

SL2M3: Postprozessor -> Isolationmilling

last Change 02/15/2020

Convert HPGL Export-Data from Sprint-Layout 6 to Sequence Control Data for CNC-Machines with Mach3.

For Files from Sprint-Layout 5 or earlier please use SL5toM3.

Content:		for my lame English (sorry) here Notes to the Text/Words:
The first Start	1	
Introduction	2	
The Program	2	
The Display from SL2M3	3	
File selection	3	
Typed Measure		Security Hight ist the Height for Rapid Feed over the Copper
Security Height Z & Mill-/Drill- Depth Z	4	
Reference Hole Depth / Outline Depth	4	
Feed / Revolutions	4	Revolutions means the Spindel Speed Revolutions
Scaling	4	
Automatiion	4	
Tool Table	4	
Settings	5	
Options/Parameters.....	5	
Laser Exposure.....	5	
Menu	5	
Status Line	6	Miller means the Milling Cutter Driller means the Drill
Outline Milling & Toolpath correction	6	
Drill Depth Correction	6	Miller and Driller explanation:
Layout Preview	7	The technology from SL2M3 is based to differentiate between the tool <i>Drill</i> and the <i>drilling</i> process.
How to export the layout	7	
Milling (HPGL) to Sprint-Layout 5	8	As in the word <i>drilling</i> the term <i>drill</i> is included, the Word <i>Driller</i> is used for the tool. The term <i>Driller</i> is not in the word <i>Drilling</i> included.
Milling (HPGL) from Sprint-Layout 6	9	
Drilling (Excellon)	10	
Installation	11	The same goes for <i>Milling</i> and <i>Miller</i> .
Error-Report	11	
If SL2M3 not work	11	
Settings in Sprint-Layout	11	
Update-Service	11	
Version Numbers	11	
Multi Language for Developers	11	
The law unfortunately inevitable	12	

The First Start

When you 1st start will be prompted for the desired language. Possible:
German (GR), English (US), French (FR) not complete, not tested.

Introduction

To the Isolationmilling and drilling of printed circuit boards I need only 5 Data. That's are:

1. File Name
2. Security Hight Z
3. Mill- / Drill- Depth Z
4. Feed
5. Revolutions.

The Program SL2M3 converts with this few Inputs and without much trouble quickly HPGL-/Excellon- Data from Sprint-Layout to G-Code for the Sequence Control to Mach3. All important Functions are combines in one Display.

- Few steps suffice to generate the G-code file in seconds.
- There are different sized holes considered and corresponding output of the milling tool change.
- Milling and drilling data can be output to a file together, the tool change course here included.
- Since (at least for me without the file name) is always the same parameters are used, these parameters are stored in an ini file as defaults.

It's that simple. No complicated set of tools more. No time-consuming check of lines and then determine the type of milling. No more tedious convert circles into holes. etc. etc.

Other features of SL2M3 that are made possible by the new milling-export of Sprint-Layout Version 6:

- It creates a complete tool table for Mach3 tool diameters by:
 - Reading the job list from Sprint-Layout.
 - Acquisition and conversion of reference Hole drilling, drilling, contour milling, contour milling.
 - Detection of the drill diameter and milling cutter diameter, takeover in the tool table.
 - Display the tool table, enter missing tool diameter, will be added to the tool table
 - Output copper levels Top K1 / Bottom K2
 - Center Punch for the holes may be included by one click in export
- The separate Exporting Excellon data is no longer required further:
 - HPGL-Drill-commands (PAX,y; PD; PU;) are converted into SL2M3 to real Drill cycles G81, G82, G83.
 - HPGL-CI-commands (CIn;) are converted into SL2M3 to milling cycles G02, G03.

What else can SL2M3 yet? Not least, there is little support as the ...

- Milling Path correction CI, which automatically compensates for the cutter diameter when drilling with cutter.
- Drilldepth correction, compensate for the different drill diameters varying depth Automatically.
- Cooling 1 (Mist) and/or Cooling 2 (Flood) may be together with the milling spindle on and off as required.
- The tool change height can be adjusted directly in SL2M3.
- For pass drills and outline cutter fixed diameter can be adopted directly in the tool table.
- Single Jobs (Create separate Files for each Job) are processed in one pass of SL2M3.
- You can see a Layout-Preview and a G-Code-Preview.
- SL2M3 translates job listings from/to German, English, French.

The Program

- It should be emphasized here expressly that I designed the program for use only with "Sprint-Layout" and "Mach3" for isolation (PCB) milling and tested have only with these two programs.

Who uses SL2M3 other than these programs will eventually experience a disappointment. It may be that the generated NC files with about WinPc-NC instead of Mach3 work well. But HPGL files (PLT) from other layout programs see sometimes extremely different than the Sprint Layout. Since then comes the real convert scrap into existence only.

Output for LinuxCNC (*. NGC) is (only from Sprint-Layout 6) possible, but since I myself use no Linux, untested.

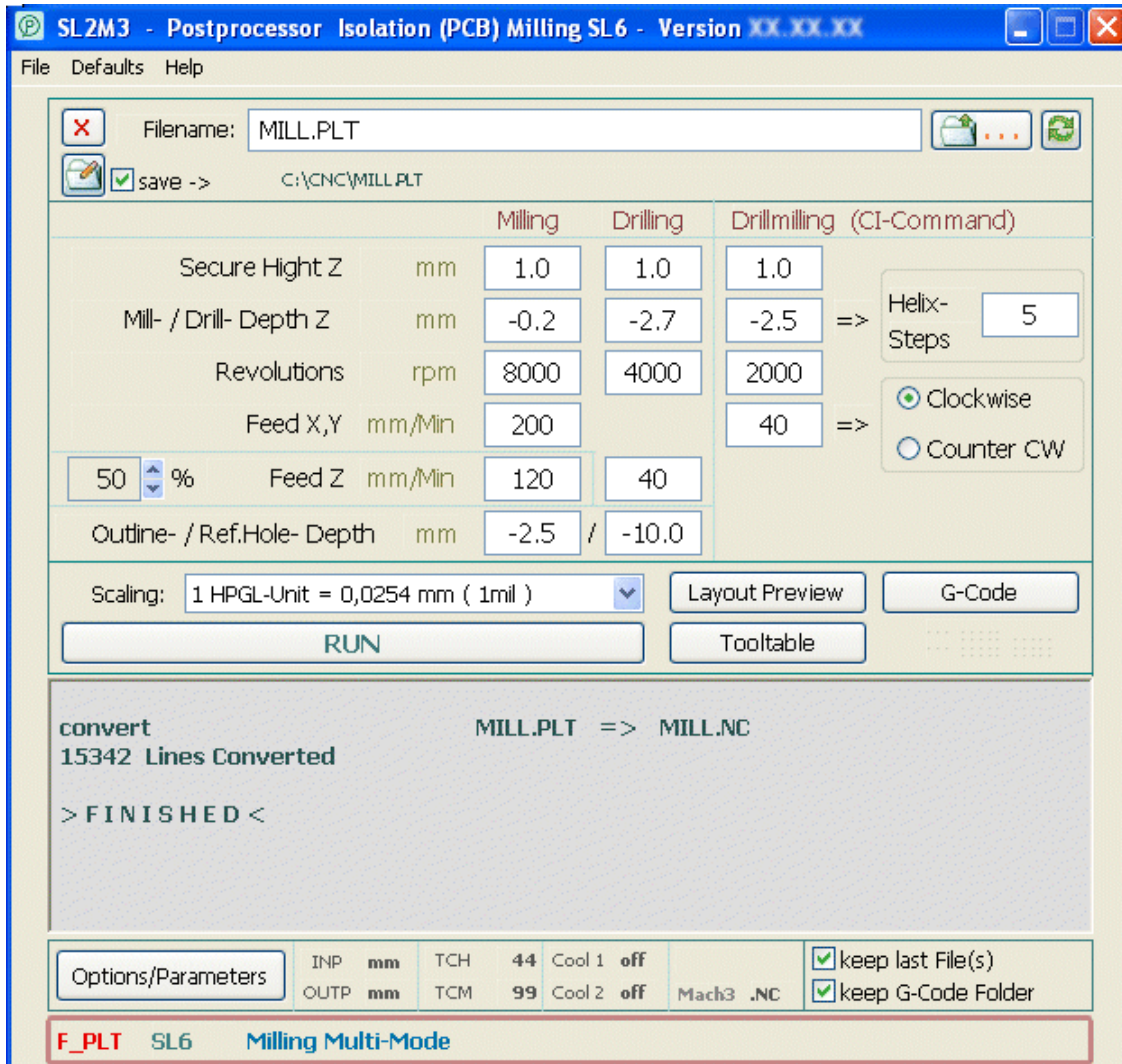
- SL2M3 holds no files in memory. All data is read from disk, and at the same time the converted data was written to disk.
- SL2M3 does not make any entries in the Windows registry. It runs so to speak "on the fly". It's "portable".
- The program is self-explanatory and can be used by anyone immediately and without problems. However, I will give below some information about the program and how to use the export function of Sprint-Layout, also because with Sprint Layout 6 many new features have been added.

Hint: For simplicity, in the following for Sprint-Layout **as of** version 6 the abbreviation **SL6** is used. For Sprint-Layout Version 5 **and earlier** accordingly the abbreviation **SL5**.

The „Display“ from SL2M3

The program combines all the functions on one surface (Display). With Push-Buttons call in a separate window only the Options/Parameters and the generated G-Code. In addition, only generated from SL6 files the tool table and the layout preview.

The input fields below *Drillmilling CI-Command* are displayed only if this feature is used.



File Selection

The source files will be selected with the extensions generated by Sprint-Layout (.PLT / .DRL). For that opens the button [...] right to the *File Name* field in the familiar Windows *File-Open*. After opening the file causes SL2M3 a check of the file, recognizes the format and displays it in the status bar. If all conditions are satisfied, the conversion of the file by clicking the [**START**] will be set in motion, if not SL2M3 will Display accordingly Error Messages.

Is under the file name [Save -->] (= save here -->) enabled, is the target file in the right shown folder (the same as the source file) saved.

The file name is the same as the name of the source file, the extender is in the box *NC-File* in Machine-Parameters selected.

Is [Save ->] (here) is not activated, the familiar Windows window *Save as* will Open to selection of folder and file name.

With the Folder-Button to the Left the folder to store G-Code and Tooltable can be permanently set.

Typed Measure:

Security Hight Z & Mill-/Drill Depth Z, Reference Hole Depth, Outline Depth

Here, the desired values are entered in mm/inch. The input will be checked and the Comma Key converted to the decimal point required by the program. Thus, one can quickly enter the correct parameters with the number block and its comma key when typing. Also, the Enter key on the numeric keypad can be used to switch into the next input field. Possible entries: -0.3 -3 .3 0.3 3 3.0

Feed / Revolutions

Here, these values are entered without decimal. I want to have not the feed and/or the speed in the generated NC file (but set in Mach3), then I leave the input fields for these values empty (then there is a ? in the input-field). The Enter key can also be used here.

With the Up-/Down-Arrows in front of % *Feed Z* can be set that the Miller -only when feed is input- by the immers in Copper moved with the here reduced Feed.

Scaling

With this selection, the size of the used HPGL unit can be determined. The correct size was 0.0254 mm (1 mil). Here most of the software probably 0.025mm (1/40 mm) is used, so this selection. The decision coincides with Sprint-Layout from version 6 is already in the milling export, here there is also this selection*.

The Sprint-Layout Version 5 before milling exports in *Options> General Settings* this must already be made: [√ HPGL scaling width 0.3937 instead of 0.4].

! In SL2M3 the same Scaling as in milling export of Sprint-Layout **must be** set by the user.

There is currently no way this process of Sprint-Layout Export out to Automate. But, if within the export to the Filename 0254 or 0250 attached, SL2M3 recognizes and automatically adjusts (example: MILL0254.PLT)

* 1 HPGL-Unit 0.0250 mm (1/40 mm) = Faktor 0,4 / 1 HPGL-Unit 0.0254 mm (1 mil) = Faktor 0,3937

Automation

1. Since (at least for me the Filename) is almost always the same parameters for isolation milling are used, these parameters are stored in an Ini-File as defaults and to the next start, reloaded. It's that simple.

2. SL5 only: SL2M3 can upload a milling file AND a drill file simultaneously. You can switch between the two by clicking the Button [PLT< - >DRL] right to the Start button. Both files should be located in the same folder as this, the NC file is output.

Among them is [√ PLT+DRL=NC]. Sprint-Layout is the export of drilling data from Excellon format with the tool change. This allows the file to be merged when converting the milling and drilling file with a check at this point. The tool changes are applied to the control flow. The router then stops the tool changes to*, moves to tool change height and waits until START button is clicked again.

* I assume here that the user is familiar with SL2M3 of the tool length measurement in Mach3. To explain these methods here would go beyond the scope of this manual.

SL6: In milling export files from Sprint-Layout Version 6 that included "HPGL Drill Commands" (drilling and Reference Hole drilling) are converted into SL2M3 to real drilling cycles (G81 and G83), including tool change*. The function [√ PLT+DRL=NC] is now obsolete and off.

* From SL6 also HPGL "tool change" (Select Pen) are output to the milling export and to be interpreted by SL2M3 means of the tool allow and recognition from the job list in the conversion Drill cycles.

Tool Table

[ToolTable] shows in SL6 files exported from the current tool table, as described in the CNC file is copied.

If [ToolTable] is underlined can be used for tools without diameter (eg Ref.Hole Driller, Outline-Miller) left here entered the diameter of the table and thus *_tooltable.txt in the tool table (see page 8) and transferred to the CNC file.

For Ref.Hole Driller and Outline-Miller a fixed diameter can be used. More on next page under *Options/Parameters*.

G-Code

This window displays the generated G code. The special feature: In single jobs all jobs for this display combined into one file. The individual jobs are clearly marked in the file. This display can be stored as indicated with the button on the bottom left.

Settings

The *keep last files(s)* and *keep G-Code Folder* can be set used for the bottom bar over the the status line. Also there is left a Button for the Otions/Parameters*.

Is the [✓ *keep last File(s)*] activated, the last converted File will be displayed again by the next Start.

Is the [✓ *keep G-Code Folder*] activated, a file containing the paths of the source and the target file is saved for each source (PLT) file.

Options / Parameters

With the [*Optionens/Parameters*] Button call the corresponding Dialog.

In the Options/Parameters dialog the tool change height and the maximum Z height can be set, or

! *Mach3-SafeZ* (G53 Z0) is selected for the tool change. **Attention:** *SafeZ* must be configured in Mach3!

on/off cooling 1 and cooling 2 (Mist/Flood) can be loaded into the G-Code.

The choice of *extender* for the Output-File (*TXT, NC, CNC, NCC, TAP*) is possible, but also G code for LinuxCNC (NGC) instead of Mach3.

For the diameter of Reference Hole Driller and Outline Milling Cutter standard values can be entered. If a value greater than Zero, it is automatically added to the Tool Table. The number of passes for contour milling in multiple Z infeeds can be selected.

If selected *center punch holes* in Sprint-Layout Export, the depth of the grain sizes can be adjusted up to twice the depth.

Reference Hole drilling is performed with the G83 Drillcycle, retreat (parameter Q) every 3 mm. Changes are here possible.

Last but not least is the selection of structured or cleared G-code, as also divide the G-Code into upper and lower PCB side (Split).

Structur

```
G00 Z 1.0
G83 X-2.489 Y 45.669 Z-10.0 R1.0 Q2.0 F33
    X 109.169 Y 45.669
    X 109.169 Y-2.489
```

Clear

```
G00 Z1.0
G83 X-2.489 Y45.669 Z-10.0 R1.0 Q2.0 F33
X109.169 Y45.669
X109.169 Y-2.489
```

Textured or Structured G-code is well suited for a visual inspection. Cleared G-code is, for example, imperative for further processing with *Autoleveller**. Therefore the G-code can be splitted from SL2m3 in to the two levels, a separate export from Sprint-Layout is not necessary.

* *Autoleveller* is software that height differences of the circuit board on the router table balances (<http://www.autoleveller.co.uk/>).

if *Laser exposure* ✓ *G-Code* is activated, the code *..._Laser.** is output without z-move. Instead, the Laser (with spindle function) switched according to Z-top / Z-bottom. It can be selected ✓ *graining* Drilling holes, the function *Center Punch* in the Sprint Layout export is NOT necessary for this.

P adjusts the wait for the laser to turn on after positioning in ms (milliseconds), which is can be useful when switching through a Relay.

With *drillings* ✓ *G-Code* an additional File *..._Drill.** with the drilling cycles is output, if *drilling* is selected in Sprint-Layout Export.

✓ *Only one Tool* deactivate the Machine-Stops for Tool-Change.

Menu (The individual menu items on the *File* menu and the *Help* menu are self-explanatory.)

- *Defaults > delete:* clears all input fields, so to speak, makes SL2M3 blank.
- *Defaults > load:* Restore the state of the input fields when starting SL2M3. Useful if you have changed input fields for only one project.

Status Line

SL2M3 examines the file to edit as you open and with the data obtained, the status bar is equipped. Thus before create the G-code all the necessary data are available and SL2M3 can make and display settings in the Status Line, also provide Errors and Hints in the Text Area.

Statuszeile:				
Typ	Status	Modus	Source-File	Hints
F-PLT	SL6 / SL6-Hx	Milling Multi-Mode	HPGL	
F-PLT	SL6-Hx	Drill-Milling	HPGL	-Hx = Helix-Fräsen (Drill-Milling CI-Command)
F-PLT	SL5+B / SL6+B	Milling Single-Modus	HPGL	SL5: With B-PLT & B-DRL is PLT+DRL=NC possible
B-DRL	SL5+F / SL6+F	Drilling	Excellon	
B-PLT	SL5+F	Drilling Mill-Modus	HPGL	SL5: With F-PLT is PLT+DRL=NC possible

The status indicators have the following meanings:

- F-PLT** HPGL-File - Milling
- B-DRL** Excellon-File - Drilling
- B-PLT** HPGL-Datei - Drilling (Name: DRIL*.PLT)

Hint: HPGL-Files from SL6 with Mill-Data AND with "DRIL" in the File-Name be (due to compatibility SL5) is interpreted as an error.

SL5... File is in the format of **Sprint-Layout to Version 5**.

SL6... File is in the format of **Sprint-Layout from Version 6**.

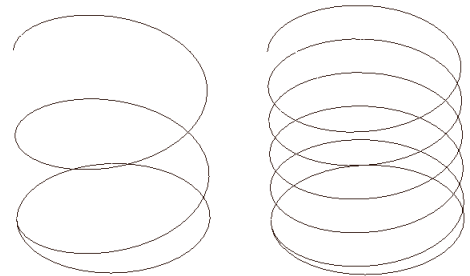
Example: An Excellon file from SL6 without decimal point has the same format as an Excellon file from SL5. It is therefore as SL5 ...displayed.

...+B with this HPGL-File can is it **SL5 [√ PLT+DRL=NC]** be used.

...+F with this Excellon-File can is it **SL5 [√ PLT+DRL=NC]** be used.

Example: If when switching with **[PLT<->DRL] SL5+B** AND **SL5+F** displays **[√ PLT+DRL=NC]** may be used (see Automation).

SL6-Hx Here to be seen the in the milling dialogue HPGL **CI** command.is used. SL2M3 transposes this into drill-milling, means the tool moves in a helical path with the 'feed X,Y' into the PCB. The feed and the steps (Number of helical paths to the drilling depth) can be entered. The feed Z arises from the fact. At the end of the Helical path to drill deep a complete circular path is milling without Z-feed.



Example in the picture: Helix with 2 steps (left) and Helix with 5 steps (right)

Outline Milling & Toolpath Correcion (see also Sprint-Layout Help - Export – Isolation Milling – Outline Milling)

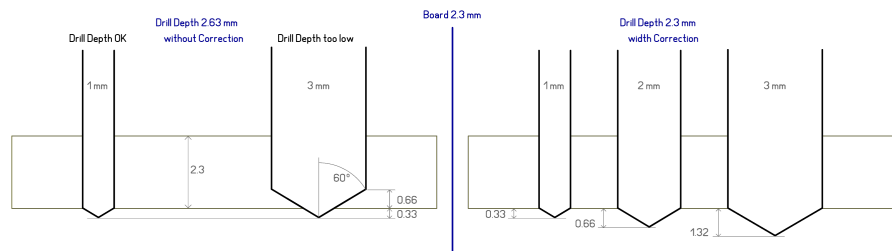
A tool path correction is here not present. This means that if I use a 2mm cutter for the outline, I have to create the outline of the Sprint-Layout 1mm (cutter radius) is greater.

The reason: Since I can create as well cutouts in the board with the outline but no way for SL2M3 of distinguishing between outside and inside is, is milled on the contour path. In a cutout section within the board do I have to create smaller the radius of the cutter this.

Drill Depth Correction

Only **SL6**: Since the SL2M3 Knows drill diameter, depth can be entered as the actual thickness of the board. The effective depth is calculated and stored in the G-Code.

The effective depth is calculated from **drill depth + drill diameter x 33.5%** (standard 60 degree bevel = 33.33...%).



Layout Preview **Note: Due to the many possible screen resolutions and versions of Windows ... and my little experience with graphics programming I give no guarantee for correct function of the preview.**

If (only SL6 milling export) completes the tool table with all missing tool diameters and a G-code file was created, reads the button [**Layout Preview**] the created G-code again and a layout preview like Sprint-Layout is displayed.

In this preview you can instantly see if any of the outline cutter collides with the pass-through pins in the holes or the width of the outline milling cutter was too large.

Instead of the interconnects shown in Sprint-Layout the **milling tracks** in current width and the **drill holes** with actual diameter are shown in this preview.

If [**√ M3**] marked the preview shows thin lines similar to the toolpath screen in Mach3.

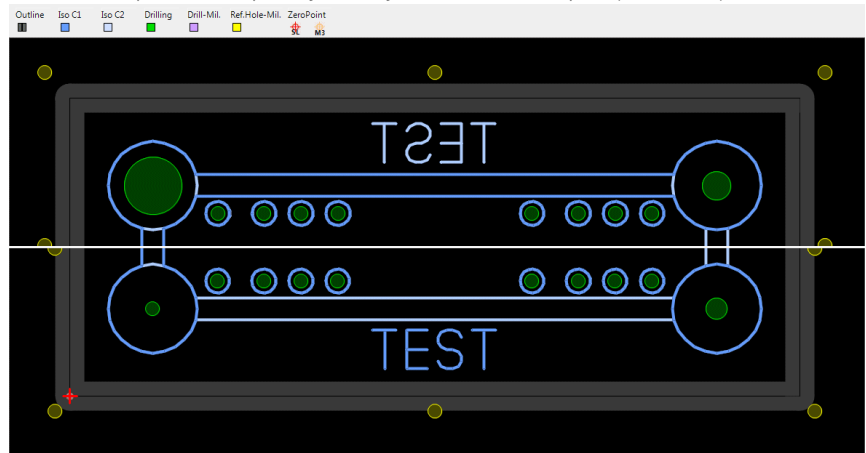
In split screen pass the distance between the holes was right up to the edge of the board, set too low bottom.

Hint: If the outline created already in sprint layout of the correct width, you can already see any overlap with interconnects.

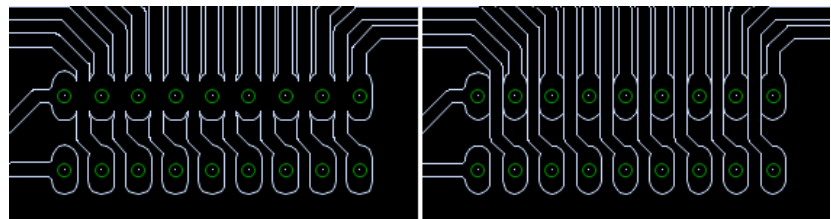
Within the dark gray cutting path is in black color the original line of the outline layer to see.

The area within the dark gray toolpath shows the actual dimensions of the board.

The colors of the different elements can be seen in a legend about the layout.
The red zero point is from sprint layout, the yellow is the tool zero point (Mach3 view).



Another possibility: Too large (for export) value of the insulation cutter width can be recognized. There are 0.4 mm in the right Picture. The layout does not fit and must be adjusted or a smaller milling cutter must be used. On the left picture there are 0.2 mm and exact.



Hint: One can also see that from the previously generated contour lines when exporting in the Sprint-Layout.
(see also [Sprint-Layout Help – Export – Isolation Milling – Milling width](#) and [– Create the Plotfile](#))

Operation (View Change)

Using the **plus** and **minus** at Num Pad the preview is zoomed and the **zero** Key at Num Pad (if Num-Lock active) switch is back to NormalZoom. With the arrow keys you move in the 4 directions.

The view of the board is shown from above the PCB in **C1 / C2 / C1+C2**, Zero point left. When (**C2**) one sees the mirrored view from below, as if you look from behind the screen in Sprint-Layout and the zero point is then right.

Only with **C1 + C2** both layers are visible. **C1**, **C2**, and (**C2**) are each only one layer and each of elements to be produced on it, including the holes. On the opposite side of the drilling the holes are be seen as a shadow line.

With a small Button between the rulers, the background color of the preview (light/dark) can be changed.

Note: Since the layout needs to be redrawn each time the View Change, it may take a few seconds until the change is visible.
This is not particularly user friendly, but met 100 percent of the purpose of the preview.

How to export the layout (Sprint-Layout)

Single-sided PCBs are on layer "**C2**" (2nd side / bottom) are created because they allow the component side is up and everything looks correct. When exporting, then "**C2**" and "**Mirror horizontal**" Select.

SL5: For Drilling is the easiest the same also "**Bottom X-mirrored HPGL compatible**".

For double-sided circuit boards must be "**C1**" (1 side / top) and to "**top (default)**" on the upper side of PCB are selected. Here as and when necessary with reference holes already to do.

SL6: Drilling from the milling export. All operations can be exported in one: Reference Holes, Isolation Milling C1 and C2, Drilling, Outline Milling.

Sprint-Layout up to Version 5, Export - Milling: SL2M3 converts Data from

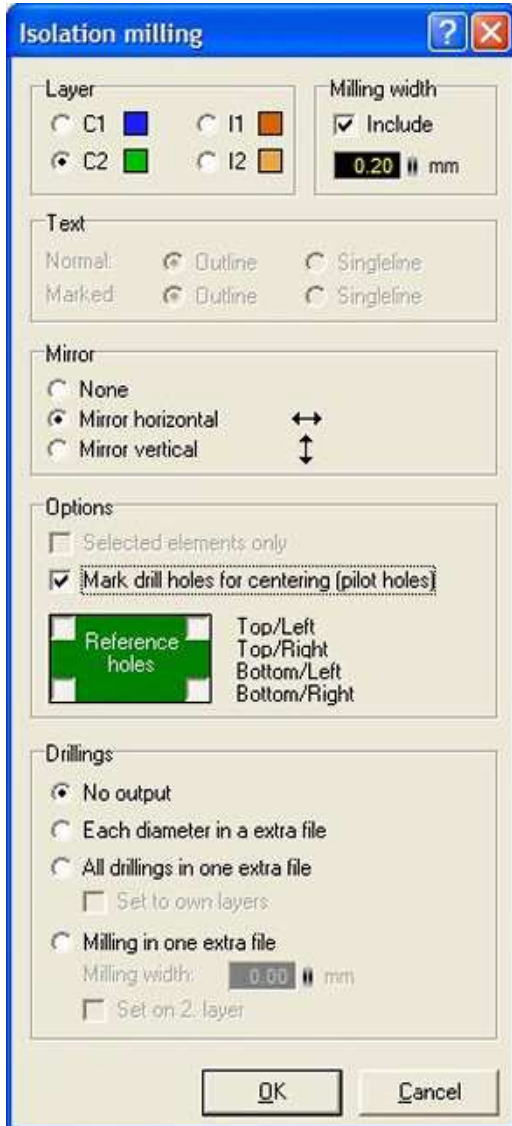
Export -> Milling Files -> Isolation Milling ->

Export -> Milling Files -> PCB Outline Milling -> (not shown here)

created. The resulting file has the extension

PLT

and includes HPGL-Data.



Layer and

Select *Milling width* as required.

Text

Select *Outline / Singleline* as required.

Mirror

Important: *Mirror horizontal*

Options

Mark drill holes for centering (pilot holes) protect the Drill.

Select *Reference Holes* as required.

With *Drillings*

- *No Output (recommended)* and the Drill Data Export as Excellon.

or (if only one drill diameter)

- *All Drillings in one extra file (not recommended)* creates the Drill-File `DRILLING.PLT`

The Option

- As *Milling in one extra File (not recommended)* so depending on the diameter of the lands about `DRIL_70.PLT & DRIL_90.PLT & ...`,

SL2M3 can indeed be processed individually, but not all attach to one milling file.

Caution: To **Version 5 Sprint-Layout** and earlier is a drilling file created here (`DRIL*.PLT`) differs not internally and not by the extender of a milling file.

Thus SL2M3 to work correctly with the drilling files created here, the file name must include the 4 letters "DRIL". The rest of the file name before/after "DRIL" is arbitrary.

Therefore, I recommend at "*Drillings*" the option "*No output*" to select, and then export the drill data as a Excellon file. Just like "real" drill data come about and the required tool changes WITH tool dimensions are included.

! Hint: From **Version 6 Sprint-Layout** the Dialog for milling files export is visually and functionally altered (see next Page). The important options are as well available, but it can now ALL operations (Reference Holes, Isolation Milling C1 and C2, each Diameter a new Drill, Outline Milling) exported in one operation, tool changes including.

The Export of Excellon drill data (see next page) is now unnecessary, but can still be used.

Sprint-Layout from Version 6, Export – Isolation Milling:

Isolation milling:

To *Milling Width* (and *Milling trails*) read the Sprint-Layout Docu

Important: C1 – Top No mirroring / C2 – Bottom Mirror horizontal
Center punch (holes) protects the Drill

Drillings:

no Output or Drill from Top (C1) or Drill from Bottom (C2) for (SL2M3 Multi-Mode*):

- Create all drillings with milling cutter (CI-command)
- As drillings (PD-command) – all drillings with the same drill (pen)
- As drillings (PD-command) – each diameter a new drill (pen)

Outline milling as required (SL2M3 Multi-Mode*)

Reference holes... as required (SL2M3 Multi-Mode*)

Text as required

Pen	Job	Side
# 1	Reference holes (3)	-
# 3	Isolation milling	Bottom
# 6	Drillings 0,6 mm (4)	Bottom
# 7	Drillings 0,8 mm (12)	Bottom
# 8	Drillings 1,2 mm (7)	Bottom
# 5	PCB-Outline	Bottom

Options:

Mill only selected elements may be used, does not affect SL2M3.

Drillings with minimal Feed NOT use (the Drill-Feed is entered in SL2M3)

Scale: the correct Format is *0,0254 mm (1 mil)*, decide yourself but everyone

[✓ save Joblist as Textfile] **must be used***

[✓ Create separate File for each job] can be used. All individual files are processed in one pass

* Caution: SL2M3 must handle this Joblist. SL2M3 automatically tries to find out whether it has been used in SL6 milling export ONLY Isolationmilling or ONLY Drilling or Isolationmilling AND Drilling/Outline/Referenceholes (Multi-Mode, for SL2M3 recommended).

Therefore it is necessary to activate the option [✓ save Joblist as Textfile]. There is no other way a tool Top (C1) or Bottom (C2) to assign.

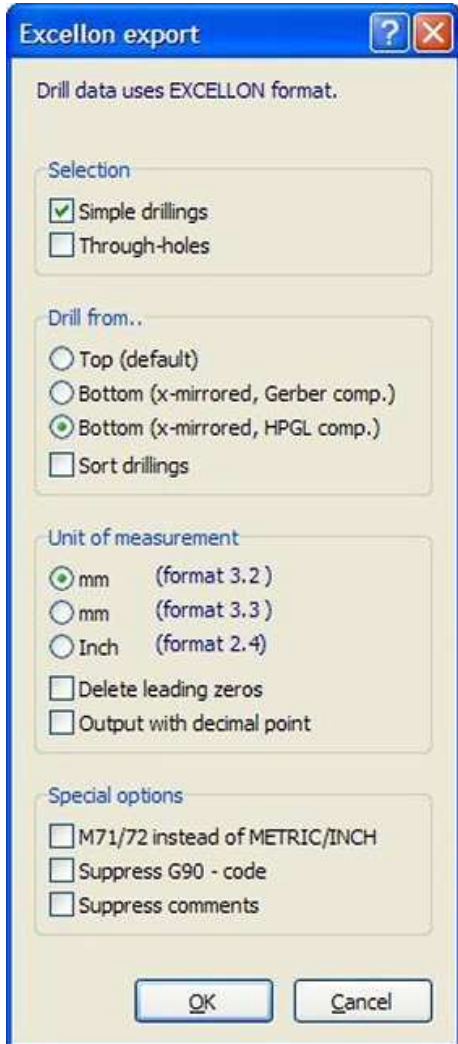
Thereby can be output in the G-Code the Tool Changes, Drill Data in real Drill cycles be converted and...
...a tool table in the NC file folders stored as a file with the name *_tooltable.txt and can (apart from the Tooltable in Mach3) be used as an aid to tool change on the machine.

Sprint-Layout SL5 & SL6 Export - Drilling: SL2M3 converts Data from
Export -> Drill data (Excellon) -> HPGL-compatible
 created. The resulting file has the extension

DRL

and includes Drill-Data.

This file also contains the tool change for different sized holes (see also Automation)



Selection

If *Trough-holes* used in this course are chosen.

Drill from...

Bottom (x-mirrored, HPGL comp.)

Sort drillings not* choose.

Unit of measurement

*"mm" (format 3.2)***

Delete leading zeros may NOT be selected

Output with Decimal point see below (in SL5 and earlier not available)

Special options

M71/M72 instead METRIC/INCH as required..

Suppress G90 - code should not be selected ...

Suppress comments may not be selected ...

otherwise as a result of SL2M3 only salad or nothing. ***

Caution: From Version 6 Sprint-Layout, there is also under *Unit of measurement* the option *Output with Decimal point*. This option is not absolutely necessary for processing with SL2M3.

But I want to have the tool table conform to the milling export from SL6 (Drills from/up Tool Number 6), then the *decimal point* must be set, because SL2M3 can only find in this decimal point the difference of SL5 to SL6.

The better option is still exporting the holes along with milling data from the SL6 milling export!

* *Sort Drillings* is in principle no problem, but it is here that errors occur sporadically in the assignment of the drill (diameter) to the correct holes. Because so far I could not catch the problem because of the sporadic occurrence, please **DO NOT** use.

** The (*format 3.3*) SL2M3 can also process, but this format is actually nonsense, as due by the HPGL system the 3 Decimal place is always 0 (zero) results. Therefore, *mm (format 3.2)* is the attached *Unit of measurement*.

*** If the *comments suppressed*, SL2M3 no longer works because it the Excellon file here is detected. If the *G90-code suppressed* the coordinates are conclusive as *absolute* defined.

Installation

No installation is necessary. Simply copy [SL2M3.ZIP](#) to the desired folder, unzip it and start [SL2M3.EXE](#).

Bug-Report

I try to consider ALL possible variations of the export of Sprint-Layout. This much audit work is necessary, and it can also "go through the cracks" something. In SL2M3 program therefore Errors also occur. Some rare bugs that I could not verify exactly will be informed by a message box with the text "**! ... Error #**" is displayed. A file named [SL2M3_error.TXT](#) is created in the folder of SL2M3.

For Troubleshooting it helps me when you sent this file via email to (webmaster@b-pahl.de) me. (Help> Email ... menu).

If SL2M3 not work

SL2M3 works fine under Windows XP 32-bit and Windows7. In Windows64, Windows Vista, Windows8 or higher I can't test SL2M3.

At fault crashes please first see that the last Sprint-Layout Update and the Last Version of SL2M3 is installed. If it still does not work please try the

-> compatibility mode for *Windows XP SP3*

and possibly

-> run as Administrator.

Settings in Sprint-Layout

In *Options* -> *General Settings* must be *Use Origin in Cam-Export ...* enabled.

Update-Service

When [**Auto Update-Check**] in the Info-Screen is enabled, the program displays a message when a new version is available. If desired, the default browser will launch and display the download website.

Version Numbers

I can with the terms version, release, and so on begin not so much. Version numbers, such as 12.123.00.002 mischief are in my eyes. With me is the version number of the year, the month and the day of publication, even if only a tiny bug has been fixed.

For Developers

At the first start of the new version will be prompted for the desired language. There are currently German (GR) and English (US) possible. The abbreviations are those of the keyboard language codes.

For English, there is a language file [LangUS.txt](#), for German the [LangGR.txt](#).

Using the language file and translate it, other languages can be implemented now. If interested, please contact me via email, I can send an explanation of the language file.

The law unfortunately inevitable

- *SL2M3* is Freeware, can be freely distributed and used freely. But Small donations are gratefully accepted, please contact (webmaster@b-pahl.de) (Help > eMail... Menu) or use the Donate Button from the [SL2M3](#) Website .
- *SL2M3* is used at your own risk.
 - For any malfunction or programming error I assume no responsibility.
 - I assume no liability for any damage to hardware or software.

I am a hobby programmer and can not afford guarantees.
- All files of *SL2M3* are summarized in a ZIP archive *SL2M3EN.ZIP* named. Please pass this archive without alteration.

This documentation *SL2M3-DOC_EN.PDF* is a part of the program *SL2M3*, is a component of the archive.

SL2M3 © Bernhard Pahl

<http://www.b-pahl.de/bastel/isofr/sl2m3en.html>

Thanks for supporting goes to A. Reinert, Nick De Torfino, Sam Reeves and all Users of the Program, told me Bugs or have made proposals.

"Sprint-Layout" is a Program from the Company **"Abacom Ingenieurgesellschaft"**.

<http://www.abacom-online.de>

"Mach3" is a Program from the Company **"Artsoft"**.

<http://www.machsupport.com>
