SENSORS FOR THE PRINTING INDUSTRY
State-of-the-art printing presses require state-of-the-art sensing technologies. They demand rugged and versatile sensors that can function consistently in a variety of machines, applications, and environments.

Pepperl+Fuchs has a broad range of cutting-edge sensors that can stand up to the rigors of the printing industry. Whether it’s sheet detection, ensuring consistent web tensioning, or measuring ink levels and monitoring stack height, Pepperl+Fuchs sensors excel at each stage of the process.

And because there’s more than one way to solve a problem, we help you achieve your goals using the technology that’s best for your unique requirements. From ultrasonic, photoelectric, and inductive sensing to rotary encoders and AS-Interface, solutions are available with advanced technologies for long life and increased performance.

With locations on six continents, a knowledgeable engineering and sales staff, high-tech manufacturing capabilities, and a product portfolio that’s second to none, Pepperl+Fuchs has exactly what you need to make your process efficient and reliable—all from a single supplier!
**ULTRASONIC SENSORS**
- UC300-F43, UB300-18GM
- Reliable ink level measurement
- Low-level alarm
- Chemically-resistant housings

**SAFETY LIGHT CURTAINS**
- SLCS, SLCT, SLIP, SafeBox
- Safety light curtains detect entry into hazardous areas
- Safety categories 2 and 4
- Narrow beams provide immunity to interference from reflective surfaces
- SafeBox modular safety controller connects all safety components into one unit

**DISTANCE MEASUREMENT**
- UB500-18GM, UB500-F54, UC500-L2, VDM28
- Reliable detection of position regardless of pallet color or finish
- Analog and discrete outputs
- Ultrasonic and photoelectric solutions available

**LASER THRU-BEAM SENSORS**
- E18/LAS
- High switching accuracy
- Automatic threshold adjustment for safe operation and dust insensitivity
- Eye-safe, laser Class 1

**DIFFUSE MODE SENSORS**
- ML10, KT10, ML4.2
- Fast and accurate detection of a wide variety of media
- Small black-to-white difference with superior background suppression
- Wide variety of sensor styles for use in tight spaces
- Fast response time
- Antistatic lens repels paper dust

**INDUCTIVE SENSORS, ENCODERS**
- ML10, KT10, ML4.2
- Precise detection of metal gear teeth, notches, and cams
- Reduction factor 1 senses all metals at the same distance
- Fast response time
- Wide variety of housings and sensing ranges
VISION SENSORS
BIS510, VOS412-BIS
- Sheet verification by image comparison, barcode, and Data Matrix code reading in one sensor
- For high-speed applications
- Optimized illumination ensures reliable verification on reflective surfaces

DOUBLE SHEET DETECTION
ULTRASONIC SENSORS
UDC-18GM
- Identifies zero, one, or multiple (overlapping) sheets
- Fast response time
- Extremely wide media spectrum, including fine papers, transparencies, cardboard, glossy surfaces, and metal foils

CODE READING
VISION SENSORS
OPTICAL PRINT INSPECTOR
- High-speed reading of 1-D and 2-D codes
- Multicode reading
- Code quality output
- Reads very long barcodes by taking several images
- Logo comparison

LASER BARCODE Scanner
VB14N
- Reads all popular 1-D codes
- Raster scanner option
- Advanced code reconstruction algorithm
- Quick and easy programming and setup

VISION SENSORS
OPTICAL PRINT INSPECTOR
- High-speed reading of 1-D and 2-D codes
- Multicode reading
- Code quality output
- Reads very long barcodes by taking several images
- Logo comparison

RETROREFLECTIVE SENSORS
ML4.2, ML4.2-54-G, ML6, ML6-54-G, R2
- Fast and accurate detection of a wide variety of media
- Reliable detection of transparent materials
- Precise sheet edge detection
- Adjustable contrast, no blind range
- 4-in-1 output minimizes inventory

RETRORREFLECTIVE SENSORS
TRANSPARENT SHEET DETECTION
- Identifies zero, one, or multiple (overlapping) sheets
- Fast response time
- Extremely wide media spectrum, including fine papers, transparencies, cardboard, glossy surfaces, and metal foils

INDUCTIVE SENSORS, ENCODERS
- Precise detection of metal gear teeth, notches, and cams
- Reduction factor 1 senses all metals at the same distance
- Wide variety of housings and sensing ranges

DISTANCE MEASUREMENT DEVICES
VDM18, VDM28
- Precise detection of stack or booklet height
- High-resolution laser triangulation ensures all pages have been assembled
- Accurate height detection regardless of media color

SHEET PRESENCE/TRANSPARENT SHEET DETECTION
- Identifies zero, one, or multiple (overlapping) sheets
- Fast response time
- Extremely wide media spectrum, including fine papers, transparencies, cardboard, glossy surfaces, and metal foils

SHEET VERIFICATION
- Sheet verification by image comparison, barcode, and Data Matrix code reading in one sensor
- For high-speed applications
- Optimized illumination ensures reliable verification on reflective surfaces

BOOKLET THICKNESS
- Precise detection of stack or booklet height
- High-resolution laser triangulation ensures all pages have been assembled
- Accurate height detection regardless of media color

INDUCTION SENSORS, ENCODERS
- Precise detection of metal gear teeth, notches, and cams
- Reduction factor 1 senses all metals at the same distance
- Wide variety of housings and sensing ranges

CYLINDER AND PART POSITION
- Precise detection of metal gear teeth, notches, and cams
- Reduction factor 1 senses all metals at the same distance
- Wide variety of housings and sensing ranges

DOUBLE SHEET DETECTION
RETROREFLECTIVE SENSORS
TRANSPARENT SHEET DETECTION
INDUCTIVE SENSORS, ENCODERS
SHEET VERIFICATION
VISION SENSORS
OPTICAL PRINT INSPECTOR
LASER BARCODE SCANNER
VB14N
DISTANCE MEASUREMENT DEVICES
VDM18, VDM28
BOOKLET THICKNESS
- Precise detection of stack or booklet height
- High-resolution laser triangulation ensures all pages have been assembled
- Accurate height detection regardless of media color

SHEET PRESENCE/TRANSPARENT SHEET DETECTION
ULTRASONIC SENSORS
UDC-18GM
**STITCHING AND BINDING**

**STITCHING TRIGGER POSITION**

**RETROREFLECTIVE SENSORS**
- ML4.2
- Detection of collated signatures for proper stitching
- No blind range
- High switching accuracy
- Scratch-resistant glass lens

**BOOK POSITION**

**THRU-BEAM AND SLOT SENSORS**
- E18/EV18-LAS, GL
- Checks booklet edge to ensure all pages are properly bound
- Narrow laser beam detects hanging sheets due to improper binding

**DOUBLE SHEET DETECTION**

**ULTRASONIC SENSORS**
- UDC-18GM
- Identifies zero, one, or multiple (overlapping) sheets
- Fast response time
- Extremely wide media spectrum, including fine papers, transparencies, cardboard, glossy surfaces, and metal foils

**VISION SENSORS**
- BISS10, VOS412-BIS
- Sheet verification by image comparison, barcode, and Data Matrix code reading in one sensor
- For high-speed applications
- Optimized illumination ensures reliable verification on reflective surfaces

**MAILROOM**

**DOUBLE SHEET DETECTION**

**ULTRASONIC SENSORS**
- UDC-18GM
- Identifies zero, one, or multiple (overlapping) sheets
- Fast response time
- Extremely wide media spectrum, including fine papers, transparencies, cardboard, glossy surfaces, and metal foils

**VISION SENSORS**
- BISS10, VOS412-BIS
- Sheet verification by image comparison, barcode, and Data Matrix code reading in one sensor
- For high-speed applications
- Optimized illumination ensures reliable verification on reflective surfaces

**TRANSPARENT SHEET DETECTION**

**RETROREFLECTIVE SENSORS**
- ML4.2, ML6-54-G, MLA41-54-G
- Reliable detection of transparent materials
- No blind range
- Adjustable contrast
- 4-in-1 output eliminates additional inventory

**VISION SENSORS**
- OPTICAL PRINT INSPECTOR
- High speed reading of 1-D and 2-D codes
- Multicode reading
- Code quality output
- Reads very long barcodes by taking several images
- Logo comparison
- Advanced code reconstruction algorithm
- Quick and easy programming and setup

**ULTRASONIC SENSORS**
- UDC-18GM
- Identifies zero, one, or multiple (overlapping) sheets
- Fast response time
- Extremely wide media spectrum, including fine papers, transparencies, cardboard, glossy surfaces, and metal foils

**VISION SENSORS**
- BISS10, VOS412-BIS
- Sheet verification by image comparison, barcode, and Data Matrix code reading in one sensor
- For high-speed applications
- Optimized illumination ensures reliable verification also on reflective surfaces

**TRANSPARENT SHEET DETECTION**

**VISION SENSORS**
- BISS10, VOS412-BIS
- Sheet verification by image comparison, barcode, and Data Matrix code reading in one sensor
- For high-speed applications
- Optimized illumination ensures reliable verification also on reflective surfaces

**DOUBLE SHEET DETECTION**

**VISION SENSORS**
- BISS10, VOS412-BIS
- Sheet verification by image comparison, barcode, and Data Matrix code reading in one sensor
- For high-speed applications
- Optimized illumination ensures reliable verification also on reflective surfaces

**CODE READING**

**VISION SENSORS**
- Optical Print Inspector
- High speed reading of 1-D and 2-D codes
- Multicode reading
- Code quality output
- Reads very long barcodes by taking several images
- Logo comparison
- Advanced code reconstruction algorithm
- Quick and easy programming and setup

**DOUBLE SHEET DETECTION**

**VISION SENSORS**
- BISS10, VOS412-BIS
- Sheet verification by image comparison, barcode, and Data Matrix code reading in one sensor
- For high-speed applications
- Optimized illumination ensures reliable verification also on reflective surfaces

**MAILROOM**

**DOUBLE SHEET DETECTION**

**VISION SENSORS**
- BISS10, VOS412-BIS
- Sheet verification by image comparison, barcode, and Data Matrix code reading in one sensor
- For high-speed applications
- Optimized illumination ensures reliable verification also on reflective surfaces
### DIE CUTTING

**Stacker Safety**
- Safety light curtains (SLC5, SLT, SLT, SafeBox)
  - Safety light curtains detect entry into hazardous areas
  - Safety categories 2 and 4
  - Narrow beams provide immunity to interference from reflective surfaces
  - SafeBox modular safety controller connects all safety components into one unit

**Distance Measurement Devices**
- UB500-18GM, UB500-F54, UC500-L2, VDM28
  - Precise detection of position regardless of pallet color or finish
  - Analog and discrete outputs
  - Ultrasonic and photoelectric solutions

**Pallet Detection**
- Identifies zero, one, or multiple (overlapping) sheets
  - Fast response time
  - Extremely wide media spectrum, including fine papers, transparencies, cardboard, glossy surfaces, and metal foils

**Double Sheet Detection**
- UDC-18GM
  - Reliable detection of stack lift
  - Insensitive to paper dust and lubricants
  - Compact housing, wear-free detection

**Stack Limit Detection**
- MLA2, MLA4, MLA2
  - Reliable detection due to small black-to-white difference
  - Light tight beam
  - 4-in-1 output
  - Antistatic lens repels paper dust

**Stack Height Monitoring**
- ML41, MLV41, MLV12
  - Compatible with AS-Interface
  - Various color configurations and mounting options
  - Audible alarms

**Operator Safety Protection**
- SLC5, SLT, SLT, SafeBox
  - Monitors status of the safety inputs with one relay
  - Network all e-stops, door interlocks, light curtains, etc. on one cable
  - Significantly simplifies cabling

**Inclination Sensors**
- F99
  - Noncontact sensing of the inclination angle in one or two axes
  - Angular resolution 0.1°
  - Both analog and switching outputs
  - Two adjustable switching points

**Rotation Control**
- Precise product positioning
  - Compact encoder for tight spaces
  - Ultrafast response time

### STACK TURNERS

**Stack Light/E-Stop**
- Illuminated and non-illuminated versions
  - Integrated AS-Interface
  - Safety at Work technology
  - Twist and pull release

**E-Stop**
- Twister and push release

**Distance Measurement Devices**
- UB500-18GM, UB500-F54, UC500-L2, VDM28
  - Precise detection of position regardless of pallet color or finish
  - Analog and discrete outputs
  - Ultrasonic and photoelectric solutions

**Inductive Sensors**
- Limit Switch Style
  - Narrow beams provide immunity to interference from reflective surfaces

**Stack Light**
- Various color configurations and mounting options
  - Audible alarms

**Inclination Measurement**
- MLA4, MLA2
  - Reliable detection of a wide variety of media

**Sheet Alignment (Front Lay, Side Lay)**
- MLA1, MLA2
  - Fast and accurate detection of a wide variety of media
  - Small black-to-white difference with superior background suppression
  - Wide variety of sensor styles for use in light spaces
  - Protected against paper dust and vibration
  - 4-in-1 output minimizes inventory

**Encoders, Positioning Systems**
- PM3X60
  - Ultrafast response time
  - Compact encoder for tight spaces

**Pallet Positioning**
- Precise detection of position regardless of pallet color or finish
  - Analog and discrete outputs
  - Ultrasonic and photoelectric solutions
NUMBER ONE FOR SHEET VERIFICATION

The powerful BIS510 sensor is the number one sensor for sheet verification in all common collating, folding, and binding machines. The vision sensor ensures safe sheet verification in high-speed applications using image comparison and 1-D and 2-D code reading.

- Automatic Teach-in of reference sheets
- Reliable detection of misfed sheets in sheet sequences
- Safe detection even on reflective surfaces
- Innovative image processing technology ensures reading of very large barcodes

FAST AND VERSATILE CODE READING

The Optical Print Inspector from Pepperl+Fuchs is the versatile solution for code reading in the paper, printing, and packaging industry. It offers a number of powerful functions:

- Multicode reading
- Code quality output
- Match code function
- Logo comparison

The sensor reads Data Matrix, Code 2/5, Code39, Code128, and Pharmacode symbologies at high speeds of up to 10 m/s at 30 readings/s. It can also reliably capture and read very long barcodes by taking several images. The large depth of focus of 120 mm allows code reading for varying distances with one setting.

ULTRASONIC DOUBLE SHEET DETECTION

Double sheet detection using the UDC-18GM Series ultrasonic sensors has proven itself in the printing and packaging industry. Printing machine downtime and high repair costs can now be eliminated with double sheet detection. Ultrasonic double sheet detection UDC-18GM sensors provide enhanced machine run time and minimize material waste.

- Insensitive to printing, colors, and reflective surfaces
- Robust and insensitive to dust
- No Teach-in required
- Fast response time
- Great mounting flexibility, easily fits into tight spaces

With the software tool (Device Type Manager of UDC-18GM), process and diagnostic data can be monitored if a double sheet is detected. The amplitude response allows the user to evaluate the sensor signals.

PHOTOELECTRIC MINIATURE PRECISION SENSORS

Our photoelectric product portfolio of miniature precision sensors range from background suppression to retroreflective sensors and measurement sensors. The miniature sensors are used for precise sheet alignment, sheet presence, and edge detection in prepress, press, or postpress machines.

Detectable targets range from deep black and reflective to transparent materials. Infrared light and the triangulation principle guarantee switching accuracy, even under heavy dust. The switching accuracy has a direct impact on the laser-engraving process, the print result, or the die-cutting precision.

- Very high degree of switching accuracy
- Precise object and edge detection
- Miniature housing easily fits into tight spaces
SERIES F43, F54, F77, M12, M18, M30
- Noncontact distance measurement
-Insensitive to material, colors, and reflective surfaces
- Immune to dust
- Analog or switching outputs

UDC-18GM, UGB-18GM
- Ultrasonic Thru-beam sensors detect double sheets and splices
- High-speed detection
-Insensitive to material, colors, and reflective surfaces
- Immune to dust

PHOTOELECTRIC
ML4.2, ML6, MLV41, R2
- Precise, noncontact object and edge detection
- Sharp background suppression sensors
- Retroreflective and Thru-beam sensors
- Wide range of housing sizes

OPTICAL IDENTIFICATION
OPTICAL PRINT INSPECTOR, BIS510, VOS412-BIS, VB14N
- High-speed reading of 1-D and 2-D codes
- Sheet verification for collating, folding, and binding machines
- Reads very large barcodes
- Powerful functions like multocode reading, code quality output, match code function, and logo comparison

CONTRAST SENSORS AND COLOR SENSORS
SERIES M4, M5
- Precise positioning
- Linear position measurement or rotation angle measuring
- Wear-free, robust, and immune to dust and noise

CAPACITIVE SENSORS
SERIES F46, F64, M12, M18, M30
- Detection of metal, plastic, liquid, or granular materials
- Adjustable sensitivity for more flexibility in application
- Wide variety of models

INDUCTIVE SENSORS
SERIES M4, M5
- Robust and miniature design
- Precise detection of metal
- Wide variety of models

CAPACITIVE SENSORS
SERIES F46, F64, M12, M18, M30
- Detection of metal, plastic, liquid, or granular materials
- Adjustable sensitivity for more flexibility in application
- Wide variety of models

ULTRASONIC SENSORS
 SERIES F43, F54, F77, M12, M18, M30
- Noncontact distance measurement
-Insensitive to material, colors, and reflective surfaces
- Immune to dust
- Analog or switching outputs

ULTRASONIC DOUBLE SHEET AND SPLICE DETECTION
UDC-18GM, UGB-18GM
- Ultrasonic Thru-beam sensors detect double sheets and splices
- High-speed detection
-Insensitive to material, colors, and reflective surfaces
- Immune to dust

PHOTOELECTRIC
ML4.2, ML6, MLV41, R2
- Precise, noncontact object and edge detection
- Sharp background suppression sensors
- Retroreflective and Thru-beam sensors
- Wide range of housing sizes

OPTICAL IDENTIFICATION
OPTICAL PRINT INSPECTOR, BIS510, VOS412-BIS, VB14N
- High-speed reading of 1-D and 2-D codes
- Sheet verification for collating, folding, and binding machines
- Reads very large barcodes
- Powerful functions like multocode reading, code quality output, match code function, and logo comparison

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- Adjustable sensitivity for more flexibility in application
- Wide variety of models

ROTARY ENCODERS
SERIES RV18, RV58, CVW18
- Positioning tasks and detection of rotational movements
- Incremental and absolute rotary encoders
- Single-turn and multiturn versions
- Certified functional safety for plants up to SIL 3 and PLe

OTHERS
PRODUCTS FOR INDUSTRY
- SENSORS FOR THE PRINTING INDUSTRY

- SELECTED SENSORS
- SERIES FOR THE PRINTING INDUSTRY

- ADMINISTRATION
- SELECTION GUIDE

- PHOTOELECTRIC
- INDUCTIVE
- CAPACITIVE
- ULTRASONIC
- ULTRASONIC DOUBLE SHEET AND SPLICE DETECTION
- OPTICAL IDENTIFICATION
- CONTRAST SENSORS AND COLOR SENSORS
- INDUCTIVE POSITIONING SYSTEM
- ROTARY ENCODERS

- OTHERS
- PRINTING ENCODERS

- VISION
- OTHERS
Pepperl+Fuchs sets the standard in quality and innovative technology for the world of automation. Our expertise, dedication, and heritage of innovation have driven us to develop the largest and most versatile line of industrial sensor technologies and interface components in the world. With our global presence, reliable service, and flexible production facilities, Pepperl+Fuchs delivers complete solutions for your automation requirements—wherever you need us.