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Documentation

Printer driver for NeuraLabel Callisto

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Releases

<i>Version</i>	<i>Date</i>	<i>Changes</i>
0.80beta	23.12.2020	first test version
0.81beta	15.01.2021	PJL initialization commands changed added debug code for print settings
0.81beta2	19.01.2021	documentation updated: Editing the printer driver page size list, Signing the printer driver installation package
0.82beta	02.02.2021	PJL initialization: line break removed Background spitting implemented printer's "zero margin mode" no longer used, page size increased instead if "Printmode" = "Banner": page bitmap size round up to multiple of 64 user interface: background spitting switch added list of page sizes updated
0.83beta	25.02.2021	custom page size editor added in driver settings bugfix in driver settings: incorrect rounding of negative dimension values PJL command with number of pages sent at the end of the print job PCL initialization commands cleaned up for testing only: registry key "EMFDespoolingSetting" set during driver installation to allow "client rendering" on mobile computers
0.84beta	03.05.2021	if "Printmode" = "Banner": printer page bitmap size rounded down to multiple of 64, original document pages repaginated to smaller printer pages background spitting changed: ink drops sent only every 8 inches, drop pattern changed for less visibility adjusted driver ink levels to lower ink levels in printer firmware, created new color profiles for better color saturation driver binaries compiled in "release mode" for better throughput user interface: range of "Print Speed" slider limited to 18, spin buttons "Mark / Gap Adjust": ticks changed
0.85beta	05.05.2021	experimental: always send media code 0 (to test max. speed) new color profile for plain paper created ink amounts reduced to 90% documentation updated: Creating and replacing color profiles background spitting changed: dont send individual ink drops, instead set minimum color intensity to the lightest gray possible (every second pixel in paper movement direction)

<i>Version</i>	<i>Date</i>	<i>Changes</i>
0.86beta	12.05.2021	color profile "glossy" also used for plain paper ink amounts increased to 95% ink intensity adjustment: finer steps from 75% to 150%, fixed problem with intensity larger than 100% page sizes: disable option "feed paper long edge" if long edge is larger than maximum print width (11.7"), limit left offset to maximum print width, removed sizes "B5", "Executive", "Statement" and envelope sizes media types: spelling error corrected background spitting: fixed problem with draft mode
0.87beta	01.06.2021	set printer id in .inf file to "NeuralogNeuraLabel_Callisto" changed rendering resolution to 300dpi for normal print quality increased maximum print width to 11.99" adjusted driver ink levels to higher printer ink levels in callisto firmware 2121A
0.88beta	15.06.2021	removed internal print margin for full print width of 11.99" ink amounts reduced to 92% fixed landscape format being printed upside down
0.90beta	02.08.2021	show label sizes < 1" x 1" in the Paper Size List change the increment (up/down button pressed) for Left Offset and Top Offset from 0.05" to 0.01" change the options for Overspray to 0.5mm, 0.75mm, 1mm, 1.5mm 2mm, 3mm and add additional options of -1mm, -2mm, -3mm -4mm to shrink the page size and print size driver will cut off overspray if print width + overspray is larger than 11.99"
1.00	12.08.2021	page dimensions sent in PJI header not always correct; fixed additional options for Overspray -5mm and -6mm added minor adjustments in user interface
1.01beta	19.04.2022	new media profiles for Gloss Paper
1.02beta	13.06.2022	new media profiles, selector "Black Color Management", page size editor accuracy increased to 3 digits, no repagination if page size is multiple of 64 pixels
1.02	07.11.2022	new media profile for "Plain Paper" (paper labelled "G11 Matte Paper") setting "Black Color Management"="K Only" now prints with pure K for neutral RGB input colors, a tolerance range has been added to print almost neutral RGB input colors with pure K

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System Requirements

Operating System

Microsoft Windows 8-10, x86 32bit and 64bit

Printer

NeuraLabel Callisto printer
Operation via network connection

Installation

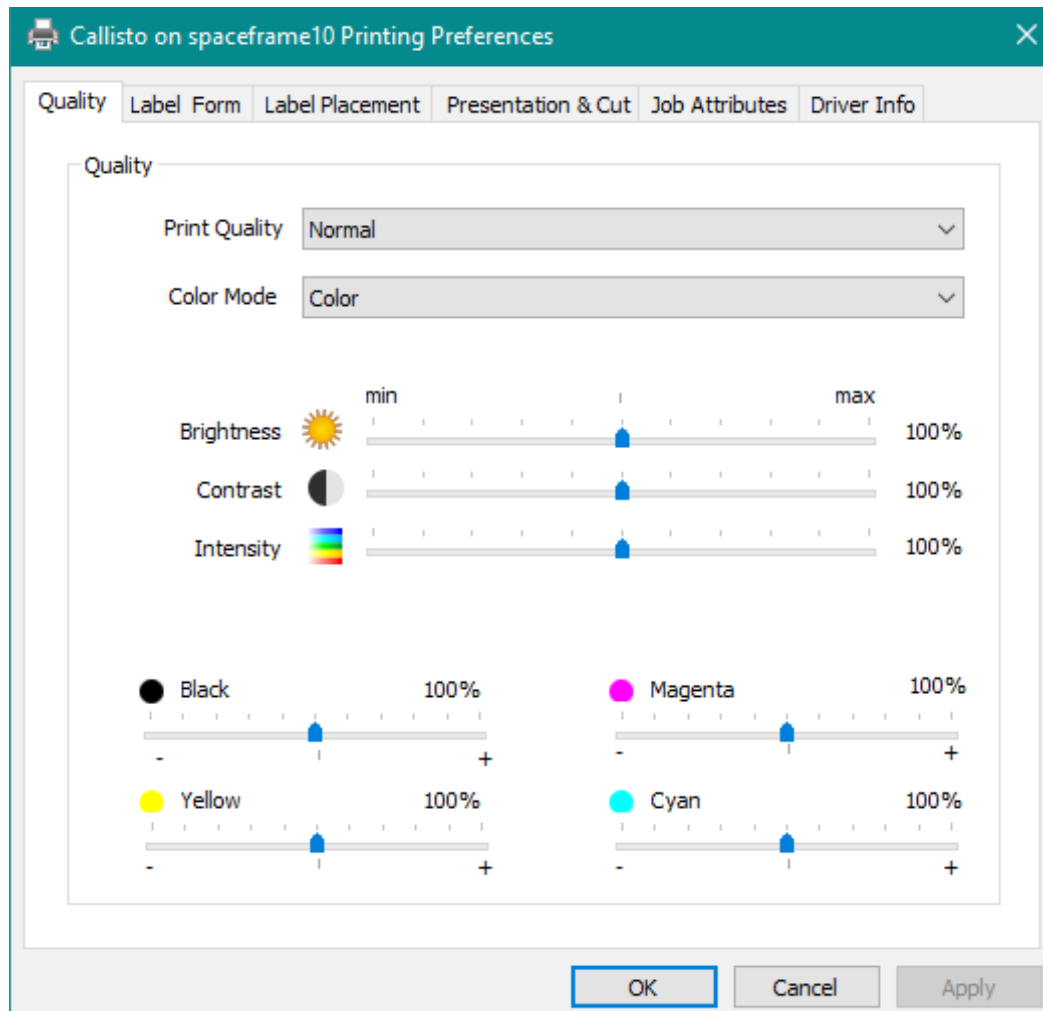
The printer driver can be installed from the Windows System Settings -> Printers & scanners -> Add printers & scanners.

Choose the option "The printer that I want isn't listed" to select the printer port and driver manually. In the dialog "Install the printer driver" press the button "Have Disk..." and select the directory where the *.inf file is located.

Printer driver settings

Driver settings for the NeuraLabel Callisto driver are arranged in six tabs.

Tab "Quality"



Print Quality

Select a print quality.

Options:

- Draft
- Normal
- Best
- Max DPI

Default = "Normal"

Color Mode

Select the color mode.

Options:

- Grayscale (only black cartridge)
- Grayscale
- Color

Default = "Color"

Brightness

Adjust the brightness of medium gray and color levels.

This is implemented by adjusting the RGB gamma value, so colors with RGB values of 0 or 255 (e.g. white, black, pure red, ...) are not affected.

Contrast

Adjust the image contrast.

With a decreased contrast white will stay unchanged, i.e. only dark colors will become lighter.

With an increased contrast, light colors will become lighter and dark colors will become darker.

Intensity

Decrease or increase the ink saturation.

Black

Adjust black intensity.

Magenta

Adjust magenta intensity.

Yellow

Adjust yellow intensity.

Cyan

Adjust cyan intensity.

The default value for all adjustment settings is "100%"

Tab "Label Form"

Druckeinstellungen

Quality **Label Form** Label Placement Presentation & Cut Job Attributes Driver Info

Size

Manage New Sizes

Paper Size: Letter

☐ Feed paper rotated (long edge)

☐ Borderless Printing

Full Bleed Overspray: Off

Print

Media Type: Plain Paper

Black Color Management: Standard

Orientation: ☒ Portrait ☐ Landscape

☐ Rotate Page 180 Degrees

OK Abbrechen

Manage New Sizes

Manage custom page sizes

Paper Size

The following paper sizes are available: Letter, Legal, Executive, A4, A5, A6, B5 ISO, B5 JIS, 3x5", 3.5x5", 4x6", 5x7", 5x8", Statement, 8x10", 8.5x13", 100x148mm, 148x200mm, Envelope sizes: Chou 3, Chou 4, #10, DL, C5, C6, A2, Monarch

Feed paper rotated (long edge)

If the checkmark is set, the paper must be inserted with the long edge first.
Default = "Off"

Borderless Printing

Enable borderless printing
Default = "Off"

Full Bleed Overspray

Set the borderless overspray enlargement to 1-5mm (on each side) or "Off" for no enlargement.
Default = "Off"

Media Type

Select the type of labels or paper.

Options:

- Plain Paper
- Matte Synthetic
- Gloss Paper
- gloss Synthetic

Default = "Plain Paper"

Black Color Management

Specify how grey and black is generated

- Standard - Black is enhanced by adding a bit of CMY
- Composite - only CMY inks used
- K Only - maximize usage of Black ink

Orientation

Set Portrait or Landscape orientation of the document, this is only important for the application software.

Rotate Page 180 Degrees

If the checkmark is set, the print output will be rotated by 180 Degrees.

Default = "Off"

Tab "Label Placement"

Callisto on spaceframe10 Printing Preferences

Quality Label Form **Label Placement** Presentation & Cut Job Attributes Driver Info

Units ☒ inch ☐ cm

Print Mode

☒ Labels
☐ Web Press
☐ Banner

Gap between Labels: 0.250 inch

Mark Mode

☐ Black Mark
☒ Gap
☐ None

Mark / Gap Adjust: 0.000 inch

Start of Print

☒ On Leading Edge
☐ On First Mark

Top Offset: 0.000 inch

Left Offset: 0.000 inch

OK Cancel Apply

Units

Set units to "Inches" or "Centimeters" for all numerical inputs.
Default = "Inches"

Print Mode

Select the print mode.

Options:

- Labels
- Web Press
- Banner

Default = "Labels"

Gap between Labels

Set the gap size.

Range = 0.000 ... 3.000 inches, only active in Web Press mode

Default = "0.250"

Mark Mode

Set the mark mode.

Options:

- None
- Gap
- Black Mark

Default = "Gap"

Mark / Gap Adjust

Adjust the mark / gap position.

Range = -3.000 ... 3.000 inches, only active in Black Mark or Gap mode

Default = "0.000"

Start of Print

Set the print start.

Options:

- On Leading Edge
- On First Mark

Default = "On Leading Edge"

Top Offset

Adjust the top print offset.

Range = - 3.000 .. +3.000

Default = "0.000"

Left Offset

Adjust the left offset.

Range = - 3.000 .. +3.000

Default = "0.000"

Tab "Presentation & Cut"

Callisto on spaceframe10 Printing Preferences

Quality Label Form Label Placement **Presentation & Cut** Job Attributes Driver Info

Units ☒ inch ☐ cm

Auto Present

☒ Off
☐ Each Job
☐ Each Label
☐ Each Copy

Cut after Present

☒ Off ☐ Manual ☐ Auto

Present Distance 0.000 inch

Auto Present Time 0 sec

Job Holding

☒ Print job
☐ Hold jobs on printer
☐ Print and hold jobs

OK Cancel Apply

Auto Present

Set the auto present mode.

Options:

- Off
- Each Job
- Each Label
- Each Copy

Default = "Off"

Cut after Present

Set the cut mode.

Options:

- Off
- Manual
- Auto

Default = "Off"

Present Distance

Adjust the auto present distance.

Range = 0.000 ... 12.000 inches

Default = 0.000

Auto Present Pause

Set the auto present pause.

Values = 0 ... 10 sec.

Default = "0 sec"

Job Holding

Set the job holding mode.

Options:

- Print jobs
- Hold jobs on printer
- Print and hold jobs

Default = "Print jobs"

Tab "Job Attributes"

Callisto on spaceframe10 Printing Preferences

Quality Label Form Label Placement Presentation & Cut Job Attributes Driver Info

Print Speed

Speed 2 18 18 inch / sec

Head Settings

Print Head Height Auto

☐ Activate Background Spitting

Blank pages

Leading Blank Pages: 0 pages

Trailing Blank Pages: 0 pages

Pause after Leading Blanks: 0 sec

OK Cancel Apply

Speed

Set the maximum print speed.

Values = 2...20 inch / sec.

Default = "20 inch / sec."

Print Head Height

Set the print head gap size.

Options:

- Auto
- Low
- Medium
- High

Default = "Auto"

Activate Background Spitting

Add a light background pattern to the printed page to make sure that each ink nozzle is activated every few seconds to prevent clogging.

Leading Blank Pages

Set the number of blank pages to be inserted before a print job.

Values = 0-20 pages

Default = "0 pages"

Trailing Blank Pages

Set the number of blank pages to be inserted after a print job.

Values = 0-20 pages

Default = "0 pages"

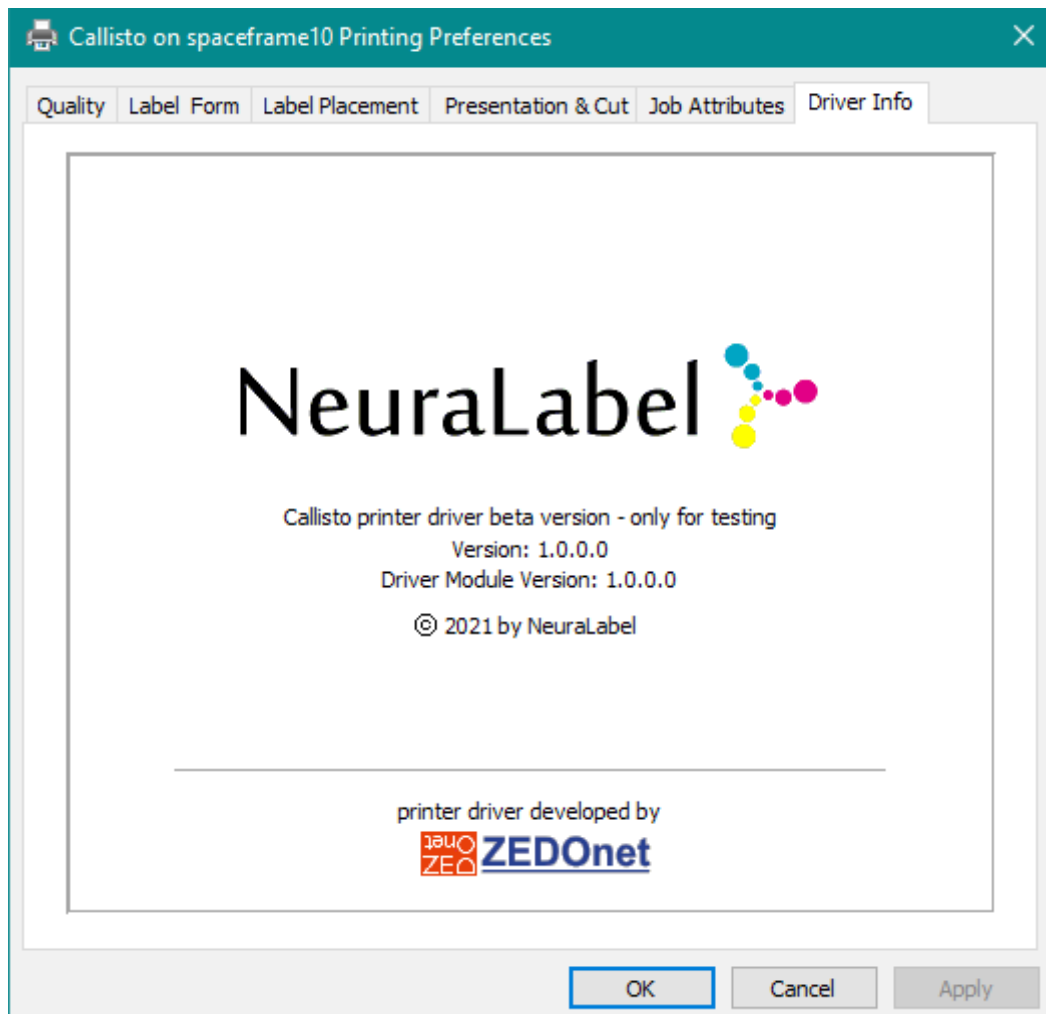
Pause after Leading Blanks

Set the pause time after printing the leading blank pages.

Values = 0-30 sec.

Default = "0 sec."

Tab "Driver Info"



Shows copyright information and the version numbers of the printer driver.

Version: Version info of the driver user interface DLL "nlcalui.dll"

Driver Module Version: Version info of the driver DLL "nlcal-filter.dll"

Editing the printer driver page size list

Additional page sizes can be added in the printer driver feature configuration file `nlcaldrv.gpd` by adding entries in the section `*Feature: PaperSize`

We suggest to insert additional size definitions before the line

```
*% custom page size definition
```

Here is a sample page size definition for the page size 12" x 8.5" (printable size 11.7" x 8"):

<-feed	8,5"			
	12"				

Example Entry	Comments
*Option: SAMPLE_8.5X12 { *Name: "Fanfold 8.5x12%" *PageDimensions: PAIR(10200, 14400) *PrintableArea: PAIR(9600, 14040) *PrintableOrigin: PAIR(300, 180) *CursorOrigin: PAIR(0, 0) }	internal name (must be unique) display name (shown in user interface) physical dimensions in 1200dpi printable area "-" left and top offset "-" (not important)

Notes:

- The page size must be entered in portrait mode (height larger than width), otherwise some applications like MS Word get confused. This means that the option "rotate 90 degrees" must be checked in the driver settings if the paper is fed "long edge first" (as is the case in the example above)
- the driver version 0.81 expects the unprintable margins to be zero, i.e. the PrintableArea should be equal to the PageDimensions and the PrintableOrigin should be (0,0).
- the character '"' must be escaped as '\"'
- the driver installation package must be signed after making changes to the .gpd file (see next chapter "Signing the printer driver installation package")

Signing the printer driver installation package

For test purposes, the printer driver installation package has been digitally signed by ZEDOnet GmbH. Before releasing the printer driver to the public, the driver should be signed using a code signing certificate of Neuralabel. The driver must be signed again after making changes to printer driver configuration files (e.g. after changing the list of page sizes in the *.gpd file).

The signature can be created or replaced with the following two command line commands:

1. Creating a .cat file from the .inf file

```
<Microsoft WDK directory>\bin\selfsign\inf2cat  
    /driver:<driver installation directory>  
    /os:Server2003_X86,Vista_X86,Server2008_X86,Server2003_X64,Vista  
_X64,Server2008_X64
```

2. Storing the signature in the .cat file

```
<Microsoft SDK directory>\bin\signtool  
    sign  
    /f <path to certificate>  
    /t <HTTP address of the timestamp server of the certificate  
issuer>  
    /p <password for the certificate>  
    <driver installation directory>\nlcaldrv.xps.cat
```

Creating and replacing color profiles

The following table shows which color profiles are used for which Media Type setting.

Media Type Setting	Black Color Management	Color Profile
Plain Paper	Standard	nlcalplaincmyk.icc
Plain Paper	K Only	nlcalplaink.icc
Matte Synthetic	Standard	nlcalmatvincmyk.icc
Matte Synthetic	Composite	nlcalmatvincmy.icc
Matte Synthetic	K Only	nlcalmatvink.icc
Gloss Paper	Standard	nlcalglossemyk.icc
Gloss Paper	Composite	nlcalglossemy.icc
Gloss Paper	K Only	nlcalglossk.icc
Gloss Synthetic	Standard	nlcalgloboppmyk.icc
Gloss Synthetic	Composite	nlcalgloboppmy.icc
Gloss Synthetic	K Only	nlcalgloboppk.icc

To create a new color profile, the corresponding *.icc profile must be removed from the Windows printer driver directory, for 64bit Windows

C:\Windows\System32\spool\drivers\W32X86\3

and for 32bit Windows

C:\Windows\System32\spool\drivers\x64\3

After removing the *.icc profile, the driver will work in uncalibrated mode. Using a profiling software like "X-Rite i1Profiler", a new color profile can be created by printing and measuring a profile color chart and creating the ICC profile.

Only RGB profiles can be created. When printing the color chart, the following settings are important:

- Media Type = <the media profile you want to replace>
- Print Quality Mode = Best
- Print Speed = <reduce if necessary>

Before measuring the color chart, it is important to check if all fields have been printed properly (no clogged nozzles).

The new ICC color profile must have the same file name as the color profile that is to be replaced.

For testing, the ICC file can be copied into the Windows printer driver directory.

For distribution, replace the existing ICC profile in the driver installation directory.

Important: The driver installation package must be signed after replacing *.icc files.