SENSORS FOR THE

PRINTING INDUSTRY

PEPPERL+FUCHS
SENSING YOUR NEEDS

As a specialist in sensors for the graphic industry, Pepperl+Fuchs offers a wide variety of sensing technologies.

We introduced the world's first inductive proximity sensor in 1958, and over the years we've extended our product portfolio to include ultrasonic, photoelectric, and capacitive sensors, rotary encoders, vision sensors, interface modules, and a complete line of cordsets and accessories. We continue to increase our range of established base technologies with ongoing innovations. The acquisition of the Visolux (2000, photoelectric sensors) and Omnitron (2004, data matrix readers) brands has enabled us to further expand and define our position in the print and paper industry.

With this wide product offering – available from a single source – our experts can help you choose the appropriate sensing technologies for your specific application, no matter where you're located. With locations on six continents, a global presence enables Pepperl+Fuchs to offer the best of both worlds: extremely high engineering standards combined with efficient, low-cost manufacturing facilities. We have exactly what you need to make your process efficient and reliable.

PEPPERL+FUCHS – COMPETENCE AT A GLANCE

- A proven record of delivering reliable sensors to the graphic industry for over 30 years. Many of those early sensors are still functioning reliably.
- We continue to provide these sensors as continuity products that will be available as long as you need them.
- Our stability and proven record ensure a long-term partnership.
- Specified by key manufacturers and OEMs.

The following pages include a short overview of typical applications for our sensors in various printshop machines. Let us show you how we can improve your printing process. Our specialists will be glad to help you.
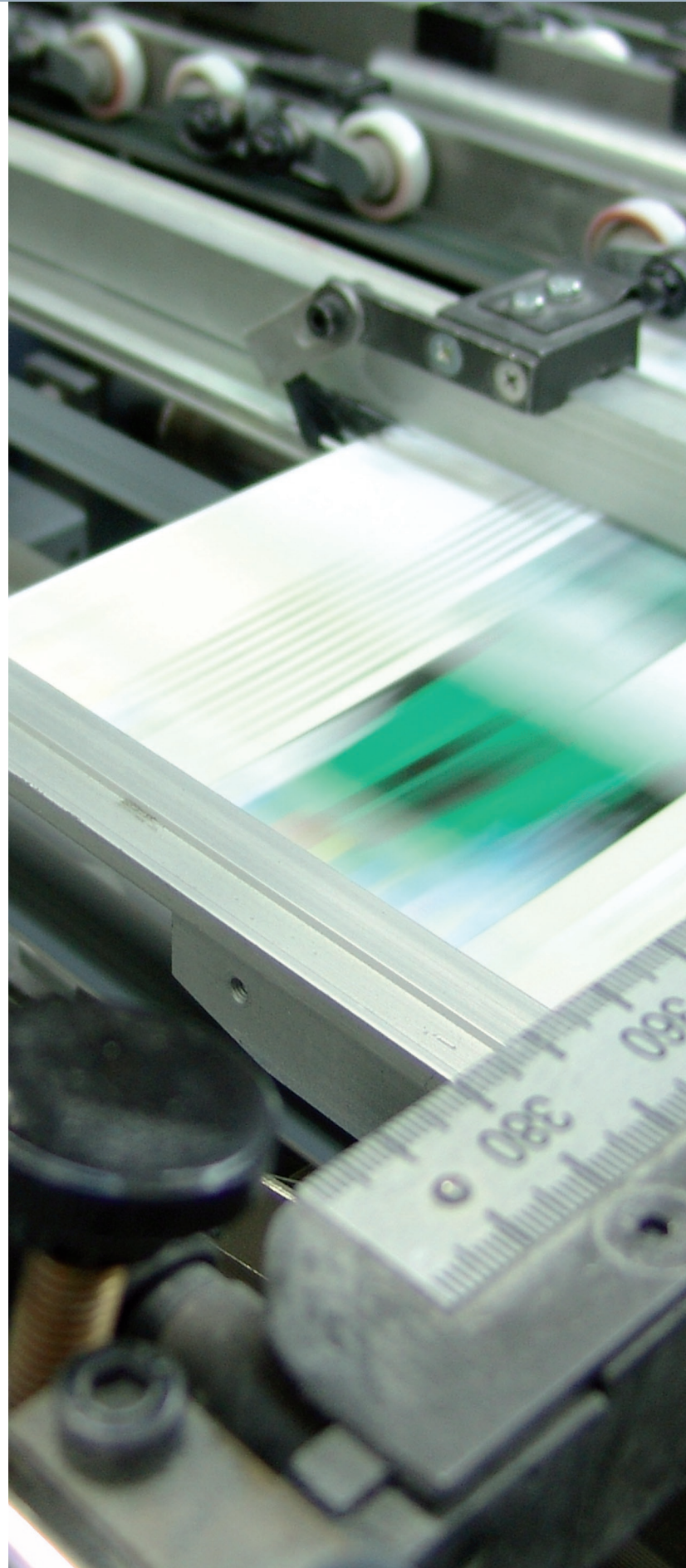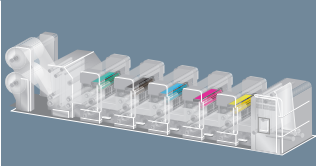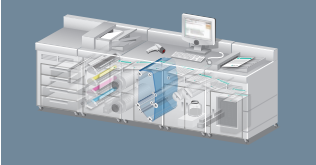
TABLE OF CONTENTS
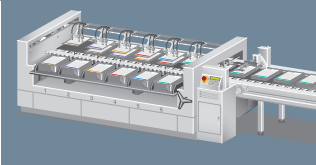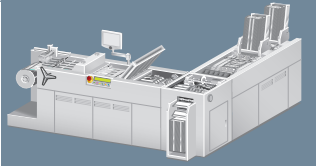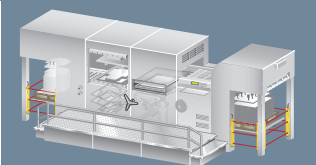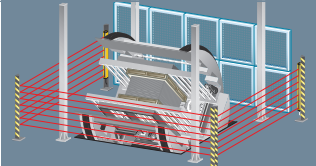
SHEET FED PRINTING

STACKER SAFETY
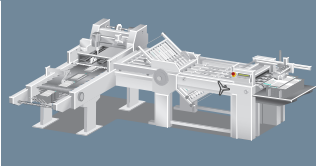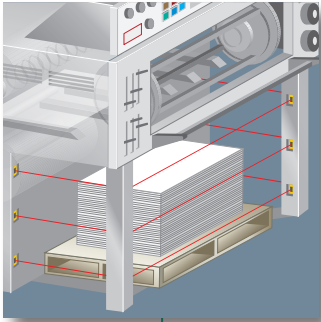
SLCS • SLCT • SLP • SAFEBOX

- 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

## DATA AND ENERGY TRANSFER

WIS

- Wireless transfer of power and sensor signals from moving or rotating parts
- No mechanical or electrical contact required
- Allows sensor installation on moving equipment (drums, modules, turntables)
- Connects up to four sensors
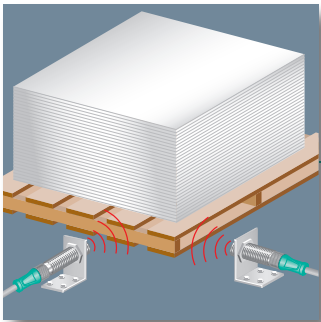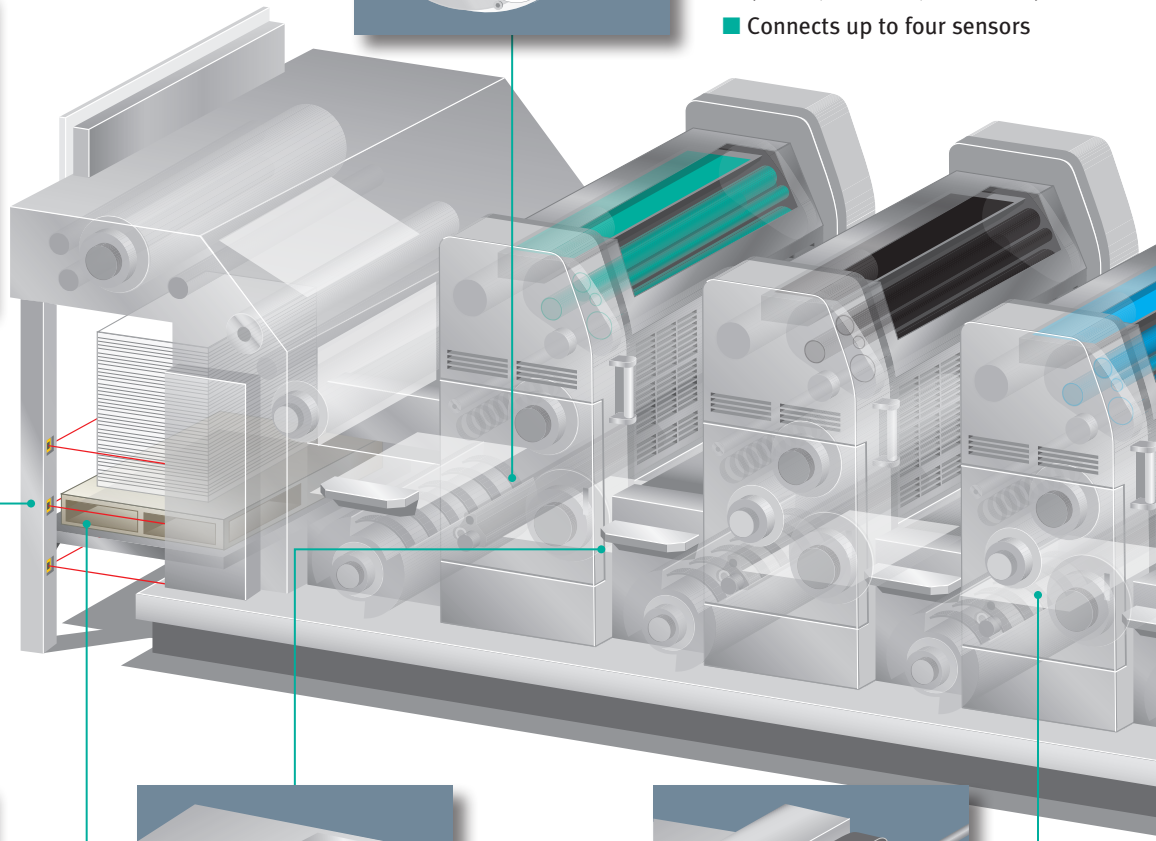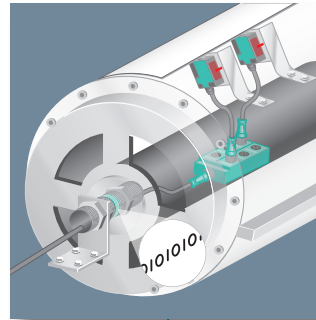
## PALLET DETECTION

VDM28 • UB500-18GM • UB500-12GM

- Reliable and precise detection of position regardless of pallet color or finish
- Analog and discrete outputs
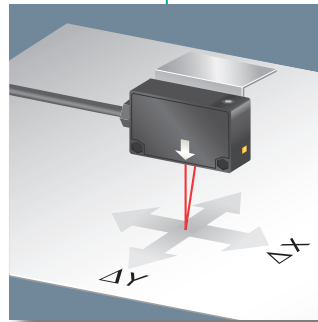
MOTION DETECTION

MS32

- Measures direction and speed
- Precise detection of motion in x and/or y axes
- Non-contact detection of irregular surfaces without requiring an edge or reference mark
- Alarm output for overspeed conditions
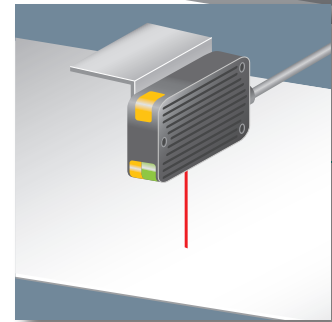
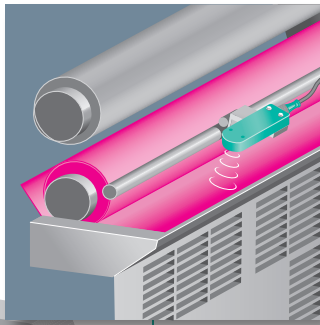## SHEET PRESENCE

MLV41 • LT66 • ML4.2 • E18/EV18-LAS

- Detects media directly while ignoring reflective surfaces close to the target
- Enhanced edge detection using background suppression sensors
- Fast response time
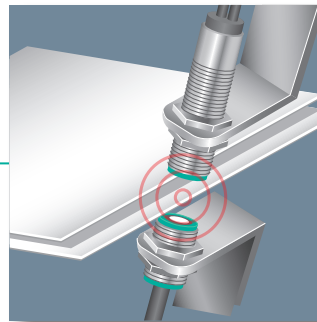
INK LEVEL DETECTION

UCX-F43

- Reliable ink level measurement
- Low-level alarm
- Chemically-resistant housings
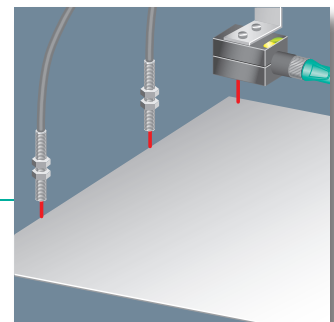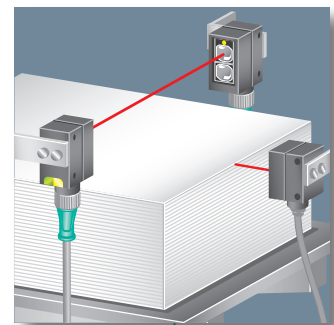
DOUBLE SHEET DETECTION

UDC-18GM-xxx

- Identifies zero, one, or multiple (overlapping) sheets
- Fast response time
- Extremely wide range of media, including fine papers, transparencies, cardstock, glossy surfaces, and metal foils

STACK HEIGHT MONITORING
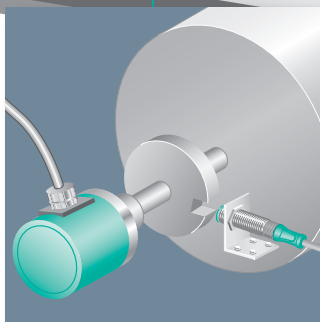
MLV41 • MLV12 • ML4.2 • M18-LAS-P

- Reliable detection due to small black-to-white difference
- Small, sharp light beam
- 4-in-1 output
- Antistatic lens repels paper dust

SHEET ALIGNMENT (FRONT LAY, SIDE LAY)

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
- Protected against paper, dust, and vibration
- 4-in-1 output minimizes inventory

CYLINDER AND PART POSITION

INDUCTIVE • PMI • ENCODERS

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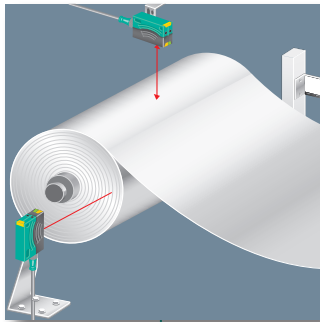- Wide variety of housings and sensing ranges

WEB PRINTING

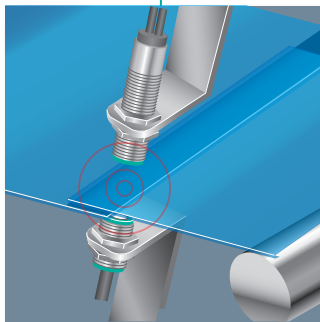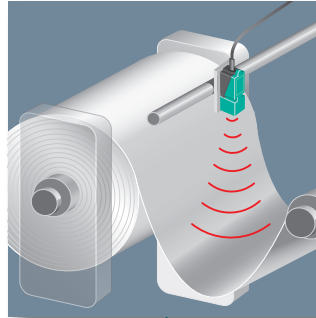## LOW ROLL DETECTION

VDM28 • RL28 • UB500-30GM

- Monitors web stock diameter
- Sends signal for automatic or manual splicing
- Insensitive to dust and harsh environments
- Immune to roll color
- Analog and discrete outputs

SPLICE DETECTION

UGB-18GM

- Reduces waste by identifying web splices
- Accurately detects manufacturer's, automatic, and manual splices
- Capable of double layer and label detection
- Operates with printed, colored, and glossy surfaces
- Simple, quick alignment and setup

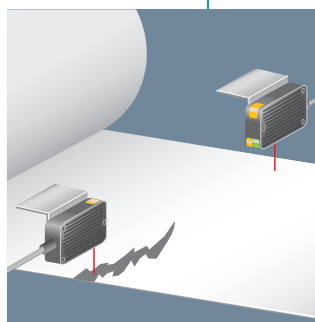## WEB TENSIONING

VDM28 • UB300-F54

- Ensures consistent web tension
- Consistent end of roll/splice detection
- Unaffected by paper dust
- Versatile mounting
- Solutions include photoelectric or ultrasonic technologies

WEB BREAK MONITORING

LT66, LT63, UB120-12GM

- Reliable and compact photoelectric sensors
- Easy setup and diagnostics
- Tamperproof or adjustable versions available
- Reduces scrap
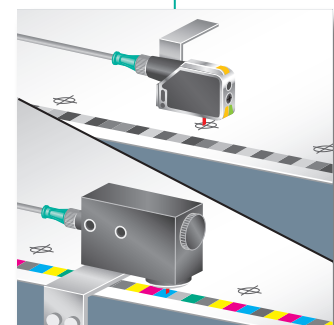
PRINT MARK TRIGGER

DKxx, DFxx

- Compact, rugged housings
- Adjustable connector positions
- High-visibility, dual-indicator LEDs
- Static and dynamic teach-in
- 4-in-1 output minimizes inventory

DATA AND ENERGY TRANSFER

WIS

- Wireless transfer of power and sensor signals from moving or rotating parts
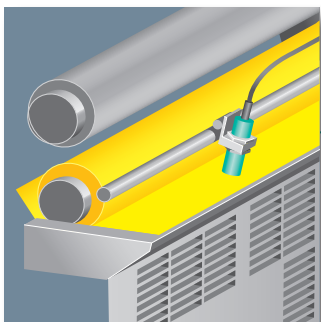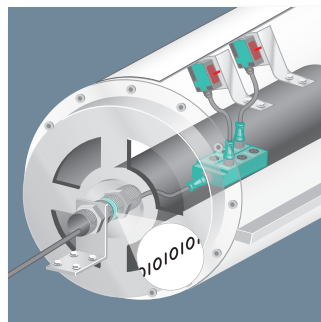- No mechanical or electrical contact required
- Allows sensor installation on moving equipment (drums, modules, turntables)
- Connects up to four sensors

INK LEVEL DETECTION

UC300-F43 • UB300-18GM

- Reliable ink level measurement
- Low-level alarm
- Chemically-resistant housings

OPERATOR SAFETY PROTECTION

AS-INTERFACE SAFETY AT WORK

- Monitors status of the safety inputs with one relay
- Network all e-stops, door interlocks, light curtains, etc. on one cable
- Significantly simplifies cabling
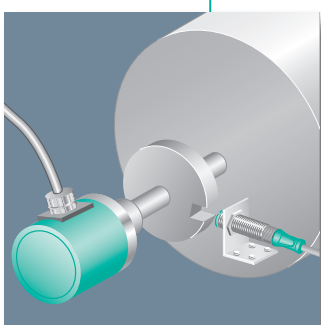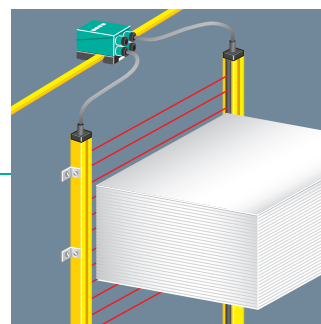
CYLINDER AND PART POSITION

INDUCTIVE • PMI • 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
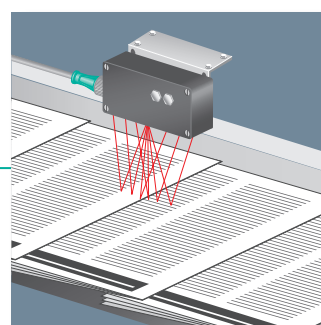
BOOKLET COUNTING AND SHINGLE DETECTION

RST

- Integrated pulse divider switches after n counts
- Detect shingle heights down to 0.1 mm
- Accurate detection of glossy and shiny surfaces

DIGITAL PRINTING AND ATMs

DOUBLE SHEET / SPLICE DETECTION

UDC • UDB • UGB-18-GM

- Identifies zero, one, or multiple (overlapping) sheets
- Fast response time
- Extremely wide media spectrum, including fine papers, transparencies, cardstock, glossy surfaces, and metal foils
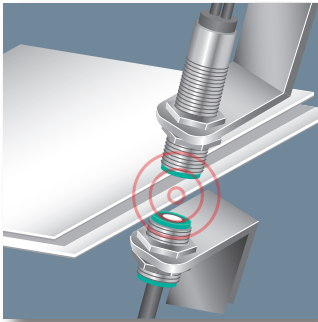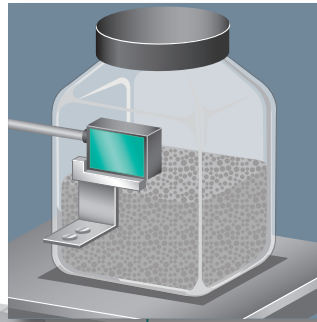
### TONER LEVEL

CBNX-F64 • CBNX-F46

- Reliably detects granular or powdered ink substances
- Detect contents through toner cartridge/waste bottles
- Tried and tested technology

PRINT MARK DETECTION

DK12 • DF12

- Compact, rugged, die-cast housing
- Adjustable connector position
- High-visibility, dual-indicator LEDs
- Static and dynamic teach-in
- 4-in-1 output minimizes inventory
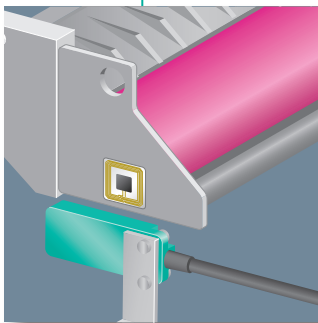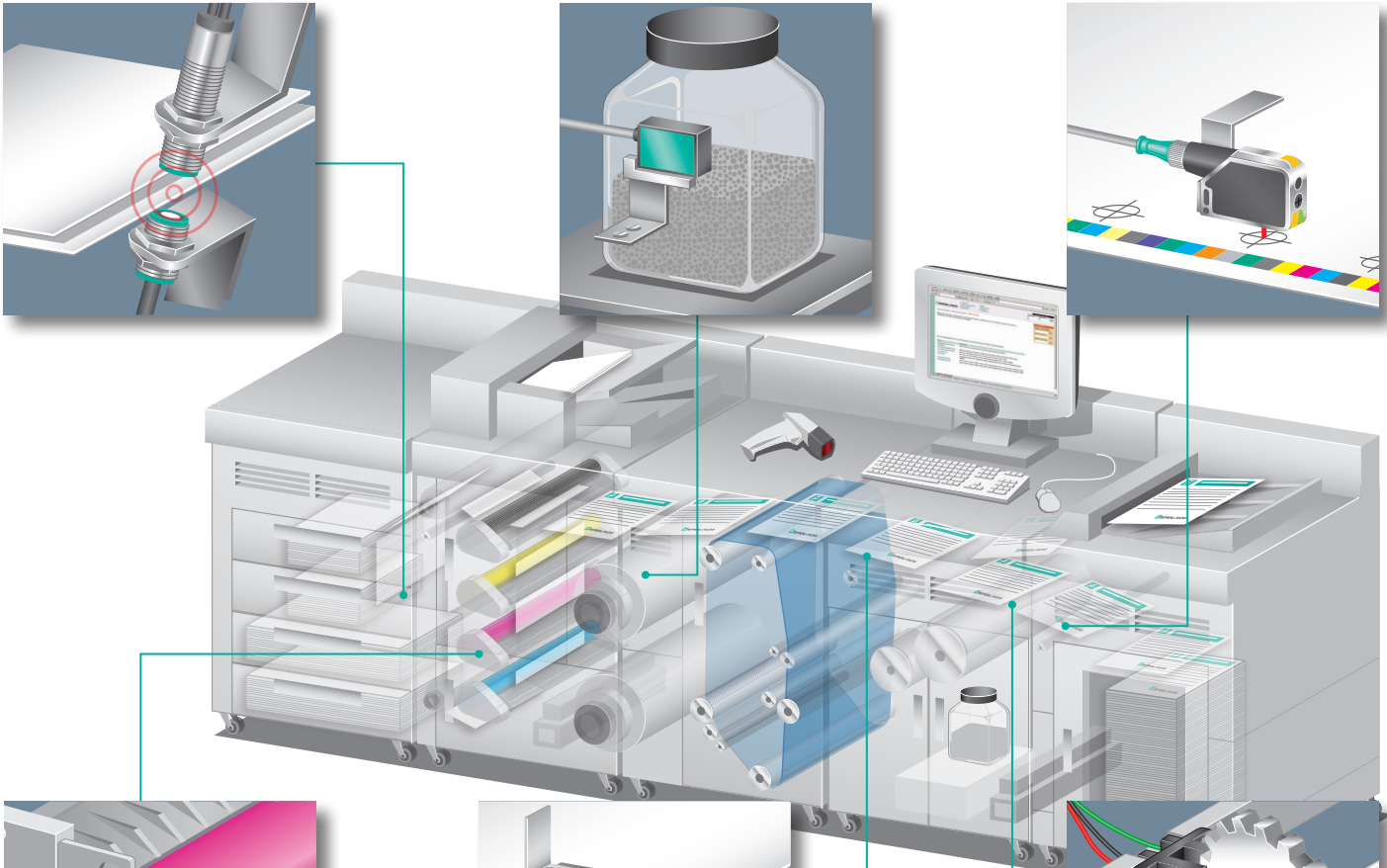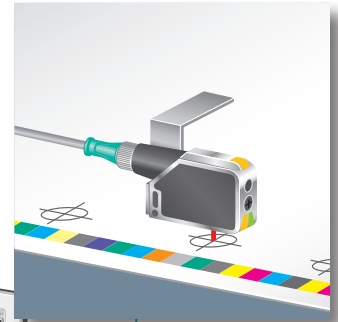
CONSUMABLES IDENTIFICATION

RFID

- RFID enables automatic identification of consumables
- Tracking and tracing
- Reliable identification in harsh environments
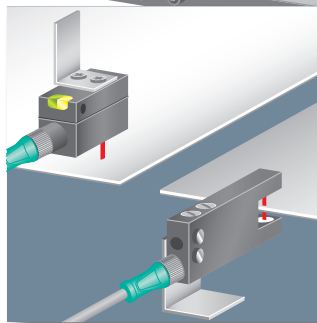
SHEET PRESENCE / EDGE DETECTION

GL2 • GL3 • GL5 • SU18 • SU19 • ML7

- Consistent frontal & lateral alignment
- Enhanced precision with background suppression sensors
- 4-in-1 output eliminates additional inventory
- Wide range of housing sizes available
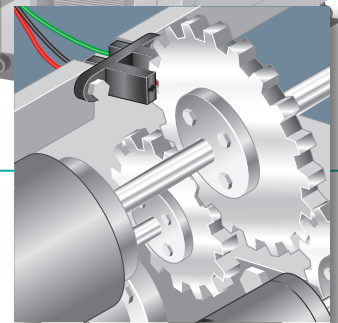
LOW-COST POSITION FEEDBACK

GL2 • GL3 • GL5

- Compact, cost-effective, accurate
- Designed to fit in tight spaces
- Extremely fast response time
- Easy mounting
- Wide variety of housing styles

FOLDING

SHEET PRESENCE

ML4.2 • MLV41

- Reliable media detection due to low black-to-white difference and good background suppression
- Various housing shapes available
- Antistatic glass window prevents false switching due to dust
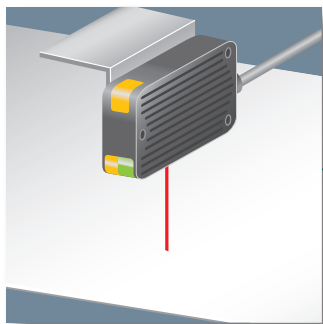
SHEET VERIFICATION

VOS410-BIS

- Industrial vision verifies the printed image itself without using barcodes
- All-in-one, high-speed vision sensor
- Powerful, integrated illumination
- Automatic teach-in option
- Tamperproof, rugged design

STACK HEIGHT MONITORING

MLV41 • ML4.2 • FTK40 • CBN12

- Reliable detection due to small black-to-white difference
- Small, sharp light beam
- 4-in-1 output
- Antistatic lens repels paper dust
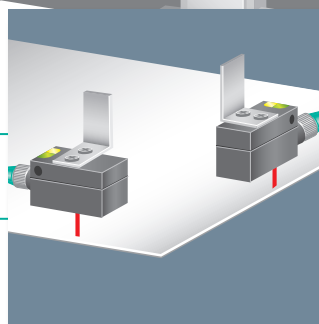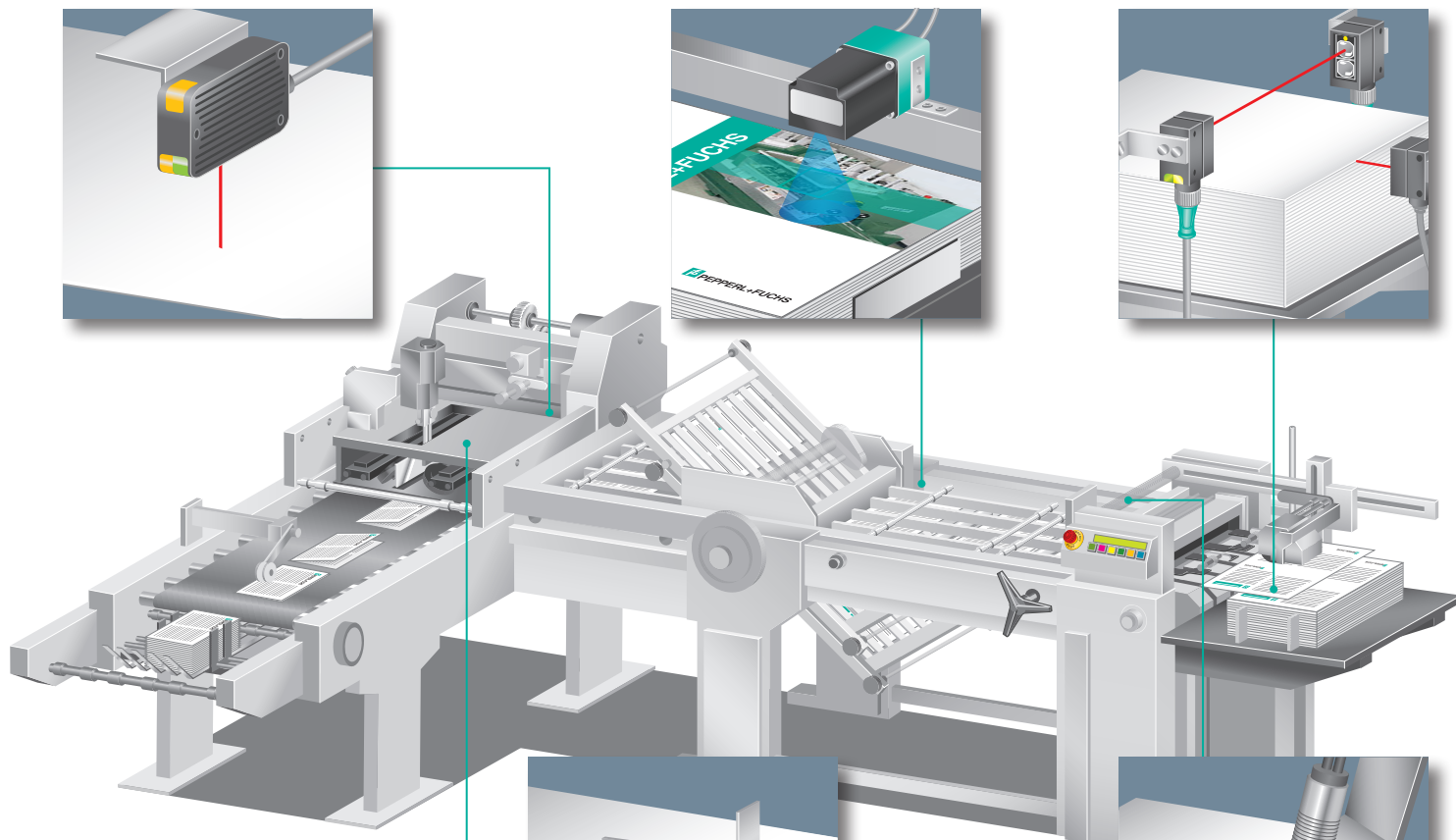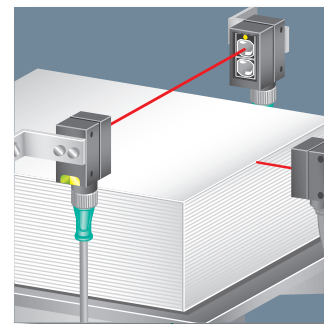
SHEET EDGE TRIGGER

ML4.2

- Consistent frontal & lateral alignment
- Enhanced precision with background suppression sensors
- Protected against paper dust and vibration
- 4-in-1 output eliminates additional inventory
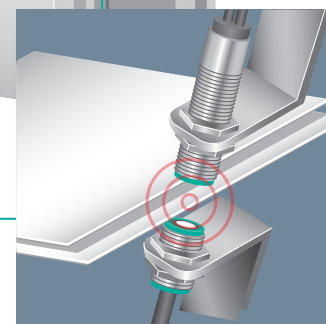
DOUBLE SHEET DETECTION

UDC-18GM

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

COLLATING • STITCHING • BINDING
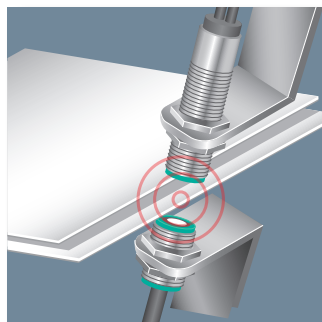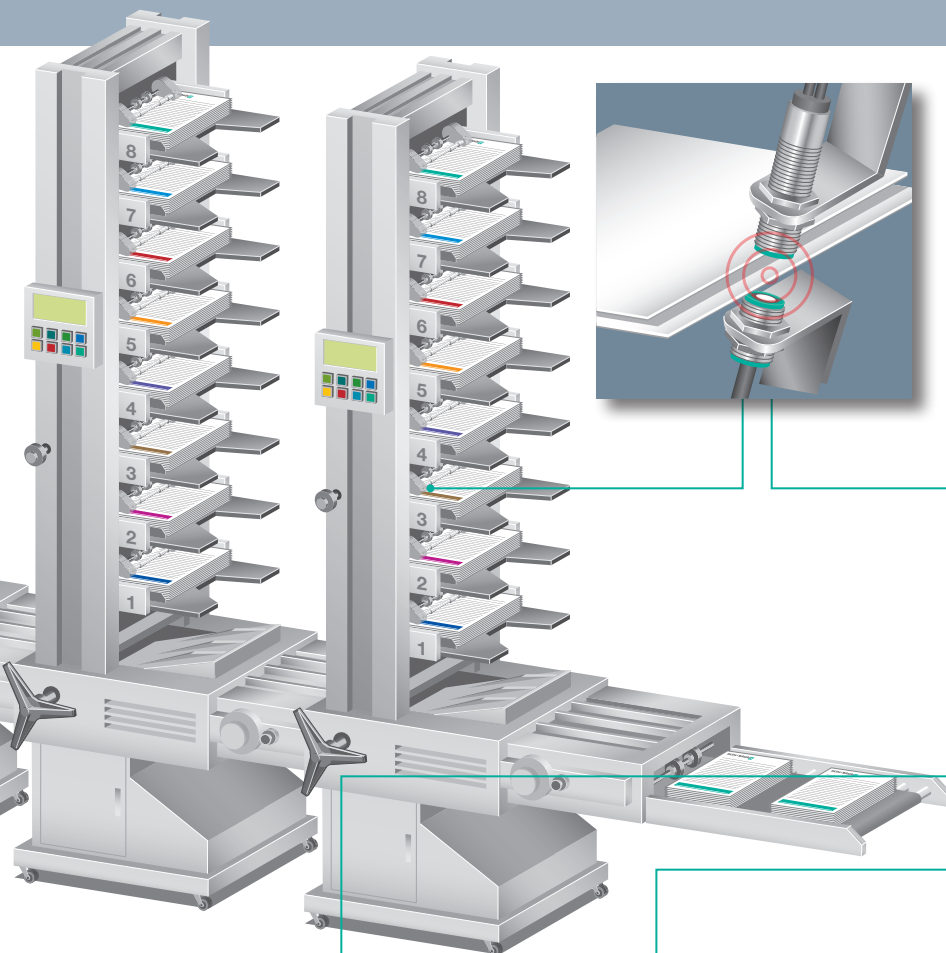
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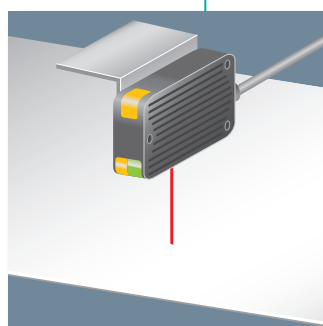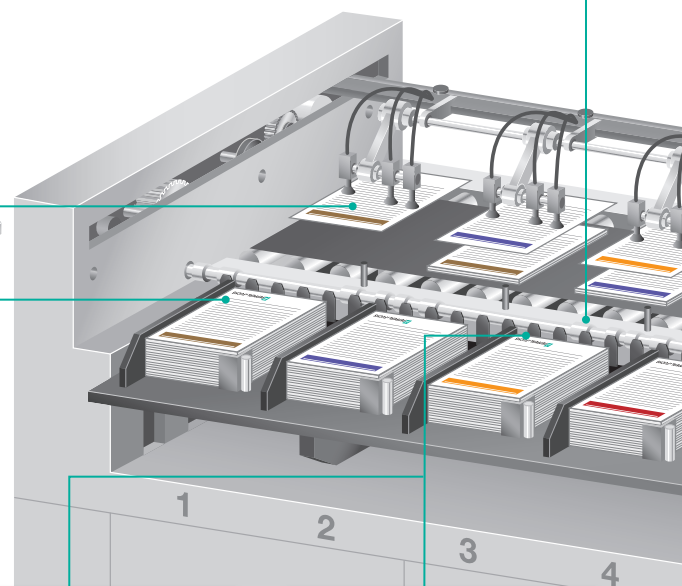
SHEET PRESENCE

ML9 • ML4.2 • ML6

- 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
- Protected against paper dust and vibration
- 4-in-1 output minimizes inventory

SHEET VERIFICATION

VOS410-BIS

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- All-in-one, high-speed vision sensor
- Powerful, integrated illumination
- Automatic teach-in option
- Tamperproof, rugged design

CODE READING

MAC400, BARCODE

High-Speed Barcode Imaging

- Reads 1-D and 2-D codes
- Reads and prints codes in various magnifications
- Reads codes when distorted or partially lost
- High accuracy, high resolution

Laser Barcode Scanners

- Reads all popular 1-D codes
- Raster scanner option
- Advanced code reconstruction algorithm
- Quick–and–easy programming and setup

BOOKLET THICKNESS

VDM18

■ Precise detection of stack or booklet height

■ High-resolution laser triangulation ensures all pages have been assembled

■ Accurate height detection regardless of media color
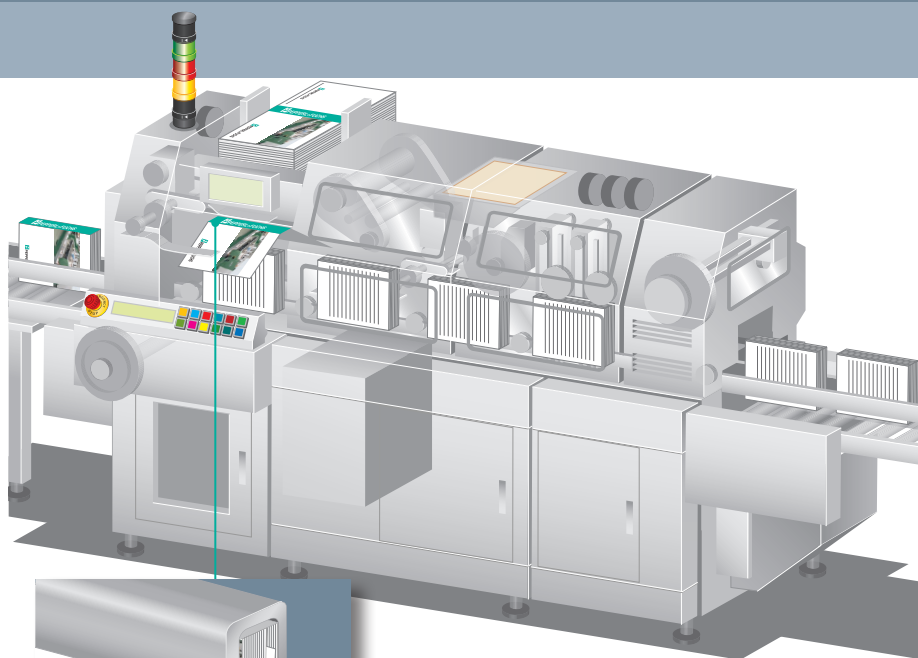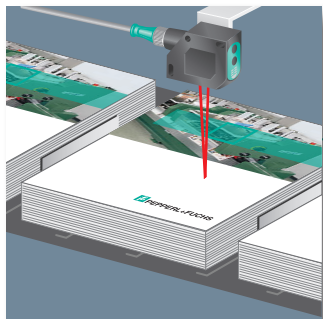
BOOK POSITION

GLxx • ML4.2 • E18-LAS

■ Checks booklet edge to ensure all pages are properly bound

■ Narrow laser beam detects hanging sheets due to improper binding

PEPPERL+FUCHS

5   6
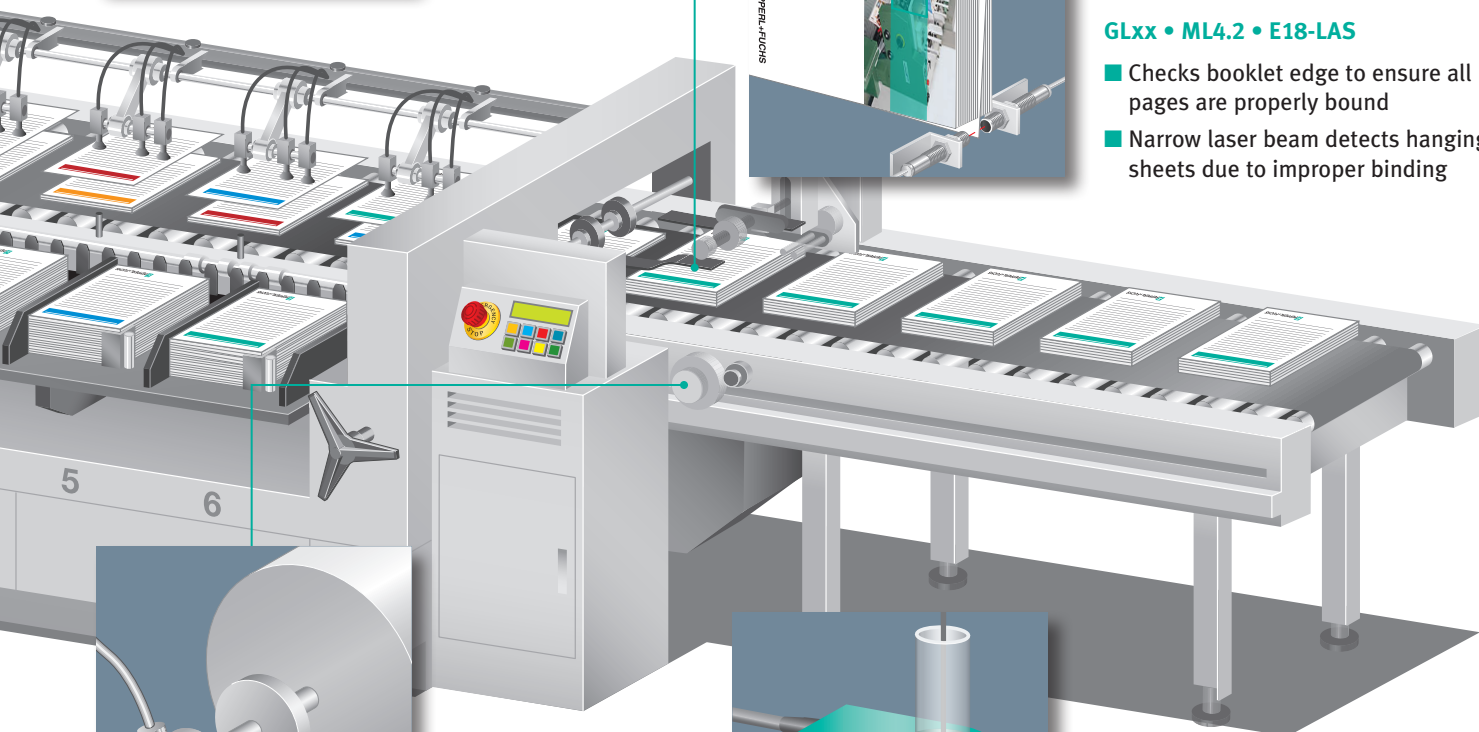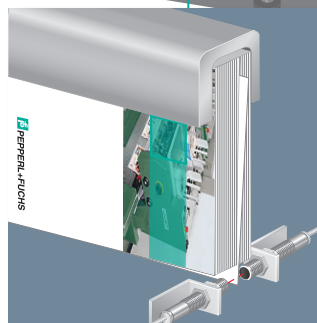
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■ Precise detection of metal gear teeth, notches, and cams

■ Reduction factor 1 senses all metals at the same distance

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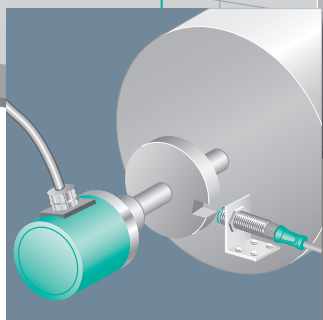
WIRE/STAPLE DETECTION

INDUCTIVE

■ Wire detection and breakage monitoring

■ Detects presence of staple in the assembled booklet
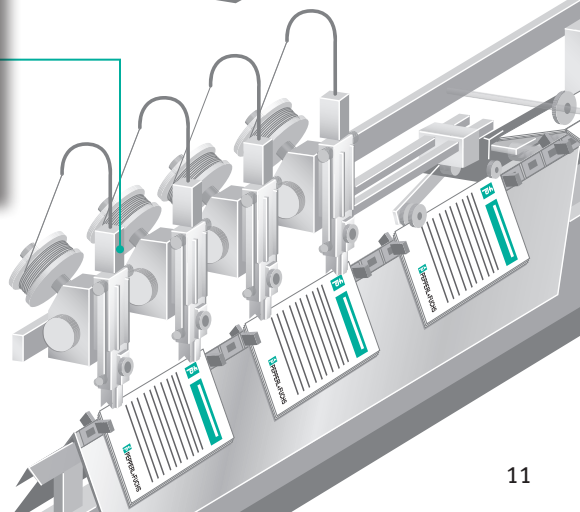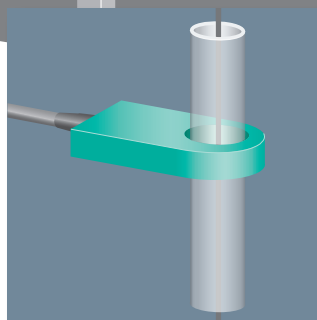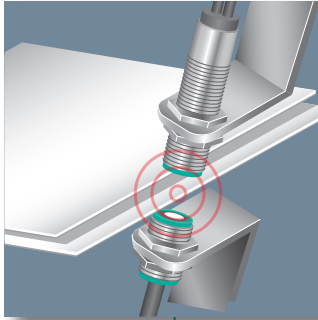
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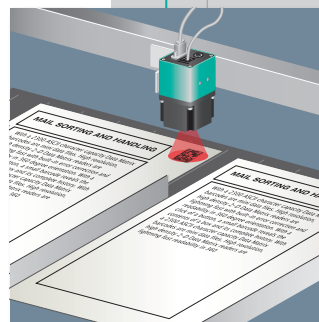
SHEET PRESENCE

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- Consistent frontal & lateral alignment
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- Wide range of housing sizes available

PRINT MARK TRIGGER

DKxx • DFxx

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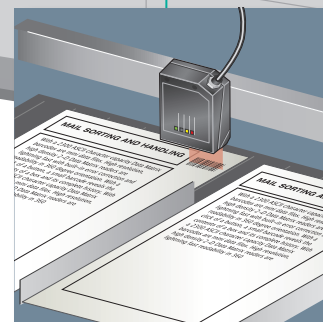- Tamperproof, rugged design

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PAPER CUTTING • DIE CUTTING

STACKER SAFETY

SLCS • SLCT • SLP • SAFEBOX

- Safety light curtains detect entry into hazardous areas
- Safety categories 2 and 4
- Narrow beams provide immunity to interference from reflective surfaces
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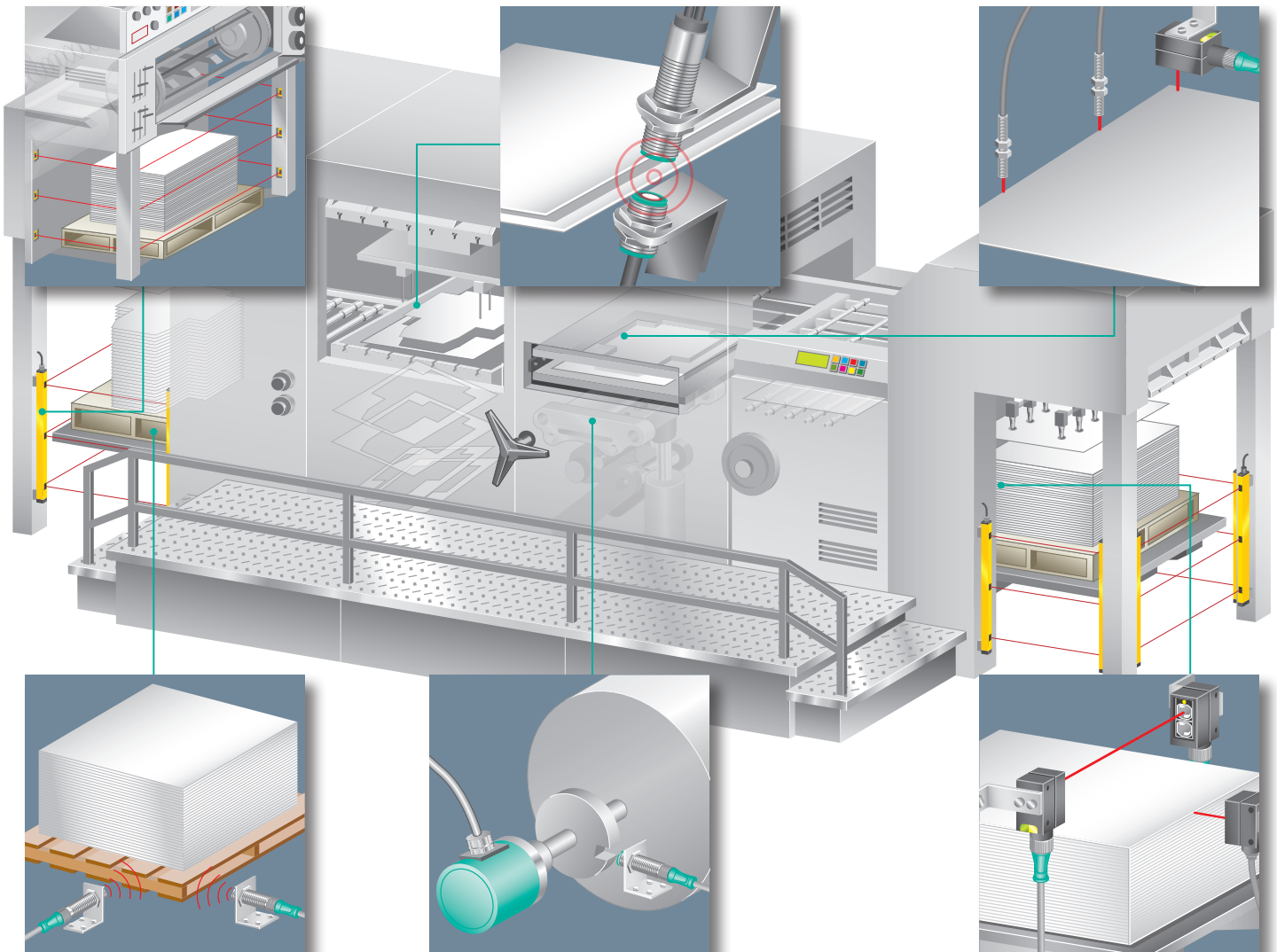
PALLET DETECTION

VDM28 • UB500-18GM • UB500-12GM

- Reliable and precise detection of position regardless of pallet color or finish
- Analog and discrete outputs

## CYLINDER AND PART POSITION

INDUCTIVE • PMI • ENCODERS

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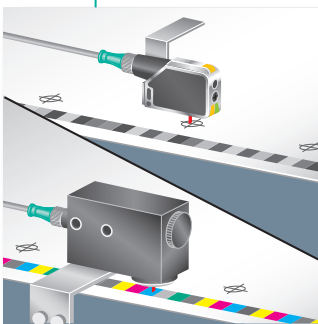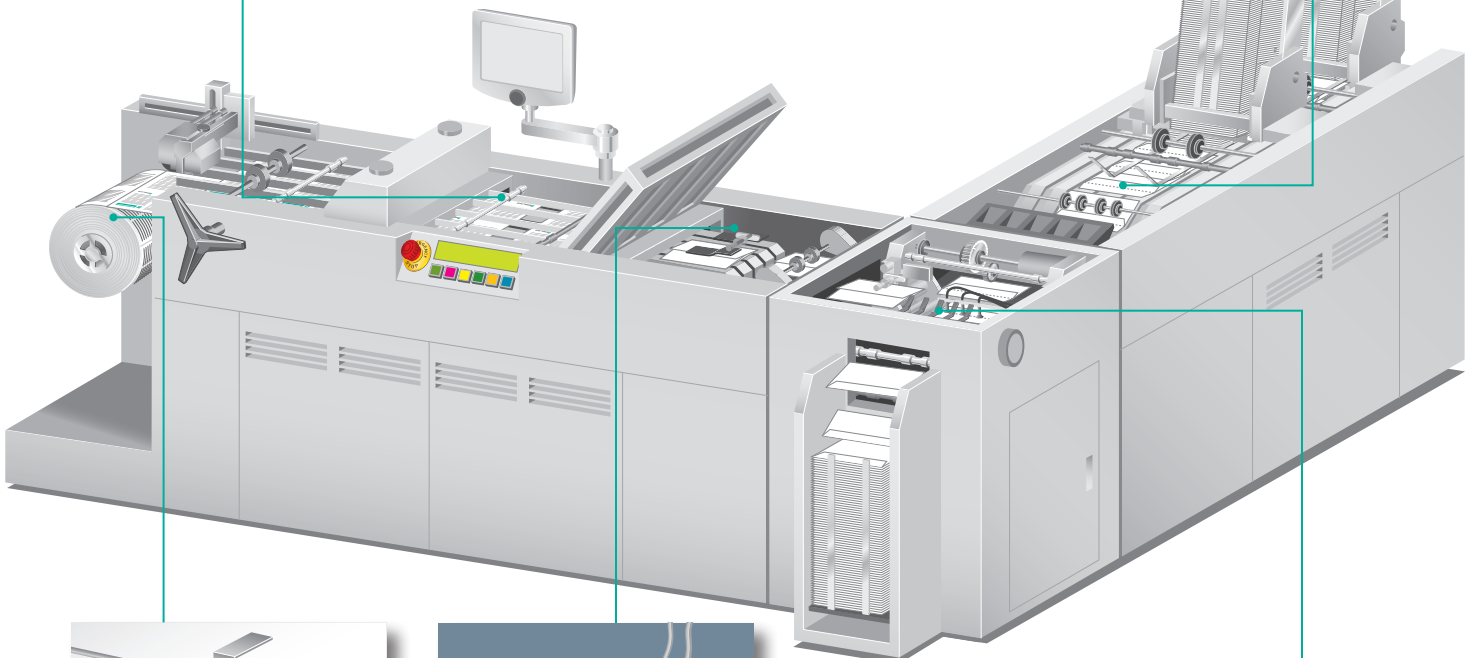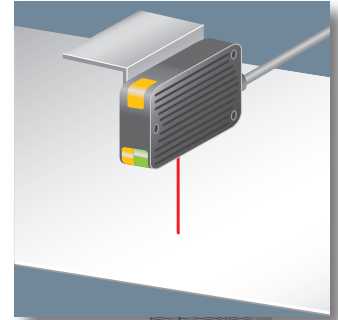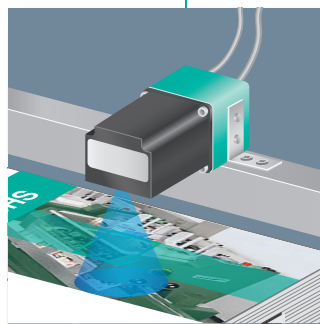- Wide variety of housings and sensing ranges

STACK HEIGHT MONITORING

MLV41 • MLV12 • ML4.2 • M18-LAS-P

- Reliable detection due to small black-to-white difference
- Small, sharp light beam
- 4-in-1 output
- Antistatic lens repels paper dust

STACK TURNERS

OPERATOR SAFETY PROTECTION

SLCS • SLCT • SLP • SAFEBOX
AS-INTERFACE SAFETY AT WORK

- Monitors status of the safety inputs with one relay
- Network all e-stops, door interlocks, light curtains, etc. on one cable
- Significantly simplifies cabling
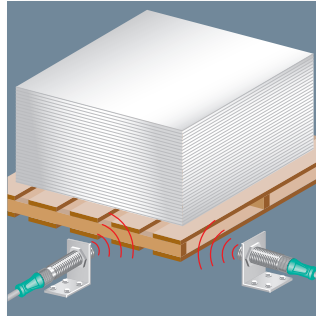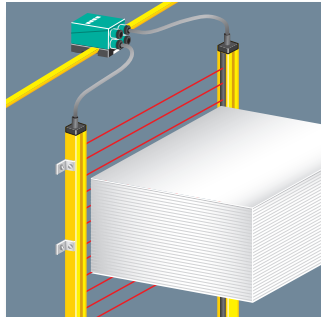
PALLET POSITIONING

VDM28 • UB500-18GM • UB500-12GM

- Reliable and precise detection of position regardless of pallet color or finish
- Analog and discrete outputs

ROTATION CONTROL

PMI360 • ENCODERS

- Precise product positioning
- Compact encoder for tight spaces
- Ultrafast response time
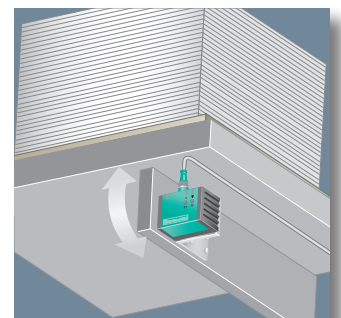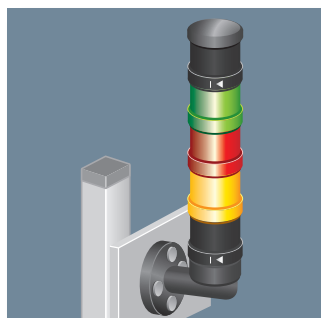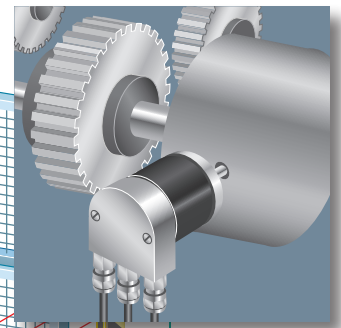
STACK LIGHT/ E-STOP

AS-INTERFACE SAFETY AT WORK

Stack Light
- Compatible with AS-Interface
- Various color configurations and mounting options
- Audible alarms

E-stop
- Illuminated and nonilluminated versions
- Integrated AS-Interface Safety at Work technology
- Twist and pull release

INCLINATION MEASUREMENT

INX360D-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

SELECTION GUIDE

		Sheet Fed Printing	Web Printing	Digital Printing /ATMs	Folding	Collating, Stitching, Binding	Mailroom	Paper Cutting, Die Cutting	Stack Turners
PHOTOELECTRIC	ML4.2	■	■	■	■	■	■	■	
	ML6								
	ML7			■		■	■	■	
	ML9			■		■	■		
	MLV12	■	■	■		■		■	
	MLV41	■	■		■	■			
	RL28		■						■
	LT63	■	■					■	
	KT10	■						■	
	M18-LAS-P	■			■			■	■
	E18-LAS	■						■	
	SU18			■		■	■		
	SU19			■		■	■		
	DK20		■	■			■		
	DK3X		■	■			■		
	DK12		■	■			■		
	DF20		■	■			■		
	DF12		■	■			■		
	MS32	■	■	■				■	
	RST					■	■		
	GL2 .. GL5			■		■	■		
	GLxx					■			
	VDM18					■	■		
	VDM28		■	■					■
	VDM35		■	■					■
	SLCT	■	■					■	■
	SLCS	■	■					■	■
	SLP	■	■					■	■
	SafeBox	■	■					■	■
	SLA12-LAS	■	■					■	■
VISION	VOS410-BIS				■	■	■		
	MAC400			■	■	■	■		
	Barcode			■	■	■	■		
INDUCTIVE	diameter 4	■	■	■	■	■	■	■	■
	M5	■	■	■	■	■	■	■	■
	M8	■	■	■	■	■	■	■	■
	M12	■	■	■	■	■	■	■	■
	M18	■	■	■	■	■	■	■	■
	M1K	■	■	■	■	■	■	■	■
	F1 Cube	■	■	■	■	■	■	■	■
	F2 Cube	■	■	■	■	■	■	■	■
	F79	■	■	■	■	■	■	■	■
	V3	■	■	■	■	■	■	■	■
	FP		■						■
	Ring					■			
	PMI	■	■				■	■	
	WIS	■	■						
	F99 Inclination Sensor		■						■
CAPACITIVE	F64	■		■	■				
	F46			■	■				
	30GM	■			■			■	
ULTRASONIC	US M12	■	■		■				
	US M18	■	■		■				
	UDC	■		■	■	■	■	■	
	UGB		■	■					
OTHERS	Encoders	■	■	■	■	■	■	■	■
	RFID			■					
	AS-Interface Safety	■	■			■	■	■	■
	Cordsets	■	■	■	■	■	■	■	■
	Fiberoptics			■		■	■		

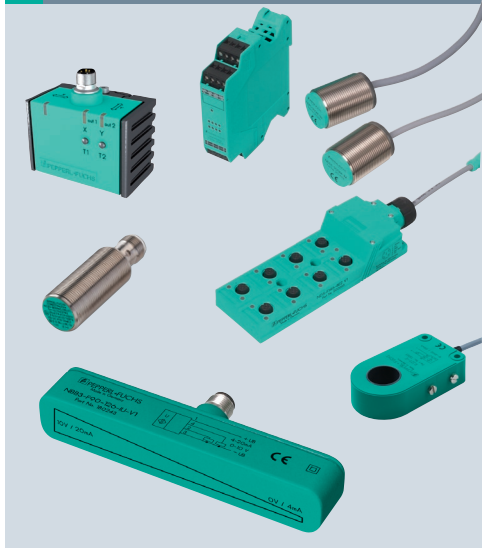## PHOTOELECTRIC SENSORS

VISION SENSORS

ULTRASONIC SENSORS

INDUCTIVE SENSORS

CAPACITIVE SENSORS

OTHERS

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PEPPERL+FUCHS

SENSING YOUR NEEDS