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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 5000 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 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

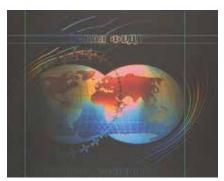


+ Color accuracy monitoring

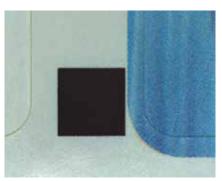
Examples from the graphics industry



+ Hot foil / cold foil



+ Hologram depiction



+ Die cutting position monitoring

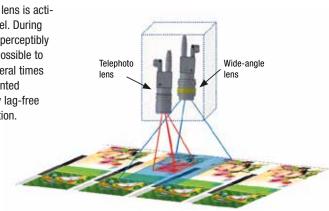


ELSCAN product family

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.

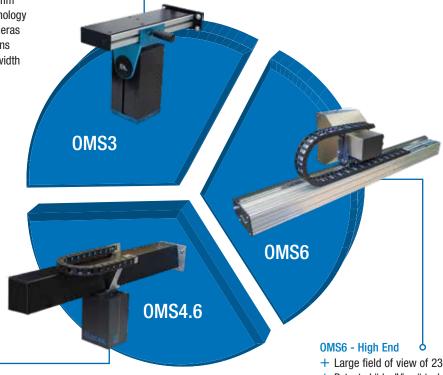
All ELSCAN variants feature the patented "dualView" technology with its two cameras. The telephoto lens or wide-angle lens is activated depending on the zoom level. During zooming, the system switches imperceptibly between the cameras. It is thus possible to display the printed images at several times their resolution. This unique, patented "dualView" concept allows nearly lag-free zooming up to the highest resolution.

Patented "dualView" technology



OMS3 - Basic

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



OMS4.6 - Premium

- + Field of view of 120 x 90 mm (other versions available)
- + Patented "dualView" technology with 2 x 5-megapixel cameras
- + For operating widths up to 2,370 mm
- + Additional functions, e.g.
 - Color comparison (deltaE)
 - 100% repeat overview
 - Position gallery
 - Double-camera system

- + Large field of view of 234 x 124 mm
- + Patented "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

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 additional computer)
- + Crossbeam with manual or motorized camera positioning
- + Operation with mouse or touch monitor
- + Image display on monitors in Full HD resolution
- + Remote maintenance access for service







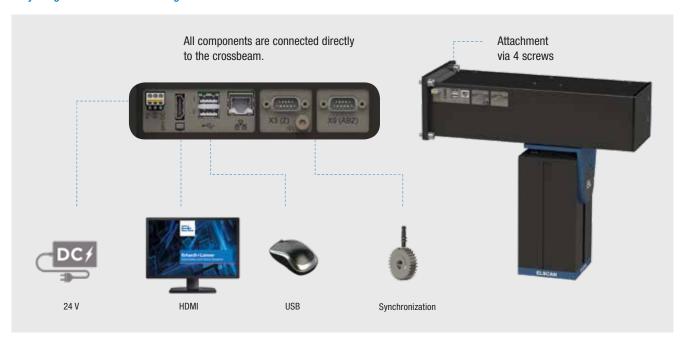
Authentic representation of hot and cold foil embossing

Price-performance par excellence!





Easy integration and commissioning



Technical data

Camera											
Туре	Camera	Field of view	Resolution	Flash	Prot. class	Web surfaces					
OM 3110	2 x 5 megapixels, color (2,596 x 1,944 pixels)	From 100 x 75 mm Up to 12 x 7 mm	W: 38 µm / 660 dpi T: 11 µm / 2,350 dpi	Bright field	IP 30 (IP 50)	Paper, labels, cold and hot embossing foils, clear-on-clear					
W = Wide	-angle lens, T = Telephoto lens (fig	jures correspond to the	native resolution per ca	amera chi	0)	W = Wide-angle lens, T = Telephoto lens (figures correspond to the native resolution per camera chip)					

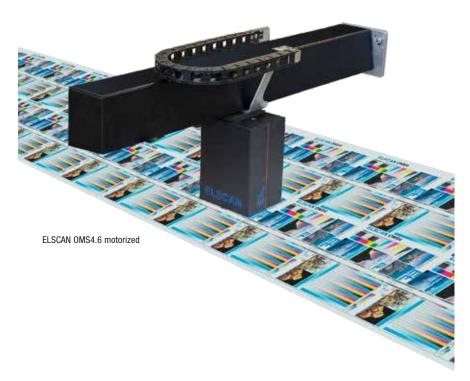
Crossbeam with integrate	ed controller	System data	
Crossbeam length max.	700 mm	Web speed	Up to 400 m/min
Operating width max.	580 mm	Ambient temperature	+5 °C to +50 °C
Actuating speed	Up to 350 mm/s	Rel. atmospheric humidity	5 % to 95 % (non-condensing)
Operating voltage	20 - 30 V DC (max. 1.5 A)	Operation	Mouse / touch monitor
Nominal frequency	50 – 60 Hz	Monitor	
Protection class	IP 30 / optical range IP 50	Operating voltage	100 - 240 V AC / 120 W (±10%)
Connections	HDMI / 2 x USB / Ethernet / 2 x synchronization	Connection	HDMI
		Resolution	22" Full HD (1,920 x 1,080 pixels)

Web monitoring ELSCAN OMS4.6

ELSCAN OMS4.6 - Premium for operating widths up to 2,370 mm

Along with all the basic functions for web monitoring, OMS4.6 provides an expanded range of functions in the hardware and software area. As per the modular concept, almost all options can be retrofitted at any time.

- + Proven "dualView" technology with 2 x 5-megapixel cameras
- + Lag-free digital zooming using mouse wheel, command station or touch screen
- + Manual or motorized camera positioning
- + Crossbeam with one-sided or double-sided mounting
- + Image display on monitors in Full HD resolution
- + Many software functions available and upgrades are possible at any time
- + Remote maintenance access for service

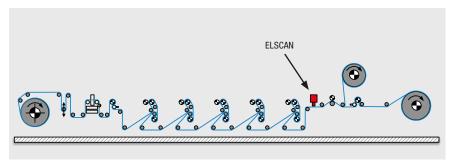




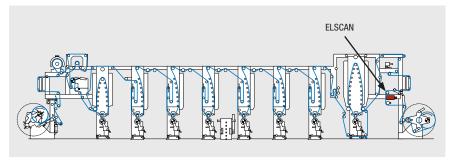
ELSCAN OMS4.6 on label printing machine



ELSCAN OMS4.6 on gravure printing machine



ELSCAN OMS4.6 on label printing machine



ELSCAN OMS4.6 on gravure printing machine



Software standard functions

- + Automatic scan both in direction of web travel and also traverse to the web
- + 100% repeat display with fast navigation to any desired position
- + Image stabilization for deviations up to ±20 mm in the direction of web travel
- + Manual measurement of objects in the print using measuring lines
- + Master image comparison to detect the smallest changes during production

Software upgrades

- + Position gallery for saving positions with individual zoom and brightness levels
- + Color comparison for up to 8 homogeneous colors using DeltaE evaluation
- + Manual register pre-adjustment for e.g. Cl flexo printing machines



Brilliant color rendering

Technical data

Camera						
Туре	Camera	Field of view	Resolution	Flash	Prot. class	Web surfaces
OM 4110 Standard		From 120 x 90 mm To 6 x 5 mm	W: 46 μm/550 dpi T: 13 μm/1,880 dpi	Bright field		Paper, labels, holograms
OM 4111 High resolution		From 90 x 67.5 mm To 5 x 4 mm	W: 35 μm/730 dpi T: 10 μm/2,440 dpi	Bright field		Paper, labels, holograms
OM 4112 UHD	2 x 5 megapixels, color (2,596 x 1,944 pixels)	From 24 x 18 mm To 1.5 x 1 mm	W: 9 μm/2,750 dpi T: 3 μm/8,400 dpi	Bright field	IP 40	Paper, labels, film, holograms
OM 4120 Twin-Flash	1,011 pixoloj	From 120 x 90 mm To 6 x 5 mm	W: 46 μm/550 dpi T: 13 μm/1,880 dpi	Dark field		Film, high gloss
OM 4130 UV		From 120 x 90 mm To 6 x 5 mm	W: 46 μm/550 dpi T: 13 μm/1,880 dpi	UV flash		Paper, labels, film
W = Wide-angle ler	ns, T = Telephoto len	s (figures correspond to	the native resolution pe	r camera chir	o)	

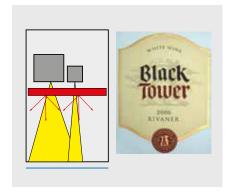
IPC (industrial compute	r)	Crossbeam	
Operating voltage	100 - 240 V AC / 400 W (±10%)	Crossbeam length max.	2,500 mm (frame inner dimension)
Nominal frequency	50 – 60 Hz	Operating width max.	2,370 mm
Protection class	IP 30	Installation	Between walls /
Connections	PS/2, USB, DVI, 2 x DisplayPort	Ilistaliation	single-sided mounting
Monitor		Actuating speed	Up to 350 mm/s
Operating voltage	90 - 240 V AC/120 W (±10%)	System data	
Connection	DVI / DisplayPort	Web speed	Up to 1,000 m/min
Resolution	19" 1280 x 1024 (4:3)	Ambient temperature	+5 °C to +55 °C
nesolution	22" / 24" - 1,920 x 1,080 (Full HD)	Pal atmospharia humidity	5 % to 95 %
Variants	Standard / multitouch	Rel. atmospheric humidity	(non-condensing)

Flash systems for ELSCAN OMS4.6

Standard flash OM 4110/11/12 – Bright field flash for paper and labels

- + Diffuse xenon flash for matt and slightly reflecting materials
- + Authentic rendering of gold, silver and other design colors
- + Compact camera dimensions for confined installation space



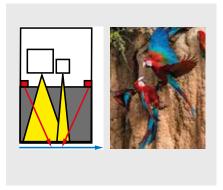


Label

Twin-Flash OM 4120 – Dark field flash for film

- + Xenon flashes are arranged at an angle to the web
- + For high-gloss films and other highly reflecting materials
- + Avoids reflections from flash sources and camera lenses in the image



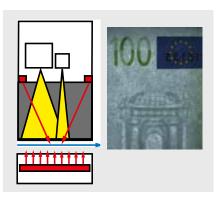


Packaging film

Rear flash OM 4401 – For front and rear registers

- + Mounting opposite the camera at the rear of the fabric web
- + Inspection of the front and rear registers on opaque materials with pixel level accuracy
- + Contours become visible on the rear and allow the register to be inspected
- + Brightness is sufficient for semi-transparent materials (such as paper, cardboard, film) up to a thickness of 240 g/m²
- + Available as manual or motorized version





Security



Double-camera system

Two cameras combined on one computer

A second camera can be retrofitted to ELSCAN OMS4.6 using plug-and-play.

- + Both cameras offset on one side of the web or in one 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



- + 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
- + Inspection of front and rear registers
- + Combination of white light and UV light

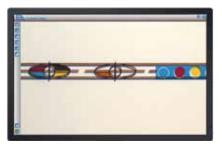


Two monitors

+ 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



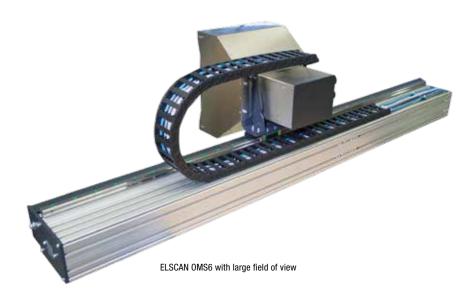
Vertical split-screen

Web monitoring ELSCAN OMS6

ELSCAN OMS6 - High End with large field of view

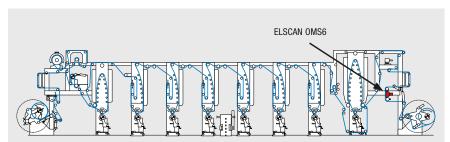
ELSCAN OMS6 is the high-end system in the ELSCAN family. With its expanded field of view of 234 x 124 mm and detailed resolution in 4k quality, it impresses in every aspect. Due to its high-speed crossbeam, the camera is moved precisely to any position in the machine with an acceleration up to 10 m/s2;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

- + "dualView" camera system with two 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

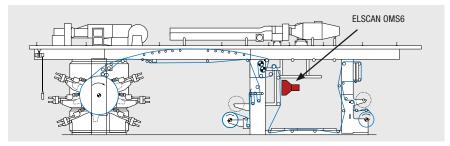




ELSCAN OMS6 on flexo printing machine



ELSCAN OMS6 on gravure printing machine



ELSCAN OMS6 on flexo printing machine



Standard functions

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



Technical data

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

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

IPC (industrial computer)		Monitor	
Operating voltage	90 - 240 V AC/400 W (±10%)	Operating voltage	90 - 240 V AC/120 W (±10%)
Nominal frequency	50 – 60 Hz	Resolution	22" / 24" - 1,920 x 1,080 (Full HD)
Protection class	IP 30	Connection	DVI / DisplayPort
Connections	PS/2, USB, DVI, DisplayPort	Operation	Multitouch

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

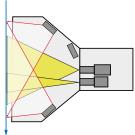
Flash systems for ELSCAN OMS6

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

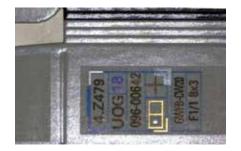


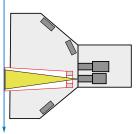


Varnish flash for coating

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



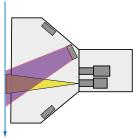


UV flash for fluorescent colors

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



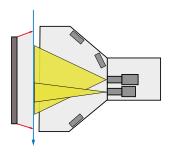


Rear flash

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





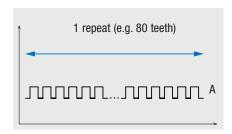


Synchronization OMS3, OMS4.6, OMS6

Gearwheel sensor

- + Synchronization method on label printing machines
- + Typical = e.g. 80 teeth/10 inch
- + Gearwheel on the print roller

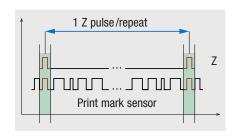




Print mark sensor

- + Synchronization via print image
- + Intelligent trigger logic automatically detects repeat signal in the print image

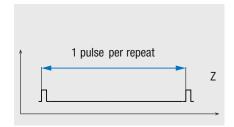




Proximity switch

- + Synchronization via repeat signal
- + 1 pulse per print cylinder rotation
- + Mounted on the shaft of the print roller

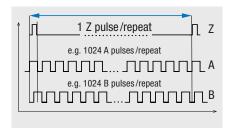




Encoder

- + Encoders supply repeat signals and A/B
- + Attachment to the print roller axle or via measuring wheel

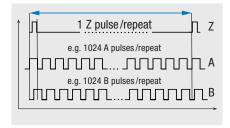




Printing machine signal

+ Modern drive controllers provide emulated encoder signals for synchronization





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



x (across web direction)





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









Autoscan 100% *

+ Scanning the repeat in X and Y direction



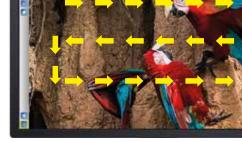




Meander-scan *

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







* Only with motorized crossbeam



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



- + Define and save a reference area on the repeat in the print
- + The smallest changes in color or position can be detected optimally using picture-inpicture
- + Master image and associated position are saved and can be retrieved at any time

Measuring lines

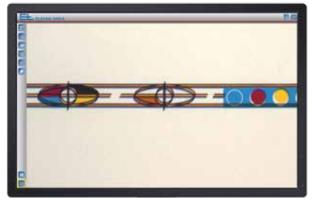
- + 2 vertical measuring lines and 2 horizontal measuring lines can be positioned as required using the mouse
- + Measuring accuracy down to 1/10 mm
- + For inspecting die cutting positions in the
- + Measurement of panels
- + Inspection of the web tension on flexible materials

Image stabilization

- + Jitter, for instance caused by web elongation during printing, can be compensated in the direction of web travel
- + The details of register marks can be monitored precisely on screen without "skipping"

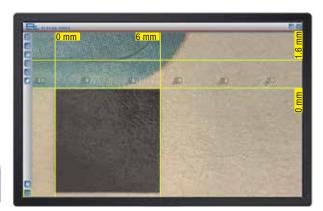




















Position gallery

- + Up to 5/21/30 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 are taken into account
- + Double camera systems can switch freely from position to position between the cameras
- + In each position it is also possible to vary individually between lead/follow and single camera mode
- + A rear flash is also possible instead of the second camera for inspecting the front and rear registers
- + A program library provides quick access
- + Saved programs can be edited









Color comparison

- + The high image quality allows precise color inspection over the entire job
- + Minimal color deviations are detected
- + The inspection window allows simultaneous monitoring of up to 8 colors
- + The color comparison is therefore excellently suited to 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
- + The last 50 measured values of each monitored color are saved and can be displayed graphically
- + Signal output for alarms (24 V signal)





Δ E	Evaluation
0.0 0.5	No difference to almost no difference
0.5 1.0	Difference can be distinguished by trained eyes
1.0 2.0	Imperceptible color difference (2.0 = typical limit)
2.0 4.0	Perceptible color difference
4.0 5.0	Significant color difference that is rarely tolerated
Above 5.0	The difference is evaluated as a different color

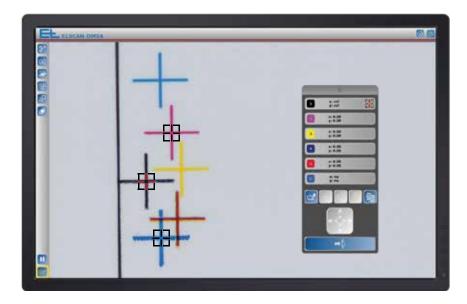


Register Pre-Adjustment (RPA)

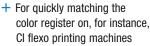
Ideal printing, more quickly

ELSCAN RPA (Register Pre-Adjustment) was specially developed for the flexo printing area. Due to the easy operation, the register can be set much more quickly on flexo printing machines while setting up a new print job or while a process is running, in this way waste can be avoided and costs reduced.

ELSCAN RPA combines register pre-adjustment with web monitoring - everything in one system. After setting up, the camera system is ready for web monitoring and can be moved to any position on the repeat to display the related images in high resolution on the monitor.

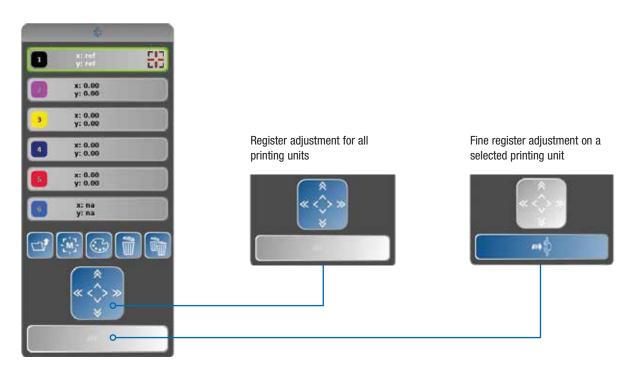


RPA in detail





- + Measuring accuracy higher than 50 µm due to high screen resolution and lenses with fixed focal length
- + The individual register marks are selected with the mouse and the distances between them measured traverse and longitudinally to the web
- + The established deviations are transferred to the printing press
- + Up to 12 printing units are supported
- + Printing unit configurations created are stored in the archive
- + The interface to the printing press is implemented via Ethernet



You will find more detailed information in the separate brochure "ELSCAN RPA" (PRO--251203).

Questionnaire 1/3

General data

Customer	
Street	
Zip code	City/town
Country	Internet
Phone	Fax
Contact person	
Phone (direct)	E-mail
Project	

Technical data

Type of machine			
Make			
Position on the machine			
Frame inner dimension	GI mm		
Web type	☐ Printed paper	☐ Printed film	-
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

D .		
Date	Issuer	



Questionnaire 2/3

Specification, ELSCAN OMS3

Camera	Positioning:		Manual				Motorized		
Operation	☐ Mouse		Cordless mouse				Trackball		
	Cable length crossbeam – mouse:		1.8 m 🚨 5 m						
	☐ Keyboard:		Panel mounted kit				With housing		
	Cable length crossbeam – keyboard:		1.8 m						
	☐ Touch monitor								
Monitor	Screen diagonals:		22" (16:9, 1920 x 1080)				Diagonal		
	Cable length:		3 m		5 m				
Optional	24 V power supply unit panel mounted kit		24 V power supply unit in hou			sing			
	■ Monitor pivoting arm		Mouse tray				Trackball holder		

Specification, ELSCAN OMS4.6

Front camera	☐ Standard (120 x 90 mm)		High resolution (90 x 67 mm)			UHD (24 x 18 mm)		
	☐ Twin-Flash (120 x 90 mm)		UV flash (120 x 90 mm)					
	Positioning:		M anual			Motorized		
	Assembly:		One-sided ((cantilever)		Both sides (GI > 700 mm)		
	Crossbeam:		Compact			Standard		
	Cable length:		3 m	□ 5 m		m (max. 50 m)		
Rear camera	☐ Standard (120 x 90 mm)		High resolut	tion (90 x 67 mm)		UHD (24 x 18 mm)		
	☐ Twin-Flash (120 x 90 mm)		UV flash (120 x 90 mm)					
	Positioning:		Manual			Motorized		
	Assembly:		One-sided (cantilever)			Both sides (GI > 700 mm)		
	Cable length:		3 m	□ 5 m		m (max. 50 m)		
Rear flash	☐ Without		Manual			Motorized		
Operation	☐ Mouse		Cordless mouse			Trackball		
	Cable length PC – mouse:		□ 1.8 m □ 5 m					
	☐ Keyboard:		Panel mounted kit			With housing		
	Cable length PC – keyboard:		1.8 m	□ 5 m		m		
	☐ Multitouch monitor:		☐ Diagonal 22"			Diagonal"		
Monitor 1	Screen diagonals:		19" (4:3, 12	280 x 1024)		24" Full HD (1920 x 1080)		
	Cable length:		m	(max. 100 m)				
Monitor 2 (must have the same resolution as monitor 1!)	Screen diagonals:		19" (4:3, 12	280 x 1024)		24" Full HD (1920 x 1080)		
	Cable length:	□ m (max. 100 m)						
Additional modules	Position gallery		Color comparison			Register pre-adjustment		
Optional	■ Monitor pivoting arm		Mouse tray			Trackball holder		

Questionnaire 3/3

Specification, ELSCAN OMS6

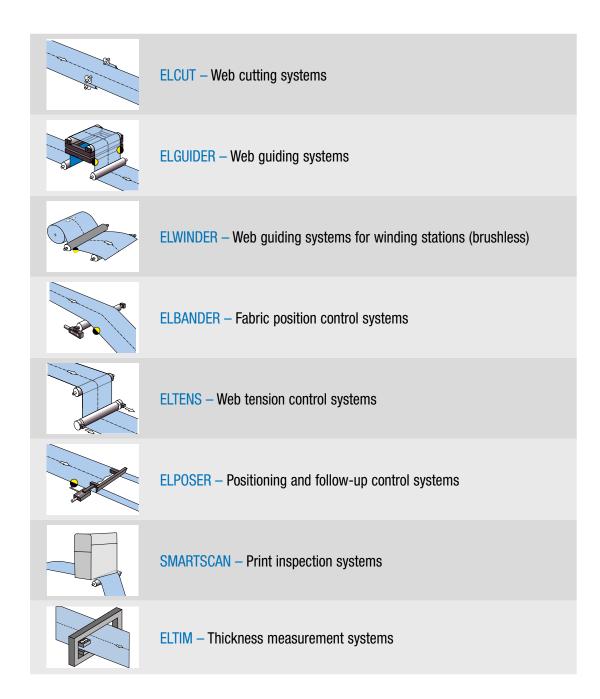
Camera	Cable length camera – server:		□ 10 m				20 m
	Cable length server – client:		m (max. 100 m)				
	Additional flash:		☐ Varnish flash				UV flash
Rear flash	☐ Background flash:		■ Motorized adjustment				Continuous
	☐ Backlight flash						
	☐ Passive background plate						
Operation	☐ Mouse		Cordless mouse				Multitouch monitor
	Cable length:		1.8 m 🚨 5 m				
Monitor 1	Screen diagonals:		22"		24"		
	Cable length:	m					
Monitor 2 (must have the same resolution as monitor 1!)	2nd monitor		22"		24"		
	Cable length:		□m				
Optional	■ Monitor pivoting arm		Mouse tray				

Specification, synchronization for OMS3 / OMS4.6 / OMS6

Synchronization	Encoder with shaft coupling (A,B,Z signal)	Cable length:		10 m		15 m		m			
		(A,D,Z Sigilal)	☐ With attachments								
		Encoder with wheel (A, B	Cable length:		10 m		15 m		m		
	signal)	signal)	☐ With attachments								
	☐ Gearwheel sensor	Cable length:		10 m		15 m		m			
		☐ With attachments									
		Print mark sensor	Cable length:		5 m 🚨	10	m 🚨	15 m	□m		
		☐ With attachments									
	☐ Proximity switch	Cable length:		5 m 🚨	10	m 🚨	15 m	□m			
		☐ With attach	ments								
	☐ Signal provided by printing press	Cable length:		10 m		15 m		m			
		☐ NPN		PNP		Push/Pul	ı 🗆	Differential			



Other products for the paper and film industry





Subsidiaries

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