items are marked in the export as follows (Yellow coded in matrix): Identical level with the bracket (1) and (2) indicate that the item properties are different.

3.5 Screen “Marker”

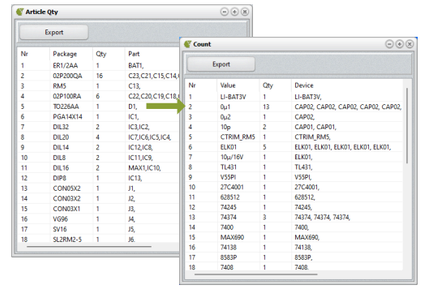
3.5.1 Marker



The "Marker" function is ideal for quickly finding specific items in the part list. You define the search criterion, such as "Text contains" or "Number range" and name the column in which the search is to be carried out. Afterwords you save these "markers" permanently so that they can be quickly reused for further parts lists. Tip: Several markers can be combined:

- Quickly find and mark specific items in the parts list
- The grouped view summaries "marked" items
- Multiple filters: text identical or contains, single number or numbers from..to (Range), number > or < or "Assembly".
- Column sorting by article ID, article title, article revision, article number, ECR no. or line number
- Export of the results

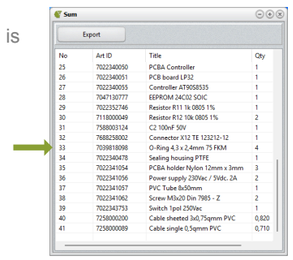
3.5.2 Counting



- Application sample MCAD/ECAD: Determine number of identical components
- Application sample: ECAD: Which component uses which package, etc.
- Column assignment freely select able (Count / Name)

Note: Each occurrence of an item counts as 1. A BOM column "Qty" is not considered, unlike „Sum“ (below) or "Where Used Qty".

3.5.3 Function „Sum“



- MCAD/ECAD application example: Adds the number / length of each item if an item is mentioned more than once in the BOM.
- Output of the total in the “Qty” column
- Example: Occurrence of O-ring at 2 BOM positions, quantity 1x and 3x => total 4
- Example: Cable 0.5qmm at 2 BOM positions, 0.46m + 0.25m => 0.71m

3.5.4 Procedure “Marker”

- Select a BOM file and assign the columns. If multiple are selected, the first one is used
- Select the "Marker" button from “HOME” screen
- Select the desired "Marker" = Enable the checkbox
  - Note: Several marker can be selected in parallel
- Press the "GO" button
- The matching article lines are coloured in the colour from the marker
- Press the "Group view" button for a block view of the marked articles.

Via the "Group view" function, the articles are grouped according to the "Marking". The groups are showed at the end of the BOM display. The "Delete marker" button in the header deletes the markers in the BOM view.

3.5.5 Marker

3.5.5.1 Define

A marker is created as follows. Input:

- - "Name": Enter the name of the marker (can be renamed later)
- "Type": Select filter criterion:
  - Exact: "Value1" must exactly match the one from the selected BOM cell (text or numeric)
  - Contain: "Value1" must be contained in the selected BOM cell (text or numeric)
  - >: Numeric value in the BOM must be greater than / equal to value1
  - <: Numeric value in the BOM must be less than / equal to value1
  - Range: Numeric value in the range from value1 to value2
  - Assembly: Mark all assemblies
- Value1: Input value1, see "Type".
- Value2: Input value2, only type "Range”

Then press the "Save" key. The "Marker" appears in the selection.

3.5.5.2 Modify

Click on the marker with the mouse. Now change the parameters as described above. Finally, press the "Save" button.

3.5.5.3 Delete

Select the marker with the mouse and press the "Delete" button.

3.5.5.4 Marking articles in the BOM

Each "Marker" has a small check box above its name. Activate one or more "Markers" via the check box and press the "GO" button. The relevant lines in the part list will be coloured in the colour of the marker. For a better view you can display all marked items in groups to the marker. To do this, press the "Group View" button. Pressing it again cancels the grouping.

3.5.5.5 Remove article marking in the BOM

Press the "Clear marker" button.

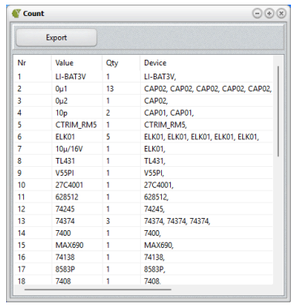
3.5.5.6 Export

Use the "Export" button to save the grouped result to an XLSX or CSV file. Each group starts with its heading. Assemblies are also marked in the "Level" column with the abbreviation *AS* for assembly. Finally, the statistics are inserted at the end of the export.

Level	ID
Group: Ok	
*1AS	7022342468
**2AS	7022342450
***3AS	7022345469
****4AS	7022345470
*****5	7012227971
*****5	7098625820
*****5	7093227881

3.5.6 "Counting" sequence

- In the "Home" window, click with the mouse on the BOM file that you want to display. Otherwise the first entry will be opened
- Select the "Marker" button in the HOME screen to view the marker screen
- Assign the columns for "Count" and "Name" above the "Count" button
- Press the "Count" key
- Another window shows the result
- Press the Export button to output the result.



Nr	Value	Qty	Device
1	LI-BAT3V	1	LI-BAT3V,
2	0µ1	13	CAP02, CAP02, CAP02, CAP02, CAP02,
3	0µ2	1	CAP02,
4	10p	2	CAP01, CAP01,
5	CTRIM_RM5	1	CTRIM_RM5,
6	ELK01	5	ELK01, ELK01, ELK01, ELK01, ELK01,
7	10µ/16V	1	ELK01,
8	TL431	1	TL431,
9	V55PI	1	V55PI,
10	27C4001	1	27C4001,
11	628512	1	628512,
12	74245	1	74245,
13	74374	3	74374, 74374, 74374,
14	7400	1	7400,
15	MAX690	1	MAX690,
16	74138	1	74138,
17	8583P	1	8583P,
18	7408	1	7408,

3.5.6.1 How to count?

You determine what is counted via the two columns mentioned below:

- “Count” column: each occurrence of an identical entry in the column is counted.
  - Example: Select the column with the component values, e.g. "0µ1" => counts all capacitors with this value
- “Name" column: the name is recorded for each occurrence, so that all names are finally shown
  - Example: Select column with component names, e.g. " => "C1, C3, C7...", like “Device”

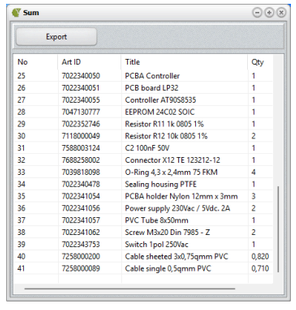
3.5.6.2 Export

Via the "Export" button you export the shown view

3.5.7 „Sum“ sequence

- Press the “Sum” button

Note: The column assignment from the HOME window is applied.

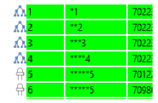


No	Art ID	Title	Qty
25	7022340050	PCBA Controller	1
26	7022340051	PCB board LP32	1
27	7022340055	Controller AT90S8535	1
28	7047130777	EEPROM 24C02 SOIC	1
29	7022352746	Resistor R11 1k 0805 1%	1
30	7118000049	Resistor R12 10k 0805 1%	2
31	7588003124	C2 100nF 50V	1
32	7688258002	Connector X12 TE 123212-12	1
33	7039818098	O-Ring 4,3 x 2,4mm 75 FKM	4
34	7022340478	Sealing housing PTFE	1
35	7022341054	PCBA holder Nylon 12mm x 3mm	3
36	7022341056	Power supply 230Vac / 5Vdc. 2A	2
37	7022341057	PVC Tube 8x50mm	1
38	7022341062	Screw M3x20 Din 7985 - Z	2
39	7022343753	Switch 1pol 250Vac	1
40	7258000200	Cable sheeted 3x0,75qmm PVC	0,820
41	7258000089	Cable single 0,5qmm PVC	0,710

4. Assembly or Component?

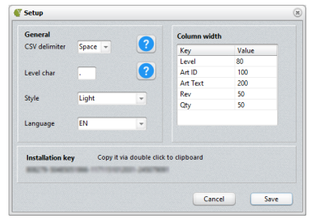
An icon in front of each line indicates whether the item is a component or an assembly :

- Component
- Assembly



The icon is shown in screen “Compare” and “Marker”. Note: Column “Level” required.

5. Setup



Note: To save the changes, the "Save" button must be pressed when the input is finished.

5.1 General

- **CSV delimiter:** Set the column delimiter char for the CSV file format. The current separator is shown in the HOME screen in the footer. Often used: ‘;’, ‘Tab’ or “Space”
- **Level char:** Enter here the letter preceding the numeric level from BOM file! For SAP BOM exports it is e.g. a dot '.'. e.g. "..2" for level 2.
- **Style:** program interface in light or dark color
- **Language:** Sets the language of the program interface
  - Auto : The language is recognised by the country settings of MS-Windows.
  - EN : Sets the language to English
  - DE : Sets the language to German

5.2 Column width

Sets the width for the named columns in pixels for the "Where Used", "Compare" and "Marker" views.

- Level : Article level
- Art ID : Article number
- Art Text : Article title / name
- Rev : Article revision
- Qty : Article quantity / length

5.3 Installation key

The key is needed to activate the software on your computer. Double-click the key to copy it to the clipboard for sharing (license request).

6. DEMO / License activation

After downloading and installing, you can test PALIX as a DEMO version free of charge. In the test version all functions are available. Only the number of lines per BOM is limited. By purchasing the license from our web store, the software can be activated permanently.

Shop: https://palixshop-en.ibstute.de

7. Specification

7.1 General

- MS-Windows 10/11 (32bit or 64bit)
- PC with internet connection to activate your license or open the PDF from web
- XLS / XLSX file handling: MS-Excel installed at your PC. Alternative use the CSV file format

7.2 BOM file

If you load multiple BOM files, their formatting must be identical. This means for each file:

- The same number, sequence and meaning of the columns
- Y Position of the "Header" with designation of the columns is at the identical position
- Y Position "First line of BOM" is the same for all files
- X Position of the first column is fixed at the first column or "A" at MS-Excel
- Usage Level (optional): The article level is numeric
  - Characters may be prefixed to visualise the level. The character must match the one from the program setup.
  - Example: Dots "..2" for a level 2, like a SAP export

Note: Decimal separators are MS-Windows language dependent. If necessary, change the language in PALIX Setup to change between ‘,’ and ‘.’

7.2.1 XLS / XLSX

- BOM starts from row 1 or later
- Between the start and the end of the BOM file there is no empty line
- XLS / XLSX: The parts list is located on the first spreadsheet (Sheet).
- Optional: The line x-1 contains column headers

7.2.2 CSV

- BOM starts from row 1 or later
- Blank lines are allowed between the start of the BOM and the end
- Optional: The line x-1 contains column headings. An empty line is allowed between the headings and the beginning of the BOM

Sample CSV file, Palix HOME screen: „BOM starts at „8“ and headings are enabled

```
Partlist                                                    <=Row 1

Exported from LP15A.sch at xx.xx.xxxx 10:44:06

EAGLE Version x.xx Copyright (c)

Part    Value       Device    Package  Library  Sheet
                                                            <= allowed
BAT1    LI-BAT3V    LI-BAT3V  ER1/2AA  UTIL     1
C1      0µ1         CAP02     02P200QA DISCRETE 1
                                                            <= allowed
C2      0µ2         CAP02     02P200QA DISCRETE 1
C3      0µ1         CAP02     02P200QA DISCRETE 1
C4      0µ1         CAP02     02P200QA DISCRETE 1
C5      0µ1         CAP02     02P200QA DISCRETE 1
C6      0µ1         CAP02     02P200QA DISCRETE 1
C7      0µ1         CAP02     02P200QA DISCRETE 1
C8      0µ1         CAP02     02P200QA DISCRETE 1
C9      10p         CAP01     02P200QA DISCRETE 1
C10     10p         CAP01     02P200QA DISCRETE 1
C11     0µ1         CAP02     02P200QA DISCRETE 1
```



```
C12     0µ1         CAP02     02P200QA DISCRETE 1
C13     CTRIM_RM5   CTRIM_RM5 RM5      UTIL     1
C14     0µ1         CAP02     02P200QA DISCRETE 1
```

7.2.3 SAP BOM Export

Use the export via T-Code CS12 Multi-Level BOM. If required, add missing columns to the SAP view and thus also to the export, such as the "Rev Level" column.

8. PALIX Update

Update to the latest version for free via the app "PALIX" Update" function. You can find it via "MS-Windows" button from the task bar, then „All Apps / PALIX" or via MS-Windows App Search via "PALIX".

9. Troubleshooting

Issue	Measure
Error: Level not numeric	Check the column assignment to the "Level" on the HOME screen. If necessary, deactivate via double click. Check value "first BOM line from" and change if necessary. First BOM line contains column header AND first BOM line is set to "1" with "BOM line with header" set to OFF
“Select Columns for” list empty on HOME screen	Check setting “First BOM line” and “BOM with column head…” on HOME screen

Web: https://palix-en.ibstute.de