SAP Printing

Customer documentation

Volume 3 : [DC47]

Device-specific information

for
- Ricoh   Aficio SP C811DN

Version: 1.26

Abstract:
This document contains device-specific information about the device hardware and accessories, the configurable features, related limitations, and the commands necessary to configure the settings in the device type.

Contents

Important notice
Parts of this manual are subject to change without prior notice.

1. General Device Information

This chapter contains general information about the devices.

SAP device types to use:
- PCL-based   **ZA0x**, ver 005+

Device / Model name:

- **[DC47]**	Aficio SP C811DN	

Compatibilities/Emulation: HP LaserJet 4 PCL 5c

Firmware (PCL):

> **Note:** It is recommended to always use the latest firmware.

Speed: [DC47]: 40 ppm (color) / 40 ppm (B&W) (A4/LTR simplex LEF)

Printer queue name `lp`

2. Device Hardware Accessories

This chapter contains information about the standard or optionally available hardware accessories of the devices.
The Description column indicates the name of the unit, its properties, and, where applicable, the supported paper sizes and the sheet capacity.
It also contains a list of features which can be configured on the device's front panel, as well as their initial factory defaults.

For more device-specific information, see also the device's corresponding Operating Instructions manual.

Device Hardware Accessories

Unit		Description
Memory (RAM)	standard	256 MB
	optional	- [Memory Unit Type C] + 128 MB - [Memory Unit Type C] + 256 MB Max. memory = 512 MB For detailed information about how much memory is needed for which resolution, please see (*).
Hard Disk	standard	40 GB
Standard Paper Trays		Standard input bins
- Tray 1	standard	- Capacity = 550 sheets - Paper = A4/LTR (LEF)
- Tray 2	standard	- Capacity = 550 sheets - Paper = see (*)
Paper Bank		(paper input) additional input trays
- Tray 3 ("Single Tray")	optional	- [**Tray unit TK3000**] - mounted below Tray 2 - Capacity = 550 sheets - Paper = see (*)

- ("Lower Paper Trays")
 - Tray 3&4 or
 - Tray 4&5
	optional	- [**Paper Feed Unit PB3000**]
		
		- Capacity = 2 x 550 sheets
		- Paper = see (*)
		- mounted either
		
		 - below Tray 2 [if no TK3000 is installed]
		  - This thus becomes **Trays 3 & 4**.
		or
		 - below Tray 3 [if TK3000 is installed]
		  - This thus becomes **Trays 4 & 5**.

		- With this configuration a finisher is not attachable.
OR		
- Tray 3 ("LCT")	optional	• [**LCIT PB3010**] - Tandem LCT - mounted below Tray 2 - Capacity = 2 x 1000 sheets - Paper = see (*)
Bypass ("Multi-bypass")	standard	(paper input) Bypass Tray unit - mounted at right-hand side - Capacity = 100 sheets - Paper = see (*)
Standard tray	standard	(paper output) standard output tray - This is the output bin **"Standard Tray"** - Capacity = 500 sheets - Paper = see (*)
		•
Bridge unit	optional	(paper path) needed to attach Finisher • [Bridge Unit Type BU3000] **Note:** With this option the capacity of "Standard tray" changes to 250 sheets.
Finisher		(paper output) device to perform stapling and/or punching functions - comes in various types - mounted on the left-hand side of the device; only 1 Finisher can be mounted - all Finishers support stapling

- **Booklet Finisher SR 3000**
(1000 sheets Finisher with 50 sheets stapler and saddle stitch)
	optional	• [**SR3000**]
		- mounted at left-hand side
		- Finisher with saddle stitch
		- 1000 sheets Finisher with 50 sheets stapler
		- Trays:
		  - 1 Proof Tray ("Finisher Upper Tray"),
		  - 1 Shift Tray ("Finisher Shift Tray"),
		  - 1 Booklet Tray ("Finisher Booklet Tray")
		
		- Capacity (# sheets) =
		  - Finisher Upper Tray: 100 (A4/LTR or smaller)
		  - Finisher Shift Tray: 1000 (A4/LTR or smaller)
		- Staple capacity =
		  - 50 sheets: A4/LTR or smaller
		  - 30 sheets: B4/LGL or larger
		- Staple positions = (*)
		
		Note:
		 The booklet finishing option cannot be supported under SAP.

- **Finisher SR3030**
(1000 sheets Finisher with 50 sheets stapler)
	optional	• [**SR3030**]
		- mounted at left-hand side
		- 1000 sheets Finisher with 50 sheets stapler
		- Trays:
		  - 1 Proof Tray ("Finisher Upper Tray"),
		  - 1 Shift Tray ("Finisher Shift Tray")
		
		- Capacity (# sheets) =
		  - Finisher Upper Tray: 250 (A4/LTR or smaller)
		  - Finisher Shift Tray: 1000 (A4 LEF/LTR LEF or smaller)
		- Staple capacity =
		  - 50 sheets: A4/LTR or smaller
		  - 30 sheets: B4/LGL or larger
		- Staple positions = (*)

Punch Kits	optional	(paper output) a piece of electro-mechanical hardware which can be installed into the Finisher. - Number of punched holes can be selected via PJL command. - Only one Punch Kit can be installed.
- US 2/3-hole Punch Kit for SR3000 and SR3030	optional	• [Punch Unit Type 3260 NA] - US 2/3-hole type
- EU 2/4-hole Punch Kit for SR3000 and SR3030	optional	• [Punch Unit Type 3260 EU] - European 2/4-hole type
- Scandinavian 4-hole Punch Kit for SR3000 and SR3030	optional	• [Punch Unit Type 3260 SC] - Scandinavian 4-hole type

Note: (*) = See the corresponding Operating Instructions manual.

The following table specifies those features that can be configured from the device's front panel, and their initial factory default settings.
For those features whose setting is typically unlikely to be changed often, they can be configured once on the device front panel, and thus need no configuration from the SAP system side.

Feature	Initial (factory) setting
• Resolution	600 dpi Std
• Symbol set	PC-8
• Paper Tray priority	Tray 1
• Duplex mode	Off
• Auto Continue	Off
• Output	Standard tray
• Autopaper Select	On
• Sort mode (Job separation)	Off
• Sub Paper Size (*)	Off
• Copies	1
• Letterhead Setting	Off
• Edge-Edge Print	Off

Note: (*) Paper size override function

3. Features & Commands

This chapter contains one section for each configurable feature.

The features are ordered by importance (how often used) and logical order (in the processing of the job).
- 3.1   - 3.7   = likely to be configured / changed
- 3.8   - 3.13   = unlikely to be changed often
- 3.14 - 3.21   = changing makes no sense or has no effect, or it must or should not be changed
- 3.22 - ...   = additional features

Each section contains the following information about the feature:

1. Description of the **Feature**
2. Table of all possible **Settings** for this feature, and the **Values** necessary to specify in the **Command**(s).
        An (*) indicates that the interpretation of a value is subject to some restriction.
3. Dependencies/Constraints, other remarks
4. (for each Printer language and each related Command):
   a. Tag (this is used to clearly mark where the Command is located in the device type)
   b. Command syntax (see Appendix 1 below for general information on the printer language)
   c. Initial command (as an example, and as it is shipped in the device type)
        The entire initial command sequence of a particular device type is listed in the corresponding Volume 2.

Note: (Print controls)
For some of those features that can be specified per page, paragraph, or character, Print controls are defined.
Where applicable, these are also listed in the Settings/Values table of the feature.

General remarks:
- The order in which the commands appear in the device type, and in which they are sent to the printer, is roughly the same as the one generated by our Windows drivers. To make sure the controller doesn't get problems, this order should be maintained.
  Please also note that some commands are sent automatically by the SAPscript driver, on which we cannot take any influence.
- Be aware that some settings may require modifications in more than 1 place !

SAP-specific syntax issues:
- A `"#"` at the beginning of a line is the SAP comment symbol. It means that the line will not be sent to the printer.
- Non-printable characters have to be entered as SAP escape characters.

Notation conventions:
- All commands are printed in fixed-spaced Courier font.
- The "`^^^`" indicates a place-holder for a value that has to be looked up from the Settings/Values table.
- **<...>** indicates a place-holder.
- A `"##"` in front of a line is to indicate that it should never be uncommented.
- [...] indicates optional text that can be omitted.

3.1 Input Bin

Description:
Specify the input bin from where to take the paper.

Settings/Values:

^^^ [PCL.01]	Print control	Interpretation	Capacity (# sheets)
0	TRYST	Print out current page from currently active input bin (remains unchanged)	--
7	--	Auto Tray Select	--
2	TRYMN	Bypass Tray (for sheet paper)	100
3	TRYME	Bypass Tray (for envelopes)	
8	TRY01	Tray 1	550
1	TRY02	Tray 2	550
4	TRY03	Tray 3 (LCT) -- if [PB3010] is installed.	2 x 1000
4	TRY03	Tray 3 -- if [TK3000] is installed.	500
4	TRY03	Tray 3 -- if [PB3000] is installed.	2 x 550
30	TRY04	Tray 4 -- if [TK3000] and [PB3000] are installed.	500 + 2 x 550
23	TRYB5	Tray 5 -- if [TK3000] and [PB3000] are installed.	500 + 2 x 550

Dependencies/Constraints:
- Tray 3 (LCT) needs [LCIT PB3010]
- Tray 3 needs [Paper Feed Unit TK3000]
- Trays 3 & 4 need [Paper Feed Unit PB3000]
- Trays 4 & 5 need [Paper Feed Unit PB3000] and [Paper Feed Unit TK3000]
- Bypass Tray => no Duplex, no Stapling, no Punching, no Auto Tray Switching
- For the paper sizes supported by a particular bin, please see the corresponding Operating Instructions manual.
- Custom paper size, 12" x 18", A5 SEF, B6 SEF, A6 SEF, Halfletter SEF and Envelopes only from Bypass
- LCT supports only A4 (LEF) or LTR (LEF)

Note: (Using the HPL2 ABAP list driver)
When using the HPL2 ABAP list driver, the PCL command for this setting will not become effective.
You need to use the SAP mechanism to specify the Input Bin.

Note: (The SAP mechanism to specify the Input Bin)
- For ABAP & SmartForms:
Under SAP this setting can also be specified in the definition of the Output device.
The "Output attributes for list drivers" tab has a setting named "Paper tray".
The selectable values "Tray 1" | ... | "Tray 10" | "Single sheet" | "Envelopes" | "ManualEnvelope",
correspond to the Print controls TRY01 | ... | TRY10 | TRYMN | TRYEN | TRYME.
This setting is only used by the HPL2 ABAP list driver.
If the standard ABAP list driver is used, the setting has to be specified in the command at [PCL.01] in the "Printer initialization" action in the Device type.
- For SAPscript:
The TRYxx print control to be used for a particular page can be specified in the definition of the Form used by the document, under
  "Page layout" -> <page> -> [Attributes] -> "Print attributes" -> "Resource name".
- For SAPscript and SmartForms under POSS:
The Input Bin can be configured using POSS option 01. For more information please refer to the section on POSS in Volume 2.

Note: (Forcing a particular Input bin for SAPscript)
As explained above, the desired input bin for SAPscript can be specified in the "Resource name" field of the definition of the SAPscript FORM. If it is not desired to assign a fixed input bin to a SAPscript FORM, then this field should be left empty, and the desired input bin should rather be specified in the "Printer initialization" action of the Device type, at tag [PCL.01]. This is, however, only possible if the SAPscript FORM does not specify an input bin yet. If the SAPscript FORM does already specify an input bin that is undesired, and if it cannot be changed, please contact Technical support for how to override it.

Note:
This command can NOT be used to specify the input bin for transparencies in connection with the slip sheet function.
Instead, it needs to be commented out, and the PJL variables DOCBODYTRAY [PJL.20c] and possibly TRAY [PJL.20d] have to be used.

3.1.1 <mark>Tag: # [PCL.01] INPUT BIN</mark>

Command syntax:
- `\e&l^^^H`

Initial / Example:
- `#\e&l7H`

3.2 Paper Type

Description:
Paper type (Media type) should be configured for two reasons:
1. Different paper quality and thickness may require a different fusing temperature. This is called **Fuser control**.

2. The device keeps track of which paper type is contained in each input bin. When a certain paper type is specified in the print job, the controller can automatically select an appropriate input bin containing the requested paper type and paper size.
Both features can be configured through either the PCL command (preferred) or the PJL variable MEDIATYPE.

Settings/Values:

^^^ [PJL.04b]	^^^ [PCL.12]	Print control	Interpretation
PLAIN	6WdPlain	ZTPLN	Plain / Normal paper
PLAINORRECYCLED	--	--	Plain / Normal paper or recycled paper
TRANSPARENCY	13WdTransparency	ZTTRS	Transparency/OHP sheet
SPECIAL	8WdSpecial	ZTSPC	Special paper1
SPECIAL2	9WdSpecial2	--	Special paper2
SPECIAL3	9WdSpecial3	--	Special paper3
THICK	6WdThick	ZTTHK	Thick1 paper
THICK2	7WdThick2	--	Thick2 paper
THICK3	7WdThick3	--	Thick3 paper
MIDDLETHICK	12WdMiddlethick	--	Middle thick paper
THICKDUPLEXBACKSIDE	20WdThickduplexbackside		Thick Duplex Back 1
THICKDUPLEXBACKSIDE2	21WdThickduplexbackside2		Thick Duplex Back 2
THICKDUPLEXBACKSIDE3	21WdThickduplexbackside3		Thick Duplex Back 3
THIN	5WdThin	ZTTHN	Thin Paper
RECYCLED	9WdRecycled	ZTRCY	Recycled paper
COLOR	6WdColor	ZTCLR	Colored paper
LETTERHEAD	11WdLetterhead	ZTLTH	Letterhead paper
PREPRINTED	11WdPreprinted	ZTPRN	Preprinted paper
LABELS	7WdLabels	ZTLBL	Labels
BOND	5WdBond	ZTBND	Bonds
CARDSTOCK	10WdCardstock	ZTCST	Cardstock
GLOSSY	7WdGlossy		Glossy paper
COATED	7WdCoated		Coated paper
ENVELOPE	9WdEnvelope		Envelope

Dependencies/Constraints:
- Only the Bypass tray supports "Transparency/OHP", "Labels", "Thick 3", "Envelope" and "Thickduplexbackside3"
- For the paper types supported by a particular bin, please see the corresponding Operating Instructions manual.

3.2.1 Tag: # [PJL.04] PAPER TYPE 1/2

Command syntax:
- @PJL SET FUSERCONTROL = ^^^ \r\n   -- **[PJL.04a]** -- This command is NOT supported by this device.
- @PJL SET MEDIATYPE = ^^^ \r\n   -- **[PJL.04b]**

Initial / Example:
- #@PJL SET FUSERCONTROL = PLAINPAPER \r\n
- #@PJL SET MEDIATYPE = PLAIN \r\n

3.2.2 Tag: # [PCL.12] PAPER TYPE 2/2

Command syntax:
- \e&n^^^

Note: The value ^^^ has the following structure: "<decimal length of keyword> W <keyword>"; the <keyword> starts with a "d".

Initial / Example:
- #\e&n6WdPlain

3.3 Duplex Mode

Description:
Duplex means printing on both sides of a sheet of paper.

Depending on the **Binding edge** (the edge of the page that would be used for binding the document), there are 2 different orientations of the rear page with respect to the orientation of the front page possible and necessary.
There are two different notions of indicating the binding edge.
- The notion of **Long-/Short-edge binding** is independent of the orientation of the contents of the pages.
- The notion of **Side (Left-edge) / Top binding** is related to the above through the orientation of the printout, as follows:

	Portrait	Landscape
Long-edge	Side	Top
Short-edge	Top	Side

Settings/Values:

^^^ [PJL.17a]	^^^ [PJL.17b]	^^^ [PCL.03]	Print control	Interpretation
OFF	--	0	SPMSI	Simplex
ON	LONGEDGE	1	SPMDU	Duplex, Long-edge binding
ON	SHORTEDGE	2	SPMTU	Duplex, Short-edge binding (Tumble)

Dependencies/Constraints:
- Duplex is not possible from the Bypass Tray.
- For Stapling, Punching, Duplexing, Orientation, and Paper feed direction, only certain combinations make sense and are permitted. See chapter "Limitations" below.
- Duplex is disabled for these Media types: "Transparency", "Labels", "Cardstock", "Thick2", "Thick3", "Thin", "Envelope", "Coated", "Thickduplexbackside1", Thickduplexbackside2 and "Thickduplexbackside3".
- The Duplex unit may not support all paper sizes; see chapter "Device Hardware Accessories" above.
- No duplexing for 12" x 18", A5 SEF, B6, A6, Half Letter SEF, Executive, Envelopes and custom paper sizes.
- Switching between different duplex modes within a document is supported.
- Duplex is disabled when "Slip sheet printing" is active.

Note: (Using the HPL2 ABAP list driver)
When using the HPL2 ABAP list driver, the PCL command for this setting will not become effective.
You need to use the SAP mechanism to specify the Duplex mode.

Note: (The SAP mechanism to specify the Duplex mode)
- For ABAP & SmartForms:
Under SAP this setting can also be specified in the definition of the Output device.
The "Output attributes for list drivers" tab has a setting named "Print mode".
The selectable values are: DEFAULT, SIMPLEX, DUPLEX, and TUMBLE DUPLEX.
This setting is only used by the HPL2 ABAP list driver.
If the standard ABAP list driver is used, the setting has to be specified in the command at [PCL.03] in the "Printer initialization" action in the Device type.
- For SAPscript:
The Duplex mode to be used for a particular page can be specified in the definition of the Form used by the document, under
  "Page layout" -> <page> -> [Attributes] -> "Print attributes" -> "Print mode".
The selectable values are: <empty>, "S", "D", "T".
- For SAPscript and SmartForms under POSS:
The Duplex Mode can be configured using POSS option 04. For more information please refer to the section on POSS in Volume 2.

Note: (Forcing a particular Duplex mode for SAPscript)
As explained above, the desired duplex mode for SAPscript can be specified in the "Print mode" field of the definition of the SAPscript FORM. If it is not desired to assign a fixed duplex mode to a SAPscript FORM, then this field should be left empty, and the desired duplex mode should rather be specified in the "Printer initialization" action of the Device type, at tag [PCL.03]. This is, however, only possible if the SAPscript FORM does not specify a duplex mode yet. If the SAPscript FORM does already specify a duplex mode that is undesired, and if it cannot be changed, please contact Technical support for how to override it.

3.3.1 Tag: # [PJL.17] DUPLEX MODE 1/2

These commands are not necessary.

Command syntax:
- `@PJL SET DUPLEX = ^^^ \r\n`   -- **[PJL.17a]**
- `@PJL SET BINDING = ^^^ \r\n`   -- **[PJL.17b]**

Initial / Example:
- `#@PJL SET DUPLEX = ON \r\n`
- `#@PJL SET BINDING = LONGEDGE \r\n`

Note: If both PJL command and PCL command are sent, the PCL setting takes precedence over the PJL setting.

3.3.2 Tag: # [PCL.03] DUPLEX MODE 2/2

Command syntax:
- `\e&l^^^S`

Initial / Example:
- `#\e&l0S`

3.4 Output Bin

Description:
The output receptacle (bin, tray) for the printed paper.

Settings/Values:

^^^ [PJL.16]	^^^ [PCL.02]	Print control	Interpretation	Capacity (# sheets)
--	0	--	Default output tray (as specified from the	--

			device's front panel)	
UPPER	1	TROST TRO01	Standard Tray	500 250 with Bridge unit
FINISHERPROOF	2	TRO04	Finisher Upper Tray - [on Finisher SR3000] - [on Finisher SR3030]	100 250
FINISHERSHIFT	101	TRO03	Finisher Shift Tray - [on Finisher SR3000] - [on Finisher SR3030]	1000 3000
FINISHERBOOKLET	102	TRO05	Finisher Booklet Tray - if Booklet Finisher [SR3000] is installed	10 sets of booklets (of 6..10 sheets each)

Dependencies/Constraints:

- Finisher trays require a Finisher unit.
- To attach a finisher to the mainframe, a Bridge Unit is required.
- To attach the finisher SR 3000 or SR3030, the paper feed unit PB3000 or the LCIT PB3010 must be installed as input bin.
- All Finishers have a Proof Tray.
- The Finisher Booklet Tray requires the Booklet Finisher unit. However, it cannot be supported under SAP.
- For the paper sizes supported by a particular bin, please see the corresponding Operating Instructions manual.
- Switching between different output bins within a document is not supported.
- Stapled printout is always printed to the "Lower Shift Tray". Any other output bin setting will be overridden. In that case any output bin setting specified here will be overridden by the above and thus become void.
- When Finisher SR3000 is attached, Transparencies are always printed to the "Standard Tray". Any other output bin setting will be overridden.

Note: (Using the HPL2 ABAP list driver)
When using the HPL2 ABAP list driver, you need to use the PJL command for this setting.

Note: (The SAP mechanism to specify the Output Bin)

- For ABAP and non-POSS systems:
There is no SAP mechanism.
- For SAPscript and SmartForms under POSS:
The Output Bin can be configured using POSS option 02. For more information please refer to the section on POSS in Volume 2.

3.4.1 Tag: # [PJL.16] OUTPUT BIN 1/2

Command syntax:

- `@PJL SET OUTBIN = ^^^ \r\n`

Initial / Example:

- `#@PJL SET OUTBIN = xxx \r\n`

Note: If both PJL and PCL commands are sent, the PCL setting takes precedence over the PJL setting.

3.4.2 Tag: # [PCL.02] OUTPUT BIN 2/2

Command syntax:

- `\e&l^^^G`

Initial / Example:

- `#\e&l1G`

3.5 Job Offset

Description:
There are several mechanisms conceivable to separate multiple copies of the same job.
Job offset can be configured for each job individually through the PJL variable JOBOFFSET.
In either case, two consecutive stacks of output can be separated through sheet **shifting**.

Settings/Values:

^^^ [PJL.13]	Interpretation
OFF	No offset.
SHIFT	Output is offset side-wise versus the previous.

Dependencies/Constraints:

- [GW Printer]: Rotation is not supported by this device.

- SHIFT requires a Finisher Shift Tray .
- A Finisher Shift tray always applies shifting, unless "OFF" is specified.
- Stapled output is not shifted.

3.5.1 Tag: # [PJL.13] JOB OFFSET

Command syntax:
- `@PJL SET JOBOFFSET = ^^^ \r\n`

Initial / Example:
- `#@PJL SET JOBOFFSET = OFF \r\n`

3.6 Stapling

Description:
Set the Stapling mode. Paper output can be stapled automatically.
One can configure the **number** of staples (1/2), and their **position** (at which corner/edge) and **orientation** (vertical/horizontal/slanted).
The command to be used also depends on the orientation of the document.
The stapling unit is part of the Finisher unit.
Due to mechanical reasons of the stapling unit, only certain modes are possible. See also the device's corresponding Operating Instructions manual.
The **physical** position and orientation of the staple(s) is determined and possibly restricted by the mechanism of the Finisher.
However, the printer controller can implement multiple **logical** staple positions and orientations, by combining the physical possibilities, the choice of SEF/LEF paper, and the orientation of the page (e.g. by making a 180 degree rotation).

Note: The TITLE action should not specify any commands for Stapling, because the Cover page is only 1 page.

Settings/Values:

^^^ [PJL.02]	Interpretation	#	Position of staple(s)	Orientation of staple(s)	Document orientation	Paper feed direction required
OFF	off / no stapling	--	--	--		--
LEFTTOP	TLH/V	1	Top-Left	Horiz./Vert. (*)	(*)	(*)
LEFTTOPSLANTPORT (**)	TLS/H	1	Top-Left	Slanted/Horiz.	(*) P/L	(*) LEF/SEF
LEFT2PORT	L2V	2	Left	Vertical	(*) P/L	(*) LEF/SEF
TOP2PORT	T2H	2	Top	Horizontal	(*) P/L	(*) LEF/SEF

Note: (*)
The stapling orientation is determined by
- the PJL SET STAPLE command sent,
- the PJL SET PUNCH command sent,
- the required staple position,
- the required duplex mode,
- the orientation of the document,
- the available feed directions of the paper.

To determine the possible combinations and the commands to be sent, please refer to the table in the section "Combinations of Feed direction, Orientation, Duplex, Stapling, Punching" below.

Note: (**)
Finisher SR3000 does not support slanted stapling.

Dependencies/Constraints:
- Stapling requires that a Finisher Unit is installed
- Bypass Tray => no Stapling
- For Stapling, Punching, Duplexing, Orientation, and Paper feed direction, only certain combinations make sense and are permitted. See chapter "Limitations" below.
- Stapling is disabled for these Media types: "Transparency", "Labels", "Cardstock", "Thick", "Thick2", "Thick3", "Envelope", "Glossy", "Coated Paper", "Thickduplexbackside1", "Thickduplexbackside2", and "Thickduplexbackside3". .
- Multiple copies should always be specified as Collated.
- The Input bin should be set to Auto Select, or it must be ensured that the paper in the tray is set in the correct paper feed direction.
- The maximum number of sheets that can be stapled is specified in the chapter "Device Hardware Accessories" above.
- Finisher SR3000 and SR3030 cannot staple paper sizes 12" x !8", A5 LEF/SEF, B6, A6, Half Letter, Envelopes, and Custom Sizes.
- Stapling is disabled when "Slip sheet printing" is active.
- The PJL SET STAPLE command forces the print job to a specific output bin that supports stapling.
  - The stapled output is printed to the "Finisher Shift Tray".
  If a different output bin is explicitly specified (at tag [PJL.16] or [PCL.02]), that setting will be overridden by the above and thus become void.

Note:
It is recommended to always explicitly specify the Duplex mode, as indicated in the section "Duplex mode" above, in order to override any existing Duplex mode setting on the device, which could be in conflict to the desired Stapling mode.

Note: (The SAP mechanism to specify the Stapling Mode)
- For ABAP and non-POSS systems:
There is no SAP mechanism.
- For SAPscript and SmartForms under POSS:
The Stapling Mode can be configured using POSS option 08. For more information please refer to the section on POSS in Volume 2.

3.6.1 Tag: # [PJL.02] STAPLING MODE

Command syntax:
- `@PJL SET STAPLE = ^^^ \r\n`

Initial / Example:
- `#@PJL SET STAPLE = OFF \r\n`

3.7 Punching

Description:
Set the Punching mode. Paper output can be 2/3/4((only if 4))-hole punched automatically.
One can configure the **number** of holes and their **position** (at which edge).
The command to be used depends on the orientation of the document output.
The Punching unit is part of the Finisher unit.
Due to mechanical reasons of the Punching unit, only certain modes are possible.
See also the device's corresponding Operating Instructions manual.

Settings/Values:

^^^ [PJL.03a]	Interpretation	**Position** of holes	Document orientation	**Paper feed direction required**
OFF	off / no punching	--	--	--
LEFTPORT	LP	Left	(Portrait)	LEF
LEFTPORT	LL	Left	(Landscape)	SEF
RIGHTPORT	RP	Right	(Portrait)	LEF
RIGHTPORT	RL	Right	(Landscape)	SEF
TOPPORT	TP	Top	(Portrait)	SEF
TOPPORT	TL	Top	(Landscape)	LEF

Dependencies/Constraints:
- Punching requires a Finisher Unit with a Punch Kit installed, and also to set "Output bin" = "any Finisher Tray (Shift or Proof)".
- Bypass Tray => no Punching
- For Stapling, Punching, Duplexing, Orientation, and Paper feed direction, only certain combinations make sense and are permitted. See chapter "Limitations" below.
- The Input bin should be set to Auto Select, or it must be ensured that the paper in the selected tray has the correct paper feed direction.
- Punching is disabled for these Media types: "Transparency", Labels", "Thick2, and "Thick3".
- Some paper sizes cannot be punched at their short edge, if they are not wide enough to hold all punch holes. E.g. A4 & LTR cannot be 4/3-hole punched at their short edge.
- Some paper sizes cannot be punched at their long edge, because they cannot be fed in LEF direction. E.g. A3 & DLT.
- Punching is disabled when "Slip sheet printing" is active.
- The PJL SET PUNCH command forces the print job to a specific output bin that supports punching.
    - On Finisher SR3020 and SR3030 punched output is printed to the "Finisher Shift Tray" by default.
  If a different output bin is explicitly specified (at tag [PJL.16] or [PCL.02]), that setting will be overridden by the above and thus become void.

Note:
Both Finisher trays of Finisher SR3000 and SR3030 support punching and can be selected by the corresponding output bin command. In case a different output bin is specified, the stapled output will be printed to the "Finisher Shift Tray 2 (Lower Shift Tray)". The Booklet Tray of the Finisher SR3000 is not a valid output tray for stapled and punched documents.

Note:
It is recommended to always explicitly specify the Duplex mode, as indicated in the section "Duplex mode" above, in order to override any existing Duplex mode setting on the device, which could be in conflict to the desired Punching mode.

Note:
- The indicated orientation of the document should match the actual orientation of the printout. Otherwise, the result may not make much sense.
- The paper supported is specified in the chapter "Device Hardware Accessories" above.

Note:
Depending on the type of Finisher and Punching unit, the following numbers of holes can be punched:
- 2 holes = European (EU) style
- 3 holes = North American (US) style
- 4 holes =
    - European (EU) style
    - North European / Scandinavian / Swedish (SC) style

^^^ [PJL.03b]	Interpretation
US2	2 holes, North American (US) style
US3	3 holes, North American (US) style (default)
JP2	2 holes, European (EU) style
EU4	4 holes, European (EU) style (default)
NEU4	4 holes, North European / Scandinavian / Swedish (SC) style (default)

Note: (Punch Kits)
For Finishers SR3000 and SR3030 three types of Punch Kits are available.
Depending on the type of Punch Kit, different numbers of holes can be punched:
For the European Punch Kit and the North American Punch Kit the number of the punched holes needs to be specified using the PJL SET PUNCHHOLE command [PJL.03b].

Note: (The PJL SET PUNCHHOLE command [PJL.03b])
- If an invalid value is specified, the output is not punched at all.
- If this command is entirely omitted, the default number of holes will be punched.

Note: (The SAP mechanism to specify the Punching Mode)
- For ABAP and non-POSS systems:
There is no SAP mechanism.
- For SAPscript and SmartForms under POSS:
The Punching Mode can be configured using POSS option 07. For more information please refer to the section on POSS in Volume 2.

3.7.1 Tag: # [PJL.03] PUNCHING MODE

Command syntax:
- @PJL SET PUNCH = ^^^ \r\n   -- **[PJL.03a]**
- @PJL SET PUNCHHOLE = ^^^ \r\n   -- **[PJL.03b]**

Initial / Example:
- #@PJL SET PUNCH = OFF \r\n
- #@PJL SET PUNCHHOLE = xxx \r\n

3.8 Resolution

Description:
By default, the horizontal and vertical printer resolution, in dots per inch (dpi), is 600 dpi.
In case of memory or speed problems, or for draft prints, you may wish to switch to 300 dpi.
If resolution is changed, the memory is reconfigured, and all downloaded fonts and PCL macros are lost.

Settings/Values:

^^^ [(*)]	Interpretation
600	600 dpi
300	300 dpi

Note: (*): The same value must be set at both places !

3.8.1 Tag: # [PJL.01] RESOLUTION 1/2

Command syntax:
- @PJL SET RESOLUTION = ^^^ \n

Initial / Example:
- @PJL SET RESOLUTION = 600 \n

3.8.2 Tag: # [PCL.14] RESOLUTION 2/2

Command syntax:
- \e&u^^^D

Initial / Example:
- \e&u600D

3.9 Copies

Description:
Number of copies to print of this job.
For example, for 4 copies of a 3-page document,
- **Uncollated** copies will appear as 1,1,1,1,2,2,2,2,3,3,3,3.
- **Collated** copies will appear as 1,2,3,1,2,3,1,2,3,1,2,3.

Settings/Values:
^^^ = { 1,...,999 }

Dependencies/Constraints:
- Please note that this may conflict with some SAP Output Management System software.

Note: (PCL/PJL)
There are two PJL commands and one PCL command related to specifying the number of copies and the collation mode.
Initially, both PJL commands are commented out, and the PCL command specifies 1 copy.
If either PJL command is used, the other one and the PCL command need to be commented out to avoid conflicts.
For Collated mode, the PJL SET QTY command is needed.
For Uncollated mode, either PJL SET COPIES or the PCL command can be used.
If both PJL and PCL commands are used, the PCL setting will override the PJL setting.

Note: (Increasing the performance of network printers)

It is possible to specify the desired number of copies directly in the print data stream, using one of the commands below. Since the spool system cannot know the contents of the data stream, it has to be told explicitly that N = 1, to avoid any conflict.

If a certain class of print jobs always requires the same fixed number of copies, the administrator may choose
1. to create a dedicated device type which sends the appropriate command, and
2. to tell his users to always keep N = 1 in the Print parameters dialog.

Note: The above does not work in conjunction with the HPL2 ABAP list driver, since it overrides this setting; it always forces only 1 copy.

3.9.1 Tag: # [PJL.15] COPIES 1/2

Command syntax:
- @PJL SET QTY = ^^^ \r\n   -- **[PJL.15a]** (for Collated)
- @PJL SET COPIES = ^^^ \r\n   -- **[PJL.15b]** (for Uncollated)

Initial / Example:
- #@PJL SET QTY = 1 \r\n
- #@PJL SET COPIES = 1 \r\n

3.9.2 Tag: # [PCL.13] COPIES 2/2

Command syntax:
- \e&l^^^X

Note:
This PCL command will just print uncollated copies.
It needs to be commented out if one of the above PJL commands is used.

Initial / Example:
- \e&l1X

3.10 EconoMode (Toner Saver)

This feature is NOT supported by this device.

3.10.1 Tag: # [PJL.14] ECONOMODE (TONER SAVER)

This command is NOT supported by this device.

3.11 Auto Tray Change/Switching

Description:
If enabled, and the current tray runs out of paper, the job will be continued from a tray containing the same paper size.
If disabled, the front panel LCD will prompt the user to refill paper and wait.
This should be disabled in case there are e.g. 2 different types of A4 paper (e.g. normal, colored) which should not be mixed.

Settings/Values:

^^^ [PJL.12]	Interpretation
OFF	disabled
ON	enabled

3.11.1 Tag: # [PJL.12] AUTOTRAYCHANGE

Command syntax:
- `@PJL SET AUTOTRAYCHANGE = ^^^ \r\n`

Initial / Example:
- `#@PJL SET AUTOTRAYCHANGE = ON \r\n`

3.12 Edge Smoothing/Enhancement

This feature is NOT supported by this device.

3.12.1 Tag: # [PJL.11] SMOOTHING

This command is NOT supported by this device.

3.13 Page Protection

This feature is NOT supported by this device.

3.13.1 Tag: # [PJL.06] PAGE PROTECTION

This command is NOT supported by this device.

3.14 Paper Size

Description:

Determines the paper size to be used for the current page.

The **physical height** and **width** of the sheet or envelope are specified below.
The engine's mechanics implies an unprintable area near the edges, so that the **imageable area** is usually smaller. This is device-dependent.

Paper may be treated differently, depending on with which edge the sheets are fed into the paper path (**feed direction**).
- **LEF** = Long-edge-feed
- **SEF** = Short-edge-feed
(This notion of feed direction is independent of the notion of orientation.)
In the paper sizes below the first value specified is the feed edge.

Note: (Configuring the Paper size)
This setting cannot be configured effectively in the "Printer initialization" action of the device type, because there are other mechanisms which would override it.
For a SAPscript document, its paper size is configured in the "Page format" setting in the SAPscript Form used by the document, which in turn determines the Device format to be used. For the SAP standard paper sizes (A3, A4, A5, Letter, Legal, Executive), the command sent is built in the HPL2 SAPscript OTF driver, otherwise (for non-standard paper sizes) it has to be specified at the end of the Printer initialization action of the corresponding Device format.
For an ABAP report, the paper size to be used is always assumed to be A4 or Letter; however, the "Printer initialization" action does not send any paper size command.
In any case, the command syntax is explained below.

Note: ("Sub paper size")
Normally, a print job specifying a certain paper size would require that paper of this size be loaded in a tray.
If paper of this size is not available in any tray, the user will be requested via the device's front panel to load it.
Since A4 and Letter have similar formats, it may be desirable to be able to print a job specifying Letter format on A4 paper, or vice versa. This feature is called "Sub(stitute) paper size". There is no scaling applied; so if the image is too large, it will be cropped at the margins.
This feature can only be set via the device's front panel (Sub Paper Size = Auto); there is no PJL command to achieve this.

Settings/Values:

^^^	Name (short)	Full / Alternative names	EU/US	Size

27	**A3**	DIN A3 ((SEF))	EU	297 x 420 mm
26	**A4**	DIN A4 (LEF) DIN A4 (SEF), A4R	EU	297 x 210 mm 210 x 297 mm
2000	**A5**	DIN A5 (SEF) DIN A5 (LEF)	EU	148 x 210 mm 210 x 148 mm
2001	A6	DIN A6 ((SEF))	EU	105 x 148 mm
46	B4	B4(JIS) ((SEF))	EU	257 x 364 mm
45	B5	B5(JIS) (LEF B5(JIS) (SEF)	EU	257 x 182 mm 182 x 257 mm
2020	B6	B6(JIS) ((SEF))	EU	128 x 182 mm
2043	12" x 18"	12" x 18" ((SEF))	US	12" x 18"
6	**Ledger**	DLT, Double Letter, Tabloid ((SEF))	US	11" x 17"
3	**Legal**	LGL, Legal ((SEF))	US	8.5" x 14"
2	**Letter**	LTR, Letter (LEF LTR, Letter (SEF)	US	11" x 8.5" 8.5" x 11"
1	**Executive**	Executive (LEF) Executive (SEF)	US	10.5" x 7.25" 7.25" x 10.5"
2008	Statement	HLT, Half Letter ((SEF))	US	5.5" x 8.5"
2012	Folio	F4 ((SEF))	US	8.25" x 13"
2011	F/GL	F, Folio GL ((SEF))	US	8" x 13"
2007	Foolscap	Foolscap, Folio, F4, Government Legal ((SEF))	US	8.5" x 13"
81	Com-10	Envelope Commercial #10 ((LEF))	US	9.5" x 4.125"
80	Monarch	Envelope Monarch, Commercial #7 3/4 ((LEF))	US	7.5" x 3.875"
90	DL	Envelope International DL (Designated Long) ((LEF))	EU	220 x 110 mm
91	C5	Envelope C5 ((LEF))	EU	229 x 162 mm
2022	C6	Envelope C6 ((LEF))	EU	162 x 114 mm
2030	8K	8Kai ((SEF))	EU/US	267 x 390 mm
2031	16K	16Kai (SEF) 16Kai (LEF)	EU/US	195 x 267 mm
101	Custom	Custom / User-defined	--	--

Dependencies / Constraints:
- Some input bins and output bins support only certain paper sizes, and some only in a certain feed direction.
  See the sections about Input bins and Output bins and the chapter "Device Hardware Accessories" above.
- If no paper select command is sent, the controller will use the paper in the addressed tray, or it may ask to load the paper which is currently specified as default.

Paper in the Bypass tray cannot be selected by only sending the "Paper size" command (<esc>&l<#>A).
In addition, also the "Input bin" select command [PCL.01] for the Bypass tray (<esc>&l2H) has to be sent.
Under SAP, this means that the "Bypass tray" has to be explicitly specified as input bin (TRYMN).

Note: (Printing envelopes)
To print an envelope, you need to specify these commands:
- (Input bin): The command for the Envelope Feeder or the Bypass tray.
- (Paper size): The command indicated in this section.
- (Orientation): Please note that all envelope sizes require Landscape orientation.

Note: (Support of paper sizes by SAP)
Only the entries marked bold are currently fully supported as standard under SAP.
For the procedure on how to support a non-standard paper size, see the corresponding section in Volume 2, Appendix 1.

Command syntax:
- \e&l^^^A

Example:
- \e&l26A

3.15 Orientation

Description:
The orientation defines how the printed output appears on the physical paper. By definition, "Portrait" means that, in order to read the text, the sheet must be held upright, i.e. with the short edge at the top. (This notion is independent of the notion of paper feed direction.)

Note: (Configuring the Orientation)
This setting cannot be configured effectively in the "Printer initialization" action of the device type, because there are other mechanisms which would override it.
For a SAPscript document, its orientation is configured in the "Orientation" setting in the SAPscript Form used by the document. The command is automatically sent by the HPL2 SAPscript OTF driver, using the Print controls SPORT and SLAND, after the command sequence of the "Printer initialization" action. Therefore, the "Printer initialization" action should not send any commands to specify orientation.

For an <u>ABAP</u> report, the orientation is a property of the Device format (X_ll_cc), which in turn is determined by the number of lines per page and the number of columns. The necessary PCL command is contained at the end of the "Printer initialization" action.
In any case, the command syntax is explained below.

Settings/Values:

	^^^	Interpretation
	0	Portrait (P)
	1	Landscape (L)

Note: The values are the digits 0,1, NOT the letters O,l.

Dependencies/Constraints:
- For Stapling, Punching, Duplexing, Orientation, and Paper feed direction, only certain combinations make sense and are permitted. See the chapter "Limitations" below.

Command syntax:
- \e&l^^^O

Note: The last character is the uppercase letter "O".

Example:
- \e&l0O

3.16 Left margin

Description:
The left margin of the page.

Note: (<u>Configuring the Left margin</u>)
This setting cannot be configured effectively in the "Printer initialization" action of the device type, because there are other mechanisms which would override it.
For a <u>SAPscript</u> document, the horizontal margins are automatically cleared (set to 0) by the HPL2 SAPscript OTF driver, sending the command "<ESC>9" after the command sequence of the "Printer initialization" action.
For an <u>ABAP</u> report, the horizontal margins are automatically cleared (set to 0) when using the HPL2 ABAP list driver. Otherwise no command is sent.
In any case, the command syntax is explained below.

Settings/Values:

^^^	Interpretation
{ 0,1,... }	Number of columns (as defined by the current HMI)

Command syntax:
- \e&a^^^L

Example:
- \e&a5L

3.17 Top margin

Description:
The top margin of the page.

Note: (<u>Configuring the Top margin</u>)
This setting cannot be configured effectively in the "Printer initialization" action of the device type, because there are other mechanisms which would override it.
For a <u>SAPscript</u> document, the top margin is automatically cleared (set to 0) by the HPL2 SAPscript OTF driver, sending the command "<ESC>&l0E" after the command sequence of the "Printer initialization" action.
For an <u>ABAP</u> report, the top margin is automatically cleared (set to 0) when using the HPL2 ABAP list driver. Otherwise no command is sent.
In any case, the command syntax is explained below.

Settings/Values:

^^^	Interpretation
{ 0,1,... }	Number of lines (as defined by the current VMI)

Command syntax:
- \e&l^^^E

Example:
- \e&l1E

3.18 Horizontal spacing

Description: (PCL)
The horizontal spacing defines the distance between two adjacent characters.
In a proportional font, it affects only the width of the space character.
The current horizontal spacing is kept in a variable called **HMI** (Horizontal Motion Index).
It has to be specified as an absolute measure in 1/120 inch.
This determines the number of characters per inch (**cpi**).
The default HMI is = 12/120" = 10 cpi.

Note: (Configuring the Horizontal spacing)
This setting cannot be configured effectively in the "Printer initialization" action of the device type, because there are other mechanisms which would override it. Moreover, after any font select command the HMI is automatically set to a (font-specific) default, and therefore it needs to be specified again.
For a SAPscript document, the horizontal spacing is specified by the HPL2 OTF driver automatically after each font select command of a proportional font (thus only affecting the width of the space character). For fixed-spaced fonts, no command is sent; thus the default pitch of the selected font will be used.
For an ABAP report, the "Printer initialization" action of an X_ll_cc Format contains a command to override the default pitch of the font used (Courier), thus condensing or expanding it to just the right size so that cc columns will fit properly on the page. The HPL2 ABAP list driver sends the command automatically.
In any case, the command syntax is explained below.

Settings/Values:

^^^	Interpretation
{ <any rational number> }	absolute measure in 1/120 inch

Command syntax:
- \e&k^^^H

Example:
- \e&k12H

3.19 Vertical spacing

Description: (PCL)
The vertical spacing defines the distance between two adjacent lines.
The current vertical spacing is kept in a variable called **VMI** (Vertical Motion Index).
It can be specified as number of lines per inch (**lpi**).
The default VMI is = 8/48" == 6 lpi.

Note: (Configuring the Vertical spacing)
This setting cannot be configured effectively in the "Printer initialization" action of the device type, because there are other mechanisms which would override it.
For a SAPscript document, the vertical spacing is initially set to 0 by the HPL2 SAPscript OTF driver, using the command "<ESC>&l0C".
For an ABAP report, the necessary command is contained at the end of the "Printer initialization" action of the format. The HPL2 ABAP list driver overrides this, setting it to 0.
In any case, the command syntax is explained below.

Settings/Values:

^^^	Interpretation
{ 1,2,3,4,6,8,12,16,24,48 }	number of lines per inch (**lpi**)

Command syntax:
- \e&l^^^D

Example:
- \e&l6D

3.20 Character set

Description:
Select/change the active printer character set.
This term is also known as "symbol set" (HP) or "code page" (Microsoft).
It is a table that interprets ASCII codes as characters.

Note: (Configuring the Character set)
This setting is not a property of the job or a page but of individual characters. Nor is it an attribute of the font, it is maintained independently. It would make sense to specify an initial value in the "Printer initialization" action of the device type, but it could be overridden at any time.
In a SAPscript document, the character set can be switched by sending an appropriate Print control. (This is currently not implemented.)
This setting is also overridden by the SFxxx font select Print controls issued by the HPL2 SAPscript OTF driver.
For an ABAP report, the initial character set to be used is specified at the end of the "Printer initialization" action.
In any case, the command syntax is explained below.

Settings/Values:

^^^	Interpretation
0N	Latin-1 (ISO 8859-1)
2N	Latin-2 (ISO 8859-2)

For the initial setting, see the Example below.

Dependencies/Constraints:
- none

Note: (Switching the Character set)
At the moment it is not possible to switch between character sets, e.g. to mix both Latin-1 and Latin-2 in the same document.

Note: (Support of the EURO character)
The EURO character (€) has been implemented in the symbol sets 19U (Latin-1), 9E (Latin-2), for most typefaces, except LinePrinter, at position 80 (hex).
For this device the resident fonts support the EURO character.
To find out if the device type supports the EURO character, please see Volume 2.

Command syntax:
- \e(^^^

Example:
- \e(0N   -- for ZA0x1vvv
- \e(2N   -- for ZA0x2vvv

3.21 Font

Description:
Selects the font to be used, by specifying the following parameters:
- ^^^p = proportional
- ^^^h = pitch (cpi)
- ^^^v = font height (point size)
- ^^^s = style (italic)
- ^^^b = weight (bold)
- ^^^T = typeface

Note: (Selecting a font & Configuring font attributes)
This setting is not a property of the job or a page but of individual characters.
It doesn't make sense to specify an initial value in the "Printer initialization" action of the device type, since it will be overridden.
In a SAPscript document, the font to be used for a portion of text is specified by preceding the text with a 2-character tag which is defined as a Character format or Paragraph format in the Form or Style used by the document. The tag maps to a system font and thus to a SFxxx Print control and thus eventually to a font select PDL command sequence.
For an ABAP report, only a fixed-spaced font can be used, in this case COURIER. The font size depends on the format chosen, and it is specified in the "Printer initialization" action of the Device format. The HPL2 ABAP list driver has its own mechanism.
In any case, the command syntax is explained below.
There are no Print controls for changing/specifying a font attribute, because using them would conflict with the existing mechanisms.

Note: (OCR text printing)
Printing OCR text requires a separate solution. Please refer to the chapter "Barcodes & OCR Text" in Volume 2 for more information.

Note: (Barcode printing)
Printing barcodes requires a separate solution. Please refer to the chapter "Barcodes & OCR Text" in Volume 2 for more information.

Note: (Arbitrary size fonts)
For printing fonts in arbitrary sizes, please refer to the chapter "The Fonts" in Volume 2 [ZA0x].

Settings/Values:
Please refer to proper PCL documentation.

Note: The pitch command (<ESC>&k#H) must be respecified after any font select command. Otherwise a (font-specific) default is used.
Note: LinePrinter supports only symbol sets 0N, 2N.

Command syntax:
- \e(s^^^p^^^h^^^v^^^s^^^b^^^T

Example:
- \e(s0p10h12v0s0b4099T   -- This would select normal Courier 10 cpi 12 pt.

3.22 Color printing

Description:
There are several parameters which can influence the appearance of color images and text.
- Color/Monochrome mode

Settings/Values:
-- see below

Dependencies/Constraints:
- Color mode is not supported with resolution 300 dpi.
-- see below

Note: (How to specify Text color)
In ABAP, the colors are predefined. In SAPscript, the color of text can be specified as follows:
- For R/3 release 4.6C+, the SmartForms component allows to specify color as an attribute of characters.
- Otherwise, the proprietary Print controls below can be used with this syntax:
  /:PRINT-CONTROL 'ZCxxx'

Print control -- direct (*)	-- indexed (*)	Color
ZCBLU	ZCXX4	Blue
ZCRED	ZCXX1	Red
ZCCYA	ZCXX6	Cyan
ZCYLW	ZCXX3	Yellow
ZCGRN	ZCXX2	Green
ZCBLK	ZCXX0	Black
ZCMGT	ZCXX5	Magenta
ZCWHT	ZCXX7	White

Note: (*)
The direct method specifies RGB values.
The indexed method uses a standard 8-color palette. This method may fail, because the SAPscript OTF driver may change the palette, mapping some colors to Black.

Note: (The SAP mechanism to specify the Color Mode)
- For ABAP and non-POSS systems:
There is no SAP mechanism.
- For SAPscript and SmartForms under POSS:
The Color Mode can be configured using POSS option 03. For more information please refer to the section on POSS in Volume 2.

3.22.1 <mark>Tag: # [PCL.30] COLOR : COLOR MODE</mark>

Description:
This setting determines whether the subsequent output should be monochrome (black-and-white) or color.

Note: (Switching the color mode within a document)
It is possible to switch between the two modes within a SAPscript document.
However, this command always requires a page break, because it affects not only the toner to be used but also the format of the rasterized page bitmap. Therefore, it needs to be immediately preceded by a form feed, as follows:

```
/:NEW-PAGE
(
/:PRINT-CONTROL 'SESCP'
  &b0M
```


Command syntax:
- \e&b^^^M

Settings/Values:

^^^ [PCL.30]	Print control	Interpretation
0	ZCLR1	Color
1	ZCLR0	Monochrome (Black-and-white)

Initial / Example:
- #\e&b0M

3.23 Slip sheet

Description:
This feature allows you to insert a sheet of paper between two consecutive sheets of transparency, thus preventing them from sticking together.
The contents and the input bin of the slip sheets can be specified.

Note:
Normally transparencies are only A4 or LTR size.
The slip sheets should have the same paper size and feed direction as the transparencies, but come from a different tray.

Settings/Values:

^^^ [PJL.20a]	Interpretation
OFF	no slip sheet
BLANK	inserts a blank page

^^^ [PJL.20b,c,d]	Interpretation
ALL	Slip sheet Auto Tray Select
TRAY1	get the sheet from Tray 1
TRAY2	get the sheet from Tray 2
TRAY3	get the sheet from Tray 3
TRAY4	get the sheet from Tray 4
TRAY5	get the sheet from Tray 5
LCT	get the sheet from the LCT
BYPASS	get the sheet from the Bypass

Dependencies/Constraints:
- Printing on Slip Sheet is not supported by this device
- [PJL.20b,c,d] are only interpreted if [PJL.20a] is not "OFF".
- In that case, a document in Duplex mode will automatically be printed in Simplex mode.

Note:
It is highly recommended to set the Paper Type to "Transparency" with the command [PCL.12], in order to prevent the device from damage.
(The fuser temperature must be lowered for printing transparencies.)

Note:
The PJL SET SLIPSHEETPRINTTRAY command [PJL.20b] specifies the source tray for the slip sheets.
To specify the input tray for the transparencies, the PJL SET DOCBODYTRAY command [PJL.20c] and the PJL SET TRAY command [PJL.20d] must be used, both with the same value. Moreover, the [PCL.01] INPUT BIN command must be commented out.

Note:
The trays indicated in SLIPSHEETPRINTTRAY, DOCBODYTRAY and TRAY should contain the same paper format in the same feed direction.

3.23.1 Tag: # [PJL.20] SLIPSHEET

Command syntax:
- @PJL SET SLIPSHEETPRINT = ^^^ \r\n   -- **[PJL.20a]**
- @PJL SET SLIPSHEETPRINTTRAY = ^^^ \r\n   -- **[PJL.20b]**
- @PJL SET DOCBODYTRAY = ^^^ \r\n   -- **[PJL.20c]**
- @PJL SET TRAY = ^^^ \r\n   -- **[PJL.20d]**

Initial / Example:
- #@PJL SET SLIPSHEETPRINT = OFF \r\n
- #@PJL SET SLIPSHEETPRINTTRAY = TRAY1 \r\n
- #@PJL SET DOCBODYTRAY = BYPASS \r\n
- #@PJL SET TRAY = BYPASS \r\n

3.24 Locked Printing

Description:
Locked printing allows to defer the printing out of the sheets of a job until the recipient has walked up to the device and entered a password.

Note: (The SAP mechanism to specify Locked Printing)
- For ABAP and non-POSS systems:
There is no SAP mechanism.
- For SAPscript and SmartForms under POSS:
Locked Printing can be configured using POSS option 09 ("User Authentication"). For more information please refer to the section on POSS in Volume 2.

Note:
Currently this feature can only be configured via POSS.

If it is needed for printing from ABAP or in a non-POSS environment, please contact Technical Support.
Also in case of different requirements regarding the job parameters displayed, please contact Technical Support.

Note: (The procedure under POSS)
To issue a job as locked, the password (of 4..8 alpha-numeric characters) has to be specified upon the creation of the job. Under POSS this has to be done at the "User Authentication" option. Note that, when entering the password, it will not be masked.
For how to release a locked job on the device, i.e. to print it out, refer to the device's Operating Instructions manual. On the panel, the job can be identified by its user id. Our Device type is designed to automatically assign the SAP login name of the creator of the Output request as the user id. For technical reasons, the entries appear with the fixed date "2001/12/31" and time "23:59". Note that a job that was specified with invalid syntax in the job password (e.g. too long), cannot be accessed on the device, even though it appears in the list; the entry can only be removed by rebooting the device.

Note: (Cover page)
Together with the Locked printing feature, a cover page should not be specified ! This is because the cover page would be generated as a separate locked print job with the same password. And, a cover page is actually not necessary for printout identification purposes, since the recipient has to walk up to the machine anyway.

3.25 Edge-to-Edge Mode

Description:
Normally there is a margin along the edges of the sheet.
If this setting is enabled, the logical area for printing almost equals the physical size of the paper; the margins are reduced to approx. 1 mm.
For normal operation, this feature should be disabled.

Settings/Values:

^^^ [PJL.07]	Interpretation
NO	disabled (default)
YES	enabled

Note:
The physical printable area may vary depending on the paper size.

3.25.1 Tag: # [PJL.07] EDGE-TO-EDGE MODE

Command syntax:
* @PJL SET EDGETOEDGE = ^^^ \r\n

Initial / Example:
* #@PJL SET EDGETOEDGE = NO \r\n

3.26 USERCODE

Description:
The USERCODE feature allows to tag a print job with a numeric code which identifies the job as having been issued by a certain individual (user) or organizational unit (department, etc.).
This can be used for accounting or billing purposes, for usage statistics, or for user authentication.
For how to register the codes on the devices and how to evaluate the statistics, refer to the corresponding Operating Instructions manual.

Settings/Values:
The length of the code is max. 8 digits.
The surrounding double-quotes (") are mandatory.
The value of the code can be specified as static/fixed or as dynamic/variable.
In our ZAxx Device type, initially a fixed value is specified as an example.
For how to assign variable codes dynamically at print time, please contact technical support.

Dependencies/Constraints:
* If the value is too long (> 8 digits), it will not be truncated, but the parameter will be empty !
* If the value contains an invalid character, i.e. a non-digit, the parameter will be empty !

3.26.1 Tag: # [PJL.24] USERCODE

Command syntax:
* @PJL SET USERCODE = "<usercode>" \r\n

Initial / Example:
* #@PJL SET USERCODE = "01234567" \r\n

3.28 Job Separation

Description:
This feature allows the separation of consecutive jobs by side-wise shifting. (In contrast, the "Job Offset" feature controls the separation of multiple copies of the same job.) Job separation can be configured through the PJL JOBSEPARATION variable.

Settings/Values:

^^^ [PJL.27]	Interpretation
OFF	No separation.
ON	Output is offset side-wise versus the previous job. (Other than for Job Offset, rotation is not supported.)

Dependencies/Constraints:
- "ON" requires the output to arrive in the Finisher Shift Tray.
- Stapled output is not shifted.

Note: (The SAP mechanism to configure Job Separation)
- For ABAP and non-POSS systems:
There is no SAP mechanism.
- For SAPscript and SmartForms under POSS:
Job Separation can be configured using POSS option 05. For more information please refer to the section on POSS in Volume 2.

3.28.1 <mark>Tag: # [PJL.27] JOB SEPARATION</mark>

Command syntax:
- `@PJL SET JOBSEPARATION = ^^^ \r\n`

Initial / Example:
- `#@PJL SET JOBSEPARATION = OFF \r\n`

4. Limitations

This chapter contains device-specific or controller-specific limitations related to combinations of several features.
For **device-specific limitations of a single feature**, see under "Dependencies/Constraints" of the corresponding section above.
For **device-independent limitations** related only to the SAP device type used, please refer to the "Limitations" chapter of the corresponding Volume 2.

4.1 Combinations of Feed direction, Orientation, Duplex, Stapling, Punching

For Stapling, Punching, Duplexing, Orientation, and Paper feed direction, only certain combinations make sense and are permitted.
The mechanics of the stapling and punching units are such that they can only operate on the far edge in the paper path (the one that leaves the path last). This results in the restrictions on paper feed direction as indicated in the above sections for stapling and punching.

The 10 most common and reasonable combinations are summarized in the table below:
(All images are in readable orientation. The arrow indicates the edge that leaves the printer first.)

Note: (Feed direction required for desired Stapling mode)
If the paper is not available in the feed direction required for stapling in the desired mode (combination of position and orientation of staple(s)), the controller reacts as follows:
If the Input tray is explicitly specified as a particular tray, it will print anyway, but unstapled.
If Auto tray select or no input tray is specified, it will ask to load paper in the required feed direction, and wait (user intervention).

All reasonable combinations are summarized in the table below:
Other combinations are not reasonable (for turning pages), or not possible (due to physical restrictions of the stapling & punching hardware).
(All images are in readable orientation. The arrow indicates the edge that leaves the printer first.)

	Image	Document orientation	Duplex mode / Binding edge	Punching mode	Stapling mode	Staple position	Staple orientation	Paper Feed direction	=> PJL STAPLE Command
		Portrait	- Off - Side / Long - Top / Short	- Off - LP	LSP	Top-Left	Slanted	LEF	LEFTTOPSLANTPORT
		Landscape	- Off - Top / Long - Side / Short	- Off - LL	LSL	Top-Left	Slanted	SEF	LEFTTOPSLANTPORT
		Portrait	- Off - (Side / Long) - Top / Short	- Off - TP	LHP (*)	Top-Left	Horizontal	SEF	LEFTTOP

	Landscape	- Off - Top / Long - (Side / Short)	- Off - TL	LHL (*)	Top-Left	Horizontal	LEF	LEFTTOP
	Portrait	- Off - (Side / Long) - Top / Short	- Off - LP	LVP (*)	Top-Left	Vertical	LEF	LEFTTOP
	Landscape	- Off - (Side / Long) - Top / Short	- Off - LL	LVL (*)	Top-Left	Vertical	SEF	LEFTTOP
	Portrait	- Off - Side / Long -	- Off - LP	L2P (*)	Left	(Vertical)	LEF	LEFT2PORT
	Landscape	- Off - - Side / Short	- Off - LL	L2L (*)	Left	(Vertical)	SEF	LEFT2PORT
	Portrait	- Off - - Top / Short	- Off - TP	T2P (*)	Top	(Horizontal)	SEF	TOP2PORT
	Landscape	- Off - Top / Long -	- Off - TL	T2L (*)	Top	(Horizontal)	LEF	TOP2PORT

Note:
- The following paper sizes cannot be stapled/punched at the Top edge (Landscape) or the Left edge (Portrait), because they cannot be fed in LEF direction: A3, Double Letter, Legal.
- Finisher SR3000 supports only those marked (*) (No slanted stapling).

4.2 Other

The **Booklet Finishing** feature cannot be supported under SAP, since the required page re-ordering is done by the Windows printer driver, not by the device's printer controller.

For possible limitations when printing from SAP with the device's **Enhanced Security** feature enabled, please contact Technical support.

5. (Appendix 1): Printer Languages

This chapter gives a brief introduction of each printer language used by the printer controllers of our devices.

5.1 PCL

The HP **PCL Printer Language** (PCL) is a **page description language** (PDL).
That means it is used to specify the contents and format of a page.

The general syntax of a PCL command is:
* `<ESC> <character> <letter> <value> <letter>`

Note:
* Please be aware that the syntax is case-sensitive.
* In `"\e&l^^^H"` etc., `"l"` is the lowercase letter "L" not the digit "1" !
* In `"\e&l^^^O"` etc., `"O"` is the uppercase letter "O" not the digit "0" !
* Do NOT introduce any extra blanks.

PCL5e is the version that most of our black-and-white devices use.
PCL5c is the version that our color devices use.

For detailed information, please refer to the "PCL5 Printer Language Technical Reference Manual" from HP.

5.1.1 PCL macros

PCL allows to define and execute **macros**. A macro is identified by a number (`<#>`).
* `<ESC>&f<#>y`**0**`X`   start define macro #
* `<ESC>&f<#>y`**1**`X`   stop define macro #
* `<ESC>&f<#>y`**2**`X`   execute macro #
* `<ESC>&f<#>y`**3**`X`   call macro #

5.2 PJL

The HP **Printer Job Language** (PJL) is a **job control language**.
That means it controls parameters of a whole job, not of individual pages.
Normally all PJL commands are sent at the beginning of a job, and then it switches to some page description language.

The general syntax of a PJL command is:
* `@PJL SET <keyword> = <value> [<CR>]<LF>`

Note:
* Please be aware that the syntax is case-sensitive.
* The white spaces in front of and behind the "=" sign are optional.
* Do NOT introduce any blanks behind the <CR><LF>.

For detailed information, please refer to the "PJL Technical Reference Manual" from HP.

6. (Appendix POSS): Support of POSS options for [DC47]

The following table shows the support of POSS options and option values on this device model.

Legend: **+** = supported, **o** = optional (supported if device hardware option), **--** = not supported.

Value	PCL	Description	Supp.
	[PCL.01]	L \p<POSSOPT:**01**> -- **Input bin**	**+**
		\e&l_H	
-1	8	Tray 1	+
-2	1	Tray 2	+
-3	4	Tray 3	O
-4	30	Tray 4	O
-15	23	Tray 5	O
-16	24	Tray 6	–
-17	25	Tray 7	–
-5	5	LCT (Large Capacity Tray)	O
-21	2	Bypass	+
-90	7	Auto Tray Select	+
	[PCL.02]	L \p<POSSOPT:**02**> -- **Output bin**	**+**
		\e&l_G	
-1	1	Inner Tray 1 (Lower Tray) (Standard Tray)	+
-2	100	Inner Tray 2 (Upper Tray) (Internal Tray 2)	–
-3	101	Finisher Shift Tray	O
-4	2	Finisher Proof Tray	O
-5	102	Finisher Booklet Tray	–
-6	103	Right Tray	–
-10	3	Mailbox Proof Tray	–
-11	4	Mailbox Tray 1	–
-12	5	Mailbox Tray 2	–
-13	6	Mailbox Tray 3	–
-14	7	Mailbox Tray 4	–
-15	8	Mailbox Tray 5	–
-16	9	Mailbox Tray 6	–
-17	10	Mailbox Tray 7	–
-18	11	Mailbox Tray 8	–
-19	12	Mailbox Tray 9	–
-21	105	Stacker 1	–
-22	106	Stacker 2	–
	[PCL.30]	L \p<POSSOPT:**03**> -- **Colour mode** -- only if [color model]	**+**
	[PCL.03]	L \p<POSSOPT:**04**> -- **Duplex mode** -- only if [dpx unit]	**+**
	[PJL.13]	C \p<POSSOPT:**05**> -- **Job separation**	**+**
	[PJL.03]	L \p<POSSOPT:**07**> -- **Punching mode**	**o**
	xxx // yyy	@PJL SET PUNCH=xxx //@PJL SET PUNCHHOLE=yyy	
-10	LEFTPORT // JP2	Left Edge (2 holes EU) (req LEF/SEF)	o
-20	TOPPORT // JP2	Top Edge (2 holes EU) (req SEF/LEF)	o
-11	LEFTPORT // EU4	Left Edge (4 holes EU) (req LEF/SEF)	o
-21	TOPPORT // EU4	Top Edge (4 holes EU) (req SEF/LEF)	o
-12	LEFTPORT // US2	Left Edge (2 holes US) (req LEF/SEF)	o
-22	TOPPORT // US2	Top Edge (2 holes US) (req SEF/LEF)	o
-13	LEFTPORT // US3	Left Edge (3 holes US) (req LEF/SEF)	o
-23	TOPPORT // US3	Top Edge (3 holes US) (req SEF/LEF)	o
-14	LEFTPORT // NEU4	Left Edge (4 holes NE) (req LEF/SEF)	o
-24	TOPPORT // NEU4	Top Edge (4 holes NE) (req SEF/LEF)	o
-90	OFF	Off	o
	[PJL.02] (...)	L \p<POSSOPT:**08**> -- **Stapling mode**	**o**
	xxx	@PJL SET STAPLE= xxx	

-1	LEFTTOP	Top-Left Corner	o
-3	LEFT2PORT	Left Edge (req LEF/SEF)	o
-4	TOP2PORT	Top Edge (req SEF/LEF)	o
-2	LEFTTOPSLANTPORT	Top-Left Corner (Slanted) (may req SEF/LEF)	o
-90	OFF	Off	+
	(...)	U \p<POSSOPT:**09**> -- **User password**	**+**
	(...)	C \p<POSSOPT:**10**> -- **Vendor-defined 1: <u>Draft print</u> (Toner Saver)** -- only if not [color model]	**+**