



PostPrint
Leipzig

PPL – Image and barcode recognition

The reliable system for ensuring the correct sheet sequence during saddle-stitching or collating.



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PPL Eagle

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The reliable system for ensuring the correct sheet sequence during saddle-stitching or collating.

Area of application

The quality and functionality of printed products such as wire-stitched books, adhesive-bound books or standard books are largely determined by the correct order of their pages. During the production process, folded sheets can be lost or mixed up. This renders the printed product unusable and leads to complaints.

The task of the PPL image and barcode recognition system is to detect missing or incorrectly inserted folded sheets. When processing language versions, for example, this ensures that no mix-ups can occur. Barcode recognition can be essential for certification or an audit.

Saddle stitchers, collators, adhesive binding or thread stitching lines can be retrofitted with PPL's image and barcode recognition system. Each individual station is equipped with a camera and production is monitored seamlessly.

The benefits for you

→ **High reliability**

Monitoring the folded sheets ensures the correct page order and, consequently, product quality.

→ **Significantly reduce the complaint rate**

Errors in collation that were previously undetected are identified immediately. A monitoring system even logs the use of the image and barcode recognition system to provide evidence for the customer.

→ **Avoiding waste**

Errors detected at an early stage reduce the effort required to separate incorrectly collated sub-products. These have already undergone a high level of value-added processing and are too valuable to be discarded.

Configuration

Each feeder on a collator or each station on a collating machine is equipped with a camera from the image and barcode recognition system. The camera is installed downstream of the feeder or station in the direction of sheet travel.

During operation, the cameras can be selected individually and thus adapted to each job. It is also possible to operate in a mixed mode combining image and barcode recognition.

The camera settings have been configured to ensure both trouble-free production and the reliable detection of misfed sheets.



Operating modes

→ Image recognition

- Image comparison = optical verification for high security
- Easy to use thanks to an automated learning algorithm
- Self-optimising learning process (exposure time, contrast, position)
- It is no longer necessary to train each individual camera
- Automatic selection of suitable features from up to 15 images
- Quick to deploy after just 4 trained signatures

The reference image is automatically captured in image recognition mode. A maximum of 15 images – distributed across the folded sheets – are captured from four consecutive folded sheets. The system selects the best image and saves it as the reference image, which is displayed on the panel PC. During production, all signatures at a station are compared with the reference image.

→ Barcode recognition

- Barcode monitoring = genuine scanning for maximum security
- Automatic learning and storage of the reference code
- Method: Barcode comparison after decoding, i.e. decryption of the information contained in the barcode
- Supported barcodes: 2/5 Interleaved, Code 39, Code 128 (A, B, C), EAN128, Pharmacode (others on request)
- Barcode orientation: can be vertical or horizontal

Monitoring an order

- Enter the job number and the machine operator's name
- It is possible to change machine operators during the job
- Automatic generation of a log file:
 - » Date
 - » Time
 - » Job number
 - » Operators 1 and 2
 - » Camera on/off
 - » Times when the camera was switched on and off
 - » New calibration process during the job
 - » Statistics and number of images captured per camera
 - » Number of errors
- Once a job has been completed, the log file is automatically sent to up to three email addresses on file

The screenshot shows the 'Setup Logfile' tab of the 'PPL Bildererkennung' application. The dialog box contains several input fields for configuring log file storage and email notifications. The 'Ablageort intern' field is set to 'c:\PpVisionWebView\content'. The 'Ablageort extern (FTP)' field is set to 'ftp://10.75.40.115:2221/'. The 'FTP User Name' is 'francis' and the 'FTP Password' is masked with '****'. Under 'Emailempfänger', there are three email addresses: the first is partially redacted, the second is 'info@postprintleipzig.com', and the third is redacted. The 'Server Name' is 'mail.gmx.net', the 'Port' is '25', the 'User Name' is redacted, and the 'Password' is masked with '****'. The 'From' field is redacted, and the 'Subject' is 'Logbuch Maschine 1'. There is a 'PW Änderung' section with an empty password field. A 'Logfiles' button is located at the bottom center.

Field	Value
Ablageort intern	c:\PpVisionWebView\content
Ablageort extern (FTP)	ftp://10.75.40.115:2221/
FTP User Name	francis
FTP Password	****
Emailempfänger 1	[Redacted]
Emailempfänger 2	info@postprintleipzig.com
Emailempfänger 3	[Redacted]
Server Name	mail.gmx.net
Port	25
User Name	[Redacted]
Password	****
From	[Redacted]
Subject	Logbuch Maschine 1
PW Änderung	[Empty]

Logfiles

Specifications for the areas of application

→ Image comparison mode

There are certain patterns or designs that are unsuitable or unsuitable for stable and secure control. These are characterised by:

- lacking in contrast (gradients), very dark or highly reflective
- text/font size < 8 pt or < 2 mm
- colour combinations that do not show sufficient differences after the greyscale process

→ Barcode mode

- min. height 2 mm / max. length (including quiet zone) 45 mm (please note the specific requirements for each code)
- min. bar/space width 0.4 mm
- distance from the print image or edge ≥ 3 mm

→ For use with Heidelberg Stitchmaster saddle stitchers

The set-up zone is defined as the area between the fold edge (top of the chain roof) and the end of the chain roof, at approximately 110 mm. If a check is required below this point, additional sheet stabilisation measures using a guide plate are necessary. Depending on the actual check position and the characteristics of the folded sheet, this reduces the maximum achievable machine cycle rate.

Features

- Camera including mount (for cover-fold feeders on saddle stitchers)
- Camera including mount for folded-sheet feeders
- Panel PC for display and operation
- Incremental encoder / timing generator
- Gauge (spacing gauge for precise positioning of the cameras)t



→ Camera including mount on a folded sheet feeder of the Stitchmaster ST 450 saddle-stitch machine



→ Panel PC next to the control panel of the Stitchmaster ST 450 saddle-stitch binder

Compatibility

- stitchers
 - » Heidelberg Stitchmaster ST 500
 - » Heidelberg Stitchmaster ST 450
 - » Heidelberg Stitchmaster ST 400
 - » Heidelberg Stitchmaster ST 350
 - » Heidelberg Stitchmaster ST 300
 - » Müller Martini Presto
- adhesive binding lines with collator
- sewing lines with collator
- other machines available on request

