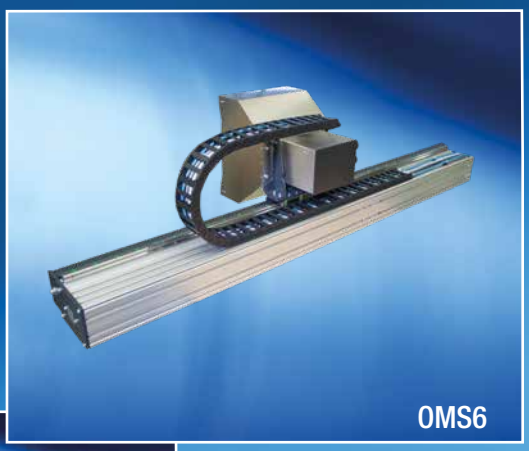
Erhardt+Leimer

ELSCAN dualView

Web monitoring

Fully digital monitoring
of the print quality on moving webs

Contents



FOCUS ON CUSTOMER SATISFACTION

INTELLIGENT TECHNOLOGY · SMART PRODUCTS

INTERNATIONAL LOCATIONS · WORLDWIDE AVAILABILITY

CUTTING-EDGE TECHNOLOGY
AT HOME ALL OVER THE WORLD

Erhardt+Leimer
Global solutions for production of the future

Intelligent technologies and products in the highest quality designed to optimize the production processes of our customers all around the world. This is our claim as the internationally expanding Erhardt+Leimer group of companies.

With our global presence – from development to production and on to service – we are always close to the customer. We develop customer-specific solutions and provide our customers with excellent products either in digital or intelligent versions depending on their preference. Not only this, but we also set new standards for the production of tomorrow. In the process, it is not just our products that are increasingly becoming smart – our entire company is currently undergoing a digital transformation. One visible indication of this is the E+L online shop, which enables our customers to order products and spare parts quickly and easily from our website.

With more than 1,600 employees at sites across Europe, Asia, and America, we deliver cutting-edge technology on-time to any location in the world.

In everything we do, we aim to use all company resources responsibly to protect the environment and demonstrate our commitment to increased sustainability.

Higher quality and productivity with web monitoring

Production processes in printing houses are becoming ever faster and more precise. The quality of the results of the printing is continuously increasing and paper waste must be reduced to a minimum.

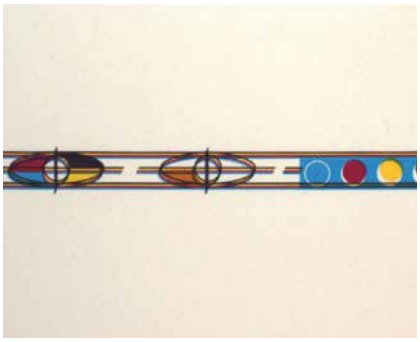
For many years, web monitoring systems from Erhardt+Leimer have made an essential contribution to fulfilling these demands. More than 8,000 ELSCAN systems have been delivered to the market worldwide.

ELSCAN dualView supports the printing process from the setup phase to completion of the job with the continuous display of the printed web in the highest resolution and prime image quality. The points in the print that are decisive for quality, such as register and color marks or distinctive colored areas, are made available to the printer in the highest resolution, and thereby guarantee high quality production.

Advantages

- Higher production speed
- Constant quality printing and color
- Less waste
- Faster system setup
- Operator assistance during production

Application areas / examples of errors in the graphics industry



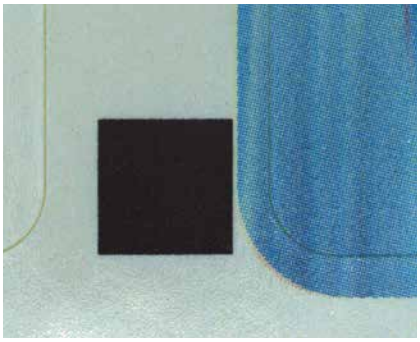
Register inspection

Print quality inspection

Color accuracy monitoring

Hot-foil/cold-foil monitoring

Hologram depiction



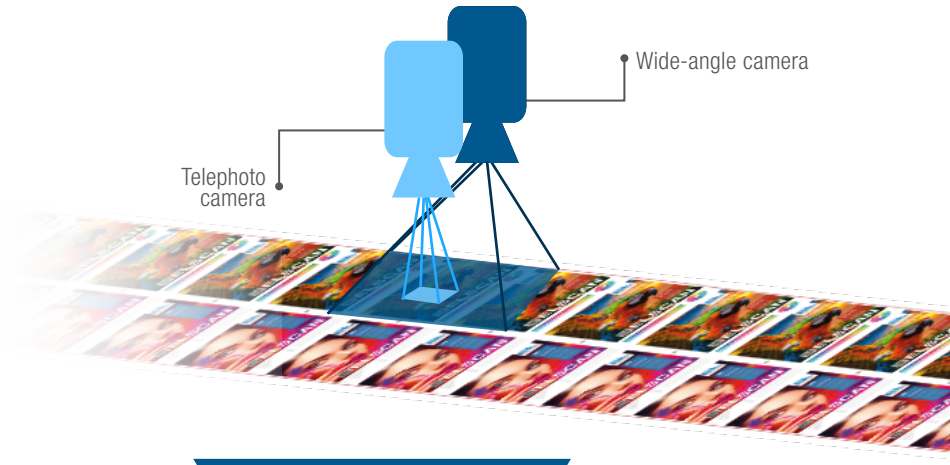
Die cutting position monitoring

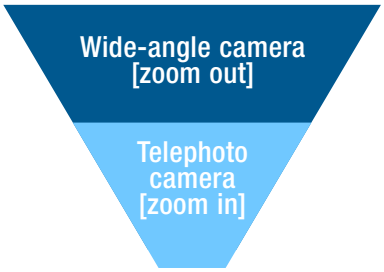
ELSCAN product family

Sophisticated image processing, combined with two high-resolution cameras – this is what the ELSCAN web monitoring systems offer. They allow the display of printed images on moving webs with the greatest detail and color fidelity. The cameras can be moved manually or by a motor to adopt positions with the highest precision and display the corresponding images on the monitor.

All ELSCAN variants feature the patented "dualView" technology with its two cameras. Depending on the zoom level, either the telephoto camera or the wide-angle camera is activated. During zooming, the system switches unnoticeably between the cameras. As a result, print images can be displayed at many times their original resolution. This unique, patented "dualView" concept allows nearly lag-free zooming up to the highest resolution.

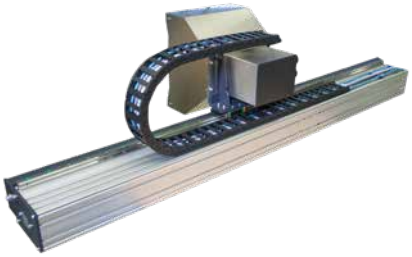
DUALVIEW TECHNOLOGY





OMS3 – Basic
- Field of view 100 x 75 mm
- "dualView" technology with 2 x 5-megapixel cameras
- For narrow web applications up to 580 mm operating width

OMS5 – Premium
- Field of view 100 x 75 mm (other versions available)
- "dualView" technology with 2 x 18-megapixel cameras
- For operating widths up to 2,406 mm
- Additional functions, e.g.
  - Color comparison (DeltaE)
  - 100 % repeat overview
  - Expanded position gallery
  - Master image comparison



OMS6 – High End
- Large field of view 234 x 124 mm
- "dualView" technology with 2 x 12-megapixel cameras
- Uncompromising image quality in 4k quality and brilliant color rendering
- Highly precise camera positioning via motorized crossbeam guide
- For operating widths up to 3,250 mm

GOLD FOIL VISIBLE IN TRUE COLOR

Web monitoring ELSCAN OMS3

ELSCAN OMS3 – Basic

ELSCAN OMS3 was specially designed for narrow web applications up to a web width of 580 mm. Reduced to the essential functions, OMS3 focuses on the main task of a web monitoring system – the display of the web in brilliant image quality.

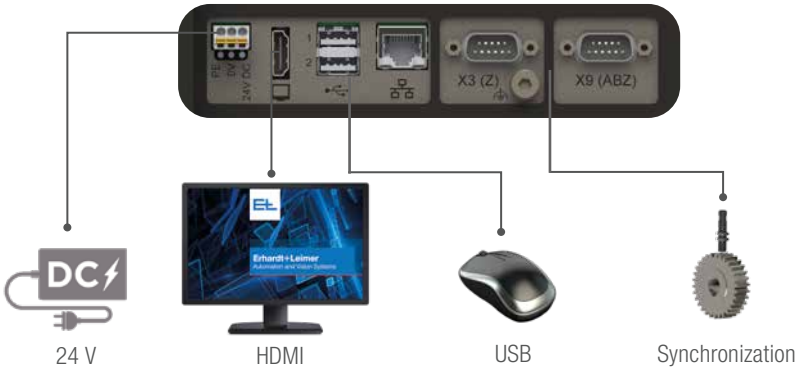
Like all ELSCAN systems, the proven "dualView" technology is used of course.

- Camera system with two 5-megapixel cameras for wide-angle and telephoto ranges
- Intelligent camera (no separate computer)
- Crossbeam with manual or motorized camera positioning
- Operation with mouse, command station or touch monitor
- Image display on monitors in Full HD resolution
- Remote maintenance access for service

Web monitoring ELSCAN OMS3

Easy integration and commissioning

All components are connected directly to the crossbeam



Technical data

Camera		
Type	OM 3110	
Camera	2 x 5 megapixels, color (2,596 x 1,944 pixels)	
Field of view	From 100 x 75 mm to 12 x 7 mm	
Resolution	W: 38 µm / 660 dpi	D: 11 µm / 2,350 dpi
Flash	Bright field	
Protection class	IP 30 (optical range IP 50)	
Web surfaces	Paper, labels, cold and hot embossing foils, clear-on-clear	
W = Wide-angle lens T = Telephoto lens (figures correspond to the native resolution per camera chip)		

System data	
Web speed	Up to 400 m/min
Ambient temperature	+5 °C to +50 °C
Operation	Mouse / touch monitor / keyboard

Monitor	
Resolution	22" Full HD
Operating voltage	100 V to 240 V AC / 120 W (±10 %)
Connection	HDMI

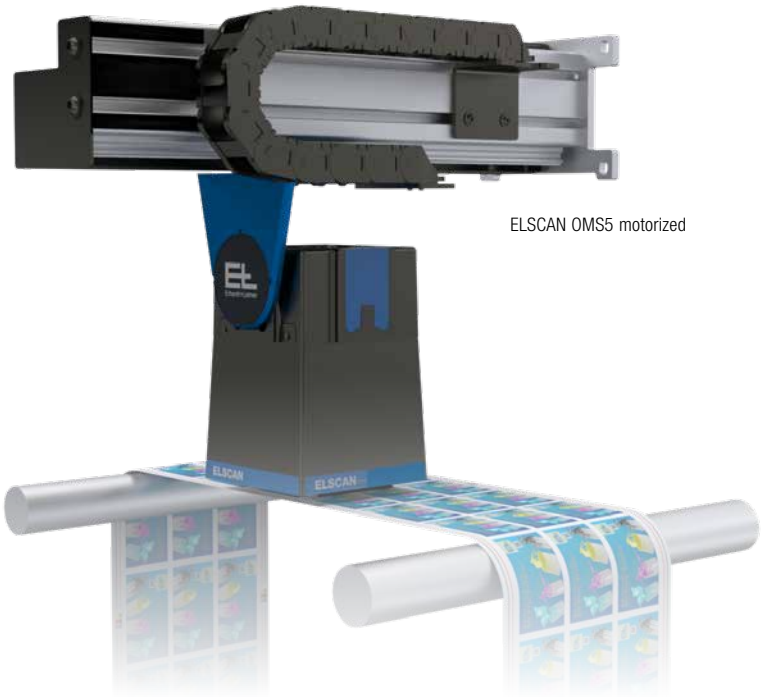
Crossbeam with integrated controller	
Crossbeam length	Max. 700 mm
Operating width	Max. 580 mm
Camera actuating speed	Up to 350 mm/s
Operating voltage	20 V to 30 V DC (max. 3 A)
Protection class	IP 30
Connections	HDMI / 2 x USB / Ethernet / 2 x synchronization

Web monitoring ELSCAN OMS5

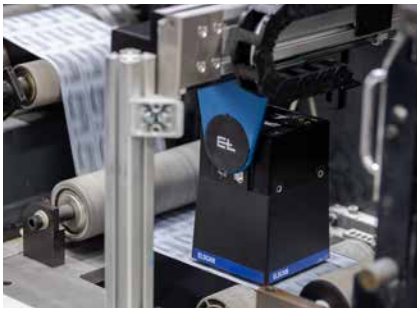
ELSCAN OMS5 – Premium for all operating widths

Along with all the basic functions for web monitoring, OMS5 provides an expanded range of functions in the hardware and software area.

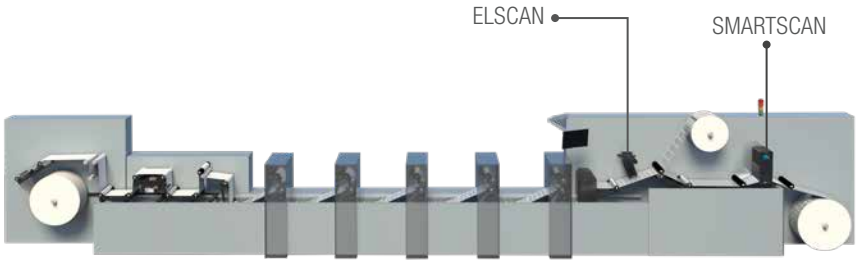
- Proven "dualView" technology with 2 x 18-megapixel cameras
- Lag-free digital zooming using mouse wheel, command station or touch screen
- Excellent image quality due to highest camera resolution in its class
- New lighting concept with additional flash for varnish
- Gold and silver foil visible in true color
- All-inclusive software package with additional functions such as inline color monitoring, 100 % repeat overview and expanded position gallery
- Remote maintenance access for service
- Commissioning wizard



ELSCAN OMS5 motorized



ELSCAN OMS5 on label printing machine



ELSCAN on label printing machine

ELSCAN OMS5 on digital printing machine

ELSCAN on gravure printing machine

Web monitoring ELSCAN OMS5

All-inclusive software package

- Automatic scan both in direction of web travel and also transverse to the web
- 100 % repeat display with fast navigation to any desired position
- Image stabilization for deviations in the direction of web travel and transverse to the web
- Master image comparison to detect the smallest changes during production
- Position gallery for saving positions and functions with individual zoom and brightness levels (21 positions)
- Color comparison with DeltaE evaluation (max. 21 measuring points)
- Screenshot function for image archiving

Technical data

Camera		
Type	OMS5 M	
Camera	2 x 18 megapixels, color (4,896 x 3,680 pixels)	
Field of view	From 100 x 75 mm to 9 x 6 mm	
Resolution	W: 20 µm / 1,270 dpi	D: 15 µm / 1,693 dpi
Flash	Universal LED flash with additional flash	
Protection class	IP 30 (optical range IP 50)	
Web surfaces	Film/foil, paper, labels, cold and hot embossing foils, clear-on-clear	
W = Wide-angle lens T = Telephoto lens (figures correspond to the native resolution per camera chip)		

System data	
Web speed	Up to 1,000 m/min
Ambient temperature	+5 °C to +55 °C
Operation	Mouse / touch monitor / keyboard

Monitor	
Resolution	22" / 24" Full HD
Operating voltage	100 V to 240 V AC / 120 W (±10 %)
Connection	Display Port

Crossbeam	
Crossbeam length*	Max. 2,500 mm (inner frame dimension)
Operating width	Max. 2,406 mm
Camera actuating speed	Up to 350 mm/s

* Larger widths on request

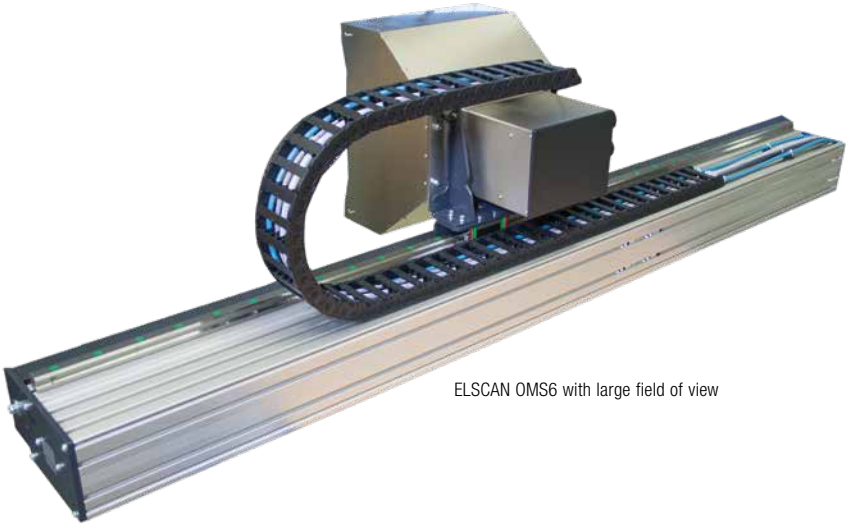
OMS5 OFFERS NEW OPPORTUNITIES

Web monitoring ELSCAN OMS6

ELSCAN OMS6 – High End with large field of view

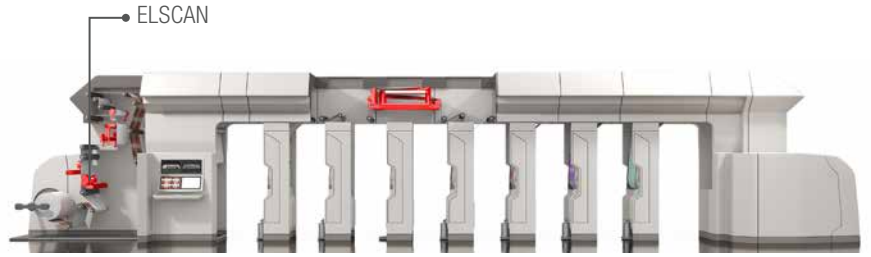
ELSCAN OMS6 is the high-end system in the ELSCAN family. With its expanded field of view of 234 x 124 mm and detailed resolution in 4k quality, it impresses in every aspect. Due to its high-speed crossbeam, the camera is moved precisely to any position in the machine with an acceleration of up to 10 m/s²; it is therefore the perfect solution for operating widths of up to 3,250 mm.

- "dualView" camera system with 2 x 12-megapixel cameras (4k resolution)
- Selection of LED flash systems for different web surfaces (white light, varnish flash, UV flash, background/backlight flash)
- Changeover between front and rear inspection for web inversion
- Remote maintenance access for service

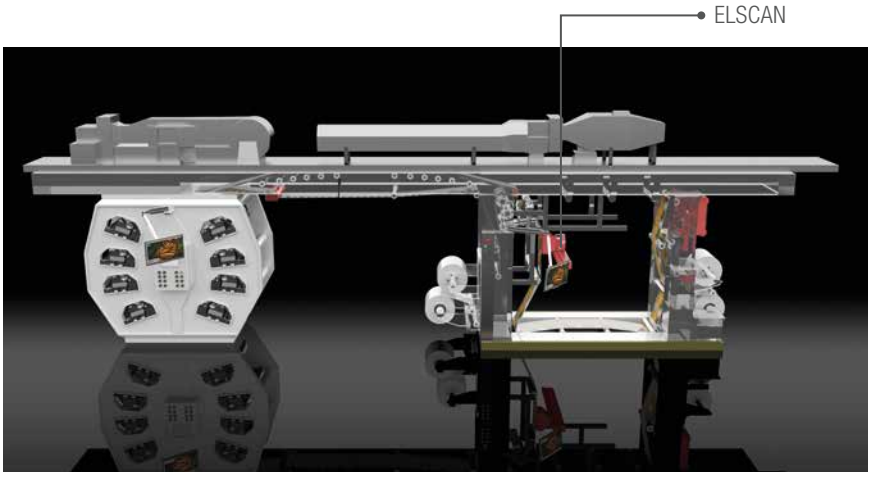


ELSCAN OMS6 with large field of view

ELSCAN OMS6 on flexo printing machine



ELSCAN OMS6 on gravure printing machine



ELSCAN OMS6 on CI flexo printing machine

Web monitoring ELSCAN OMS6

Standard functions

- Modern multitouch operation
- Ultra-short LED flash for speeds up to 1,300 m/min
- Scan functions transverse to the web and in direction of web travel
- 100% repeat display with complete overview for fast navigation to the desired position
- Position gallery for saving positions and functions with individual zoom and brightness levels (21 positions)
- Image stabilization
- Master image comparison to detect the smallest changes during production

Technical data

Camera		
Type	OM 6120	
Camera	2 x 12 megapixels, color (4,096 x 2,160 pixels)	
Field of view	From 234 x 124 mm to 8 x 4 mm	
Resolution	W: 56 µm / 450 dpi	D: 12 µm / 2,080 dpi
Flash	LED (dark field, light field, UV)	
Protection class	IP 40	
Web surfaces	Paper, aluminum, film/foil (opaque, transparent, reflecting)	

W = Wide-angle lens
T = Telephoto lens (figures correspond to the native resolution per camera chip on a 16:9 monitor display)

Control cabinet with IPC (industrial computer)		Monitor	
Operating voltage	90 V to 240 V AC / 150 W (±10 %)	Operating voltage	100 V to 240 V AC / 120 W (±10 %)
Nominal frequency	50 Hz to 60 Hz	Resolution	22" / 24" Full HD
Protection class	IP 54	Connection	Display Port
Connections	DVI / DisplayPort / USB	Operation	Multitouch

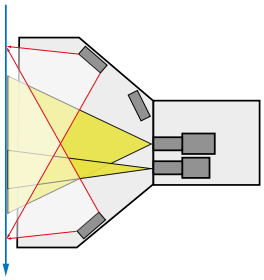
Crossbeam		System data	
Length (inner frame dimension)	Max. 3,600 mm	Web speed	Max. 1,300 m/min
Operating width	Max. 3,250 mm	Data interface	Ethernet
Camera actuating speed	Up to 1,000 mm/s	Ambient temperature	+5 °C to +55 °C
Acceleration	2 m/s² (max. 10 m/s²)	Relative humidity	5 % to 95 % (non-condensing)

Flash systems for ELSCAN OMS6

Dark field flash (standard)

Indirect lighting is standard for ELSCAN OMS6 cameras.

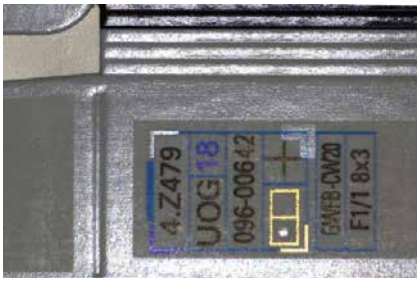
- Prints with reflecting or glossy surfaces are displayed with highest color fidelity
- Spectral color deviation ≤ 8 DeltaE

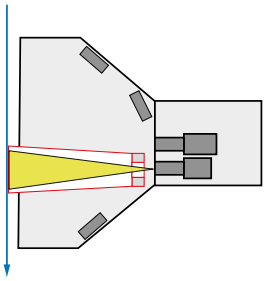


Varnish flash for coating

Optionally, the ELSCAN OMS6 telephoto camera can be equipped with a varnish flash.

- Coatings, paints and adhesives applied become visible
- The varnish flash can be switched on as required

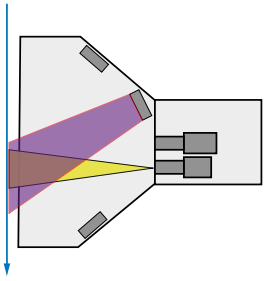




UV flash for fluorescent colors

Optionally, the ELSCAN OMS6 telephoto camera can be equipped with a UV flash.

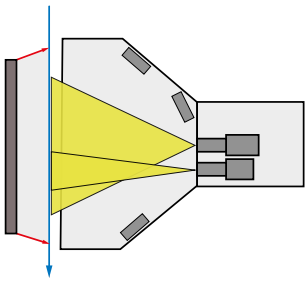
- For highlighting and/or making visible security features and UV effects
- The UV flash can be switched on as required



Rear flash

The ELSCAN OMS6 system is available with motorized and continuous rear flash.

- Inspection of front and rear registers
- Enhanced contrast for opaque and transparent film prints
- Display of, for instance, watermarks



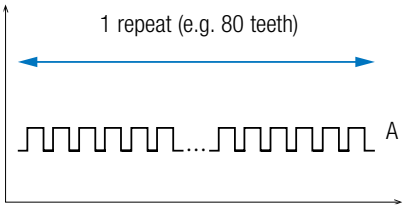
Synchronization for ELSCAN

Synchronization of image acquisition matched to the web movement is essential for stable image display on the monitor. Otherwise, the image jumps about or even runs away. Different sensor options help with finding the optimal configuration for every application. Also, sophisticated software-based image stabilization is available to suppress remaining fluctuations.

Definition
- Repeat = Image length
- Z signal = 1 signal per repeat
- A signal = Fine subdivision of the repeat

Gearwheel sensor (A sensor)
- Typical synchronization method on label printing machines
- Typical = e.g. 80 teeth / 10 inch
- Gearwheel on the print roller

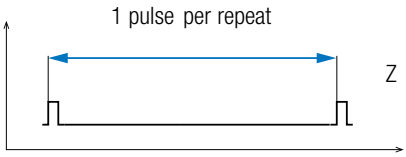
Encoder / rotary encoder (A sensor)
- Attachment to the print roller axle or via measuring wheel on the web



Signal behavior with A sensor

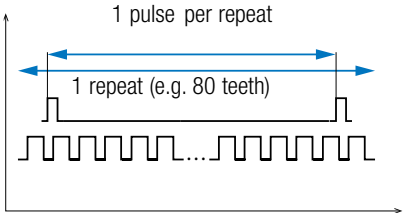
Print mark sensor (Z sensor)
- Synchronization via print image
- Intelligent trigger logic automatically detects repeat signal in the print image

Proximity switch (Z sensor)
- Synchronization via repeat signal
- 1 pulse per print cylinder rotation
- Mounted on the shaft of the print roller



Signal behavior with Z sensor

Printing machine signal (A/Z sensor)
- Modern drive controllers provide emulated encoder signals for synchronization
- As such, additional sensors are mostly unnecessary



Signal behavior with A and Z sensors

Advantages of the combination of A and Z signals
- Utilization of saved, recurring orders
- Independent detection of work order changes (automatic repeat length detection)

Function modules

Autoscan X *

- In the Autoscan X mode, the entire width of the repeat is scanned at any position along the length of the repeat

OMS3	OMS5	OMS6
■	■	■

Autoscan Y

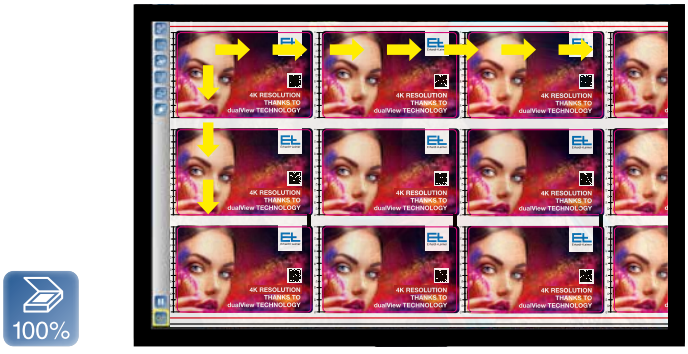
- In the Autoscan Y mode, the repeat is scanned in the direction of web travel, at any position transverse to the web

OMS3	OMS5	OMS6
■	■	■

Autoscan 100% *

- Scanning the repeat in X and Y direction

OMS3	OMS5	OMS6
■	■	■



Meander-scan *

- The camera scans the entire repeat by meandering over the print image

OMS3	OMS5	OMS6
	■	■

* Only with motorized crossbeam

Function modules

100 % repeat overview

- Display of the entire repeat overview
- The repeat is built up one image after the other
- Each position in the repeat overview can be selected directly and quickly by clicking with the mouse

OMS3	OMS5	OMS6
	■	■

Master image comparison

- Saving reference areas in printing
- The smallest changes in color or position can be detected optimally using image-in-image
- Horizontal and vertical split-screen view

OMS3	OMS5	OMS6
	■	■

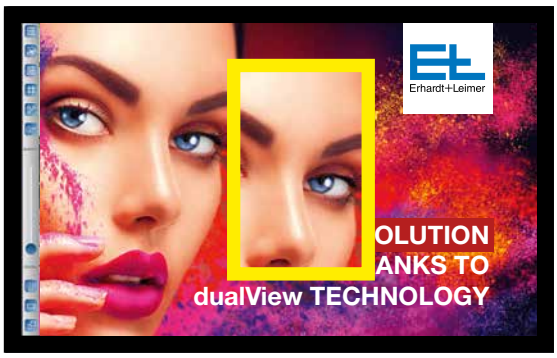


Image stabilization

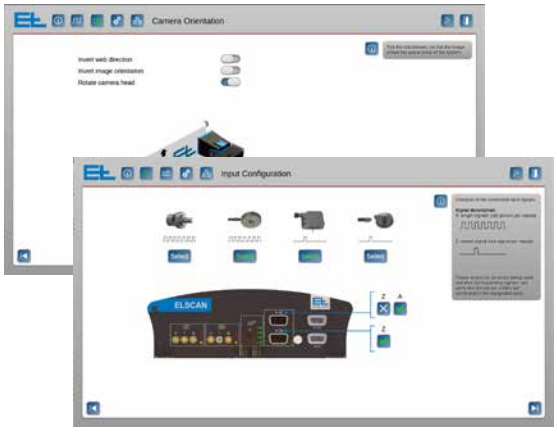
- Image fluctuations can be compensated in the direction of web travel and perpendicular to the web
- The details of register marks can be monitored precisely on screen, without "skipping"

OMS3	OMS5	OMS6
(■)	■	■

Commissioning wizard

- Step-by-step assistance during initial commissioning
- Straightforward setup of the synchronization, camera alignment and system integration in the network

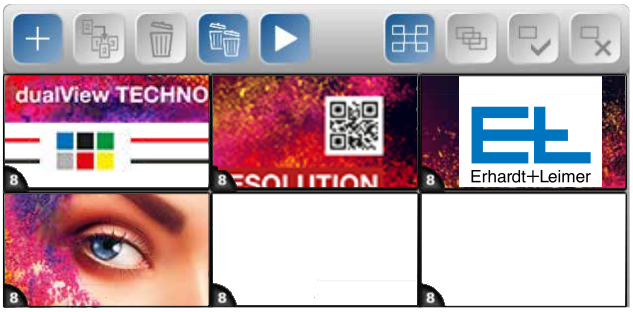
OMS3	OMS5	OMS6
■	■	■



Function modules

Position gallery

- Up to 5/21 positions can be saved in the position gallery with zoom and brightness levels
- The saved positions are shown in a continuous loop and can be selected specifically
- Additional functions such as master image or color comparison can also be added
- A program library provides quick access for repeat orders
- Saved programs can be edited



OMS3	OMS5	OMS6
■	■	■

DeltaE color comparison

- The high image quality allows precise color inspection over the entire job
- Minimal color deviations are detected
- The color comparison is excellently suited to the monitoring of color bars
- In combination with the position gallery, each position can have a color measurement zone
- Image stabilization guarantees that the correct color area is analyzed if slip or web elongation occurs
- Histogram with color gradient overview

OMS3	OMS5	OMS6
	■	■

General evaluation of ΔE

ΔE	Evaluation
0.0 … 0.5	Almost imperceptible
0.5 … 1.0	Can be distinguished by trained eyes
1.0 … 2.0	Minor color difference
2.0 … 4.0	Significant color difference
4.0 … 5.0	Significant color difference that is rarely tolerated
Above 5.0	The difference is evaluated as a different color

Double-camera system

Two cameras combined on one computer

- Both cameras offset on the same side of the web or in the same position at the front and rear
- Independent operation of both cameras
- Coupled operation of both cameras (lead / follow mode)
- Grid lines for inspecting the front and rear registers

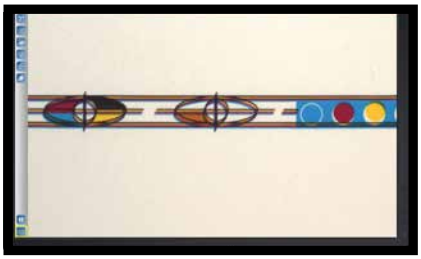
Typical applications

- Camera 1 for register inspection or color monitoring, camera 2 for independent working
- Monitoring of sequential processes
- Parallel monitoring of the left and right web edge
- Inspection of front and rear registers
- Combination of white light and UV light

Two monitors

- Display of both camera images on two separate monitors

Camera 1

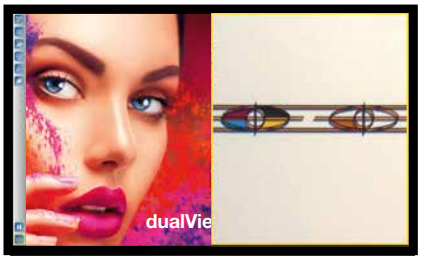


Camera 2

One monitor with two camera images

- Full-screen display of the selected camera with thumbnail of the second camera image
- Split-screen display of both camera images (horizontal/vertical)

Full-screen display with thumbnail



Vertical split-screen

Questionnaire

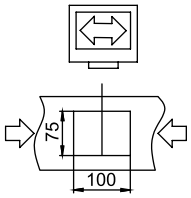
General data			
Customer			
Street			
Zip code		City/town	
Country		Website	
Contact person			
Phone		E-mail	
Project			

Technical data			
Type of machine			
Make			
Position on the machine			
Frame internal dimension	GI _____ mm		
Web type	❑ Printed paper	❑ Printed film/foil	❑ _____
Web width	min. _____ mm	max. _____ mm	
Web speed	min. _____ m/min	max. _____ m/min	
Ambient temperature	_____ °C		
Ambient conditions	❑ Dry	❑ Dusty	❑ _____
Operating voltage	_____ V	_____ Hz	

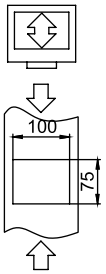
Comments

Date		Issuer	

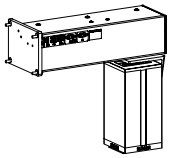
Questionnaire OMS3



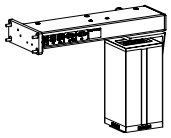
Horizontal direction of web travel



Vertical direction of web travel

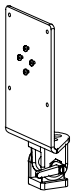


Motorized crossbeam

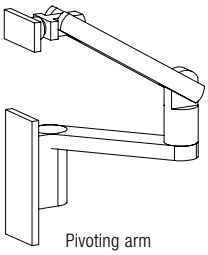


Manual crossbeam

Keypad (keyboard)

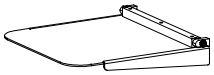


VESA mount

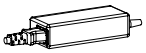


Pivoting arm

24 V power supply unit for DIN rail



Mouse pad holder



24 V power supply unit

Direction of web travel on the monitor

❑ Horizontal direction of web travel (standard)	❑ Vertical direction of web travel

Crossbeam

Motorized crossbeam	Manual crossbeam
❑ GI = 300 / AB = 170	❑ GI = 300 / AB = 180
❑ GI = 400 / AB = 270	❑ GI = 400 / AB = 280
❑ GI = 500 / AB = 370	❑ GI = 500 / AB = 380
❑ GI = 600 / AB = 470	❑ GI = 600 / AB = 480
❑ GI = 700 / AB = 570	❑ GI = 700 / AB = 580

Monitor

Monitor	❑ 22"			❑ Touch monitor 22"			
Cable	❑ 1 m	❑ 3 m	❑ 5 m	❑ 10 m	❑ 15 m	❑ 20 m	❑ 30 m

Command stations

❑ Mouse	❑ Mouse, cordless	❑ Trackball	❑ Keypad

Keypad (keyboard)

❑ Without holder	❑ Bench mounting
❑ Wall mounting	❑ Flexible holder M5
❑ Magnetic holder	

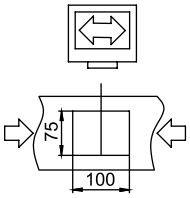
USB cable extension

❑ 1.5 m	❑ 3 m	❑ 5 m	❑ 10 m

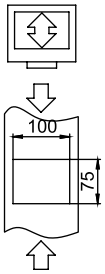
Miscellaneous accessories

- ❑ Monitor pivoting arm
- ❑ Monitor VESA mount
- ❑ Mouse pad holder
- ❑ Trackball holder
- ❑ Mounting screw set 4 x M8 x 20
- ❑ 24 V power supply unit for DIN rail
- ❑ 24 V power supply unit

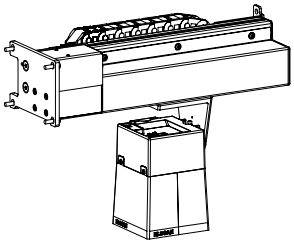
Questionnaire OMS5



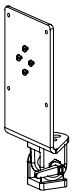
Horizontal direction of web travel

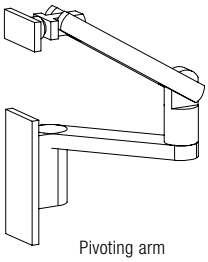


Vertical direction of web travel

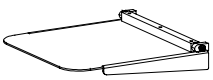

Motorized crossbeam

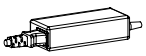

Keypad (keyboard)


VESA mount


Pivoting arm


24 V power supply unit for DIN rail


Mouse pad holder


24 V power supply unit

Direction of web travel on the monitor

❑ Horizontal direction of web travel (standard)	❑ Vertical direction of web travel

Motorized crossbeam

Frame dimension Gl = _____ mm (min. 300 mm to max. 2500 mm)

Cable (crossbeam to the computer)	❑ 2 m	❑ 5 m
Installation	❑ On one side (max. up to Gl 700 mm)	❑ On both sides

Monitor

Monitor	❑ 22"		❑ 24"		❑ Touch monitor 22"	❑ Touch monitor 24"	
Cable	❑ 1 m	❑ 3 m	❑ 5 m	❑ 10 m	❑ 15 m	❑ 20 m	❑ 30 m	❑ 50 m

Command stations

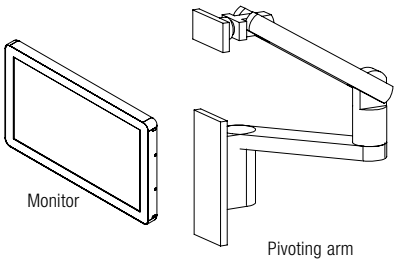
❑ Mouse	❑ Mouse, cordless	❑ Trackball	❑ Keypad
Keypad (keyboard)			
❑ Without holder		❑ Bench mounting	
❑ Wall mounting		❑ Flexible holder M5	
❑ Magnetic holder			

USB cable extension	❑ 1.5 m	❑ 3 m	❑ 5 m	❑ 10 m	❑ 15 m

Miscellaneous accessories

- ❑ Pivoting arm
- ❑ VESA mount
- ❑ Mouse pad holder
- ❑ Trackball holder
- ❑ Mounting screw set 4 x M8 x 20
- ❑ 24 V power supply unit for DIN rail
- ❑ 24 V power supply unit
- ❑ DisplayPort to HDMI adapter
- ❑ Adapter plate for OMS3/OMS4
- ❑ Power strip with three outlets

Questionnaire OMS6

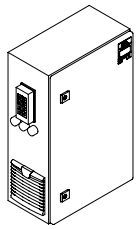


Motorized crossbeam

Frame dimension GI = _____ (min. 400 mm to max. 3,600 mm)

Operating width AB = _____ (min. 650 mm to max. 3,250 mm)

❑ Move clear	❑ Park position monitoring



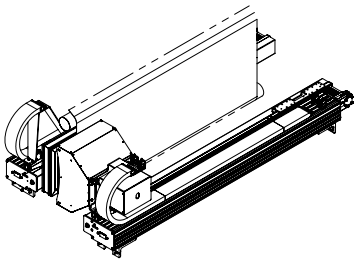
PC switch panel

Cable (camera to the PC switch panel)

❑ 10 m	❑ 20 m

Camera bracket

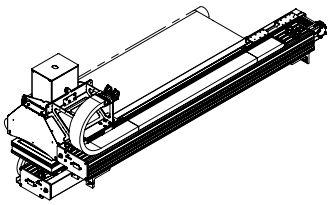
❑ 0°	❑ 10°	❑ 15°	❑ 25°	❑ 90°



Camera alignment 0°

Monitor

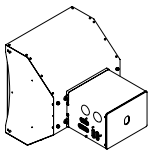
❑ Touch monitor 22″		❑ Touch monitor 24″	
❑ Without pivoting arm		❑ With pivoting arm	
Cable lengths	❑ 2 m	❑ 5 m	❑ 10 m
❑ 15 m	❑ 20 m	❑ 30 m	❑ 50 m



Camera alignment 90°

Additional LED flash

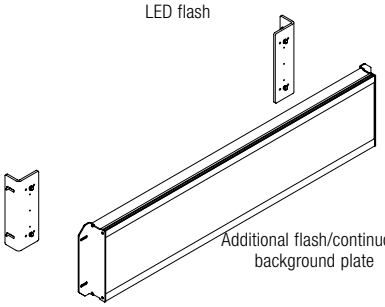
❑ Varnish flash	❑ UV flash



LED flash

Software functions

❑ DeltaE color module	❑ DeltaE module with indicator and sound (specify cable length)	❑ Haze module (for detection of stripe defects)

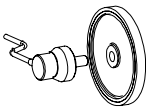


Additional flash/continuous background plate

Additional flash/continuous background plate

❑ Planar light transmitter	❑ Background plate passive in the housing	❑ Background plate, basic

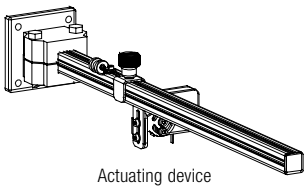
Questionnaire synchronization



Rotary encoder

Gearwheel sensor

Print mark scanner



Actuating device

Proximity switch

Synchronization			
❑ A signal		❑ Z signal	
❑ Rotary encoder (A signal)			
Version	❑ With shaft coupling	❑ Only encoder	❑ With measuring wheel
Cable	❑ 10 m	❑ 15 m	
❑ Gearwheel sensor (A signal)			
Version	❑ Fastening bracket		
Cable	❑ 5 m	❑ 10 m	❑ 15 m
❑ Print mark scanner (Z signal)			
Version	❑ With actuating device		
Cable	❑ 5 m	❑ 10 m	❑ 15 m
❑ Proximity switch (Z signal)			
Version	❑ Fastening bracket		
Cable	❑ 5 m	❑ 10 m	❑ 15 m
❑ Signals available from machine (A/Z signal)			
Version	❑ PNP	❑ NPN	❑ RS422
Cable	❑ 5 m	❑ 10 m	

SMARTSCAN

200 %

Print inspection

- Detect print defects automatically
- Increase quality
- Reduce waste
- Avoid complaints

SCAN HERE AND SPEAK WITH OUR EXPERTS

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