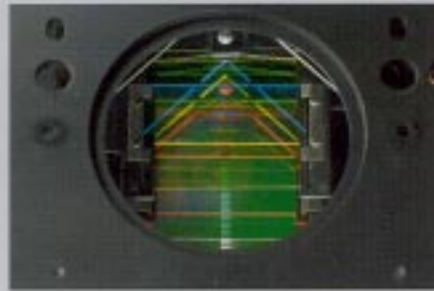


durst

Optimo AC
Optimo CL
Optopia



The new Optimo and Optopia enlargers are part of the Durst PIDAM darkroom system. Outstanding features include a novel lighting system and supremely convenient operation. They form a complete system for modern efficient print production.



Photographic printing is facing growing technical demands.

We have in recent years seen significant advances in cameras, lenses, films, enlarging papers and chemistry. Latest colour films and printing emulsions cover greater chromaticity ranges, higher colour saturation and increased resolution. And progress still continues. The number of film sizes makes further demands on photofinishing technology.

The enlarger still rules supreme.

Daylight printers have made enlarger work stations somewhat less attractive in the darkroom – but its versatility and efficiency make the regular enlarger indispensable for producing high-quality enlargements. More advanced features, simpler operation and sensible automation have made enlarger operation more efficient and profitable. More flexible print production makes the enlarger an effective means for finishers offering superior and more individual customer services.

Nowadays image quality depends primarily on optical and projection performance – i.e. on the enlarger. Today's enlargers have to produce prints of optimum colour rendering and perfect definition. To make the most of the improved printing characteristics of current photo papers you need suitable matched whole lighting systems. Traditional enlarging is subject to limitations of optical and illumination technology.

Things are speeding up, too. Development often takes less time than focusing and exposing a conventional enlarger. If processing is that fast, enlarger engineering must keep up, too.

Durst continues to back traditional enlarging.

For meeting essential requirements of present-day professional photography, the technology, efficiency and economy of traditional enlarging is still superior to other production methods such as printing or electronic hard copies. Durst employs computer systems wherever electronic control offers faster, more precise and more convenient operation.

Durst has had generations of experience in enlarger design and manufacture. But progress means more than developing single products. We are aiming at a system technology to serve the next generation and to solve its problems overall and in detail.

The System

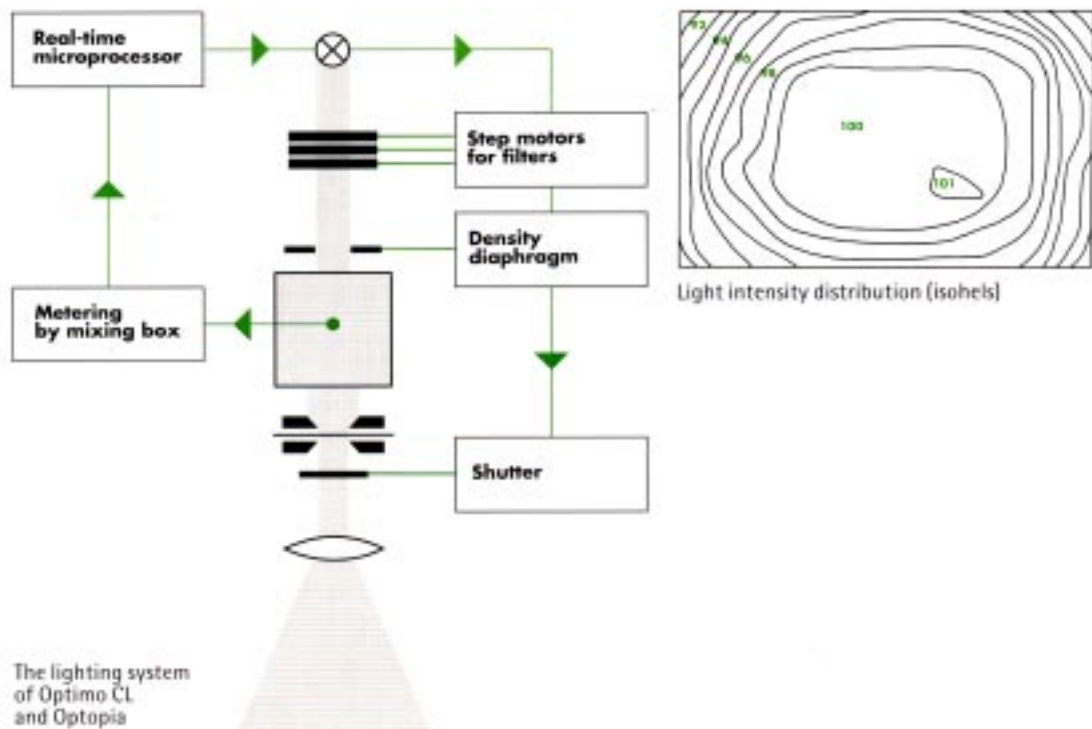
Durst offers a complete system of efficient up-to-date print production. The new Optimo and Optopia enlarger range provides high-performance colour enlargers for the modern printing lab, covering film sizes up to 4 x 5 inch (Optimo CL/AC) and up to 13 x 18 cm or 5 x 7 inch (Optopia). These new enlargers are part of Durst's PIDAM (picture data management) system and feature advanced lighting systems, electronic control, high convenience and special printer facilities (AC).

New lighting system for even illumination.

Durst developed a novel lighting system for these enlargers, offering exceptional reproducibility, light output and optical image quality. A highly responsive electronic control assures constant light intensity and homogeneous colour mixing. The light output is fully adequate for all processes and for extreme conditions. With every film size you are sure of short exposure times.

The new light source uses a perfected Closed-loop system with solid engineering designed for trouble-free heavy-duty operation. Durst's lighting setup concentrates the homogeneous projection light with minimum light loss onto every film area.

An ingenious build-in cooling system protects films against overheating and maintains constant projection conditions even in continuous use.



Electronically controlled optics for precise and rapid operation. Durst designed elaborate electronically controlled motor drives to adjust the magnification and for focusing. With this system the operator can quickly change films even while seated, irrespective of the enlarger head position, and precisely resets the enlarger to any previous setting. The electronics control the motorised adjustment of the lens carrier with its three high-quality lenses, the motorised aperture setting and the shutter.

You can equally rely on Durst's autofocus system: it focuses precisely all the time, without backlash and in every setting range.



Motorised lens adjustment

User-friendly operation and automation speed up the work flow and reduce setting up times.

Constant repetitive operations should be automated. Yet the enlarger must always permit easy manual operation.

Many of the interchangeable components are coded; each change is recorded. When repeating an exposure the system calls up the components required.

A clear keyboard layout with plainly marked functions, plus user prompting for the programming sequences, facilitate operation. The control also monitors input errors. Numerous supplementary functions speed up test exposures and allow automatic repeat exposures. A built-in output printer logs operations. Despite the many functions the exposure sequence is simple enough to be reduced to just four steps: Insert the film, select the order number (or read it in with a bar code reader), start, expose.



Control panel

```

PRINTING DATA
V= 22.0
M= 20.0
C= 0.0
D= 00.0
CP=13
LENS NO. 1
H=20.000
W=0.00
P= 20.0
F/3.5
T= S.L
VCR= ON
* 0.00
    
```

```

PRINTING DATA
V= 22.0
M= 20.0
C= 0.0
D= 00.0
CP=13
LENS NO. 1
H=20.000
W=0.00
P= 20.0
F/3.5
T= S.L
VCR= ON
* 1000.00
    
```

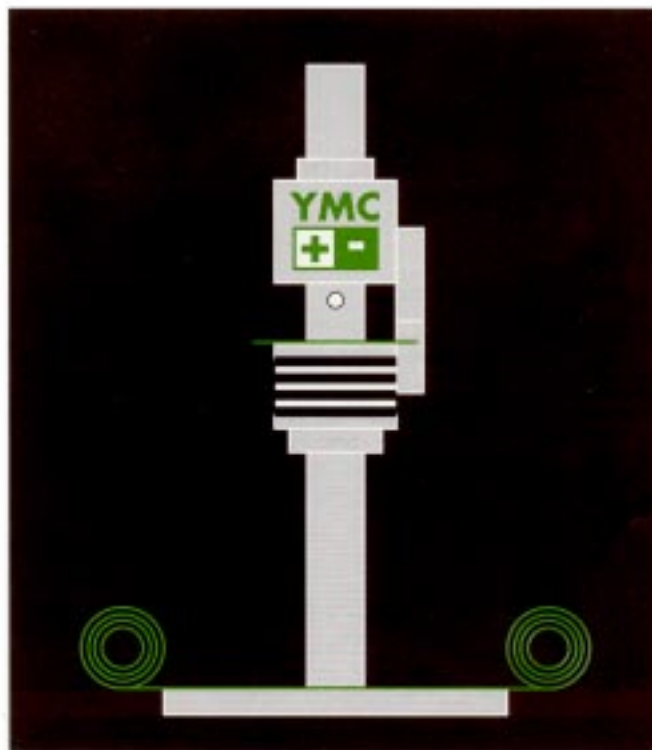
```

PRINTING DATA
V= 22.0
M= 20.0
C= 0.0
D= 00.0
CP=13
LENS NO. 1
H=20.000
W=0.00
P= 20.0
F/3.5
T= S.L
VCR= ON
    
```

Data printout

Optimo AC – a universal enlarger with printer features.

As a colour enlarger for film sizes up to 4x5 inch, the Optimo AC is a flexible single work station for professional print production. A built-in analyser, automatic exposure control and correction functions provide the facilities of an up-to-date photofinishing printer. The acceptable first-time print yield is over 80%. The Optimo AC is ideal for immediate yet individual enlargements of high quality, for instance in press agencies, in studios or as a rush print centre in photofinishing and high-speed labs.



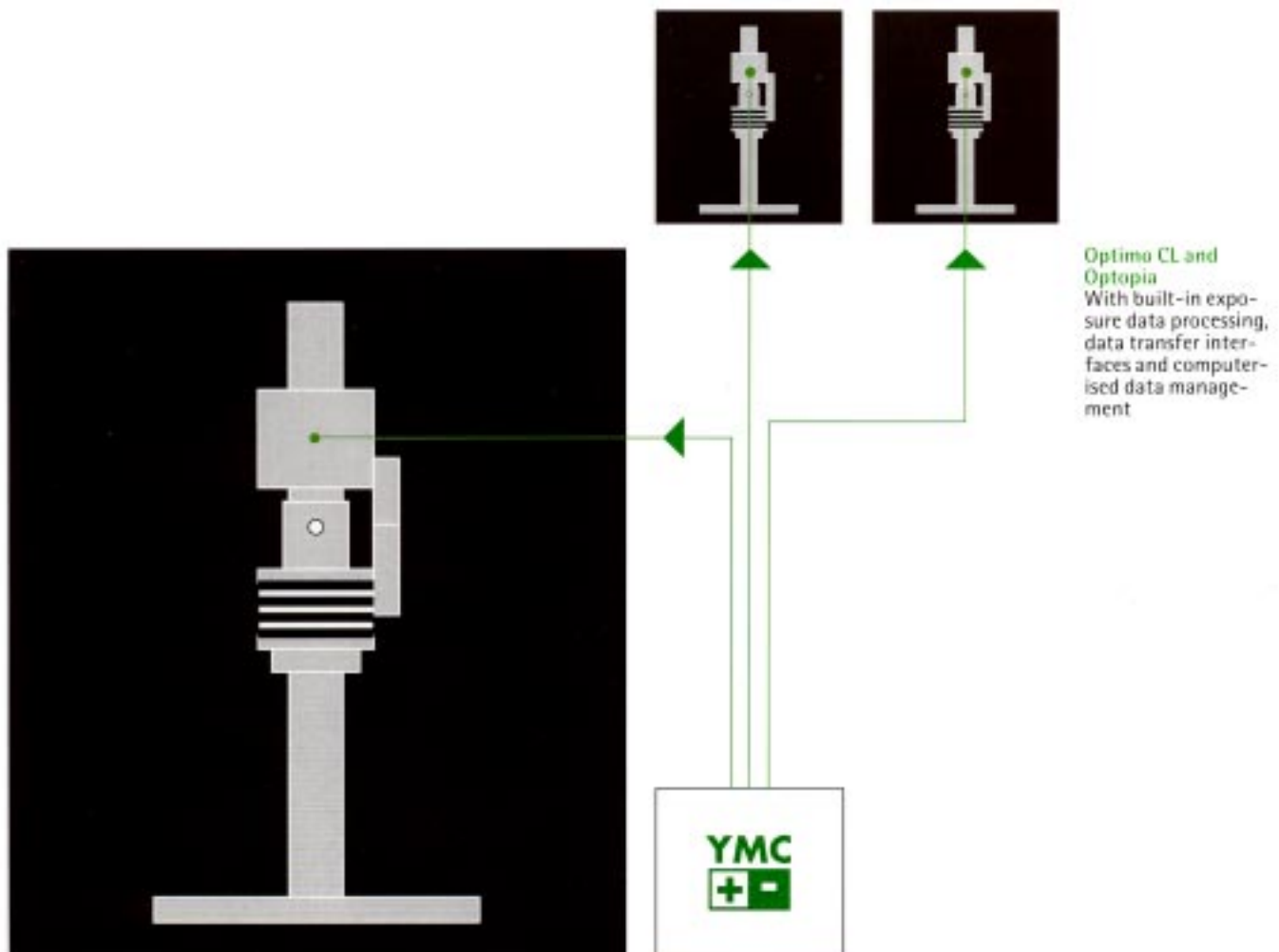
Optimo AC
Built-in analyser,
automatic exposure
control, correction
functions, printer
features

Optimo CL and Optopia – High-performance colour enlargers for the professional lab.

The Optimo CL is designed for films up to 4x5 inch, the Optopia for sizes up to 13x 18 cm or 5x7 inch. With their high repeat accuracy, built-in exposure data processing (by VCNA – video colour negative analysis) and data transfer interfaces these models are designed as components of the Durst PIDAM (picture data management) system. Durst's approach to print production of the future involves direct exposure data transfer, via PIDAM, between intelligent analysers such as the Durst Optoscan original scanner and Durst enlargers. Loss-free transfer of measured exposure data speeds up print production. Computerised data management makes for transparent order monitoring from acceptance to final output. The Optimo CL and Optopia enlargers are particularly suitable for professional printing labs depending on performance, profitability and efficiency.

Lab operation becomes more reliable, more efficient and more easily calculable.

Quality may centrally be determined. Lighting and control systems assure equal performance with all enlargers of this system. The Optimo and Optopia are reliable precision tools for the expert.



Features

Tension spring
Counterweighting spring for smooth enlarger head movement at every level.

750 watt tungsten-halogen lamp
Selected special lamp with diathermic reflector, tested to factory standards.

Subtractive filter system
Step motors acting via precision cams control dichroic yellow, magenta and cyan filters with constant precision over their whole setting range. Settings accurate to the nearest 0.005 density. Special patented glass rod light diffuser.

Mirror boxes
Fade-free light boxes ensure even illumination and homogeneous colour mixing. Three format matched mixing boxes (four for Optopia) spread the light evenly over the film area.

Negative carrier on roller bearings
Heavy-duty type with accurate register via register pins, interchangeable mask and glass inserts, four adjustable masking strips. Alternatively, freely movable glassless quick-change film carriers.

Carrier for interchangeable lenses and triple lens holder
Electronic shutter control (CL, Optopia), lens position indication. Motorised lens change of three permanently built-in Rodenstock lenses. Motorised aperture setting in half-stop intervals.

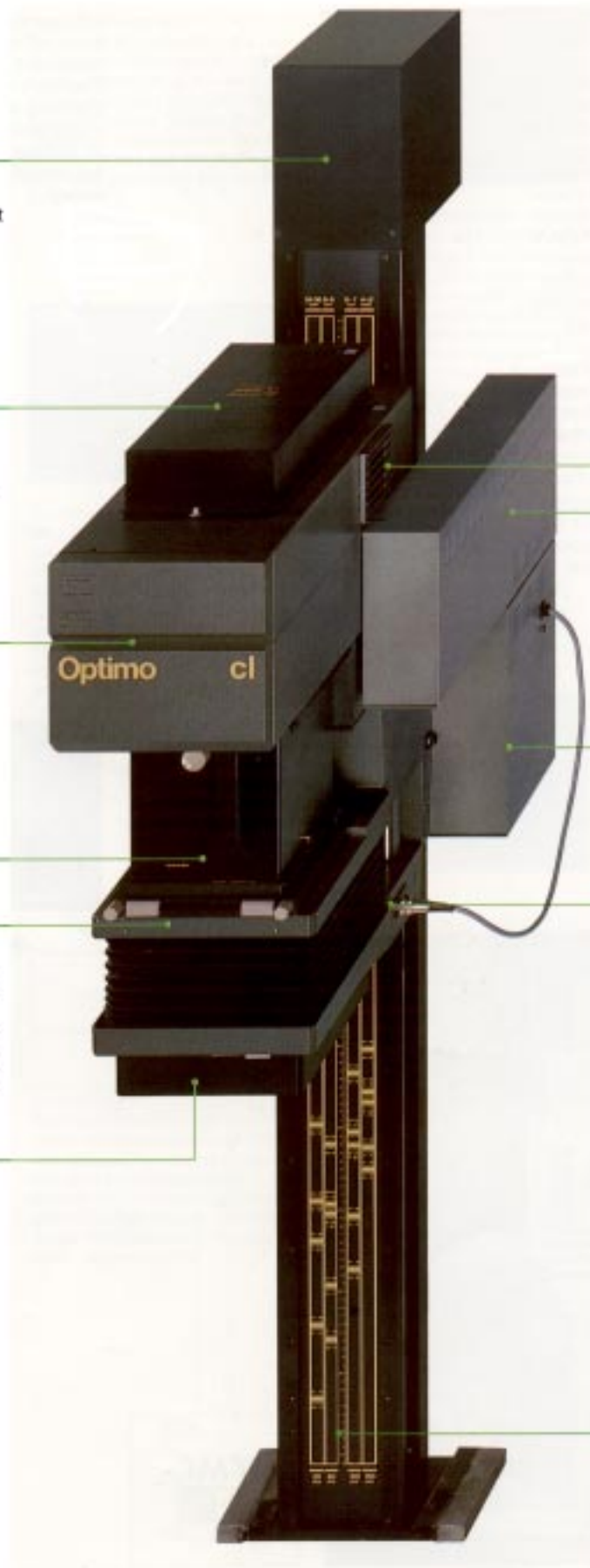
Cooling system
Two-step low-vibration, recirculating air cooling, with dust filter for lamphouse, mixing box and negative carrier.

Closed-loop electronic system
Monitors light intensity and colour composition (with about 100 readings/sec), control via filter system. Corrects any deviation during whole exposure. Keeps filter values constant irrespective of lamp aging or change of lamp or reflector.

Autofocusing
Electronic system coordinates lens and enlarger height adjustment to ensure constant focus with programmed lenses.

Electronically controlled lens and enlarger height adjustment
Constant-speed heavy-duty motors with backlash-free fine adjustment assure rapid and precise setting. Angle encoder provides exact positioning.

Profile column
Non-warping extruded aluminium section. Running surfaces in hardened and polished steel.



Further Optimo AC features

Subtractive filter system
Three dichroic filters set by step motors.

Dichroic exposure-terminating filters
Swing rapidly in and out for colour control during the exposure.

Film readings
Row of meter cells below film carrier reads full area of film sizes from 24x36 mm to 4x5 inch.



Closed-loop electronic system
Flexible exposure control (with exposure-terminating filters or matched pre-filtration). Exposure settings based on integrated film readings.

Functions

Operational control

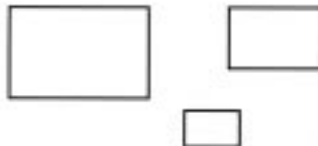
Electronic lens selection and designation. Mixing boxes identified by their coding. Come-down function permits easy film changing while seated. System programming includes built-in instructions and user prompting. Monitors operations and signals errors.



Autofocus

Microprocessor-controlled automatic focusing for up to seven different lenses and automatic lens channel selection.

Can program and store film plane locations of three further negative carriers. PV (positive variator) program can match autofocus to any change of projection plane. NV (negative variator) program compensates image plane shift with laterally reversed projection.



Auto sizing

Precise stepless size adjustment while automatically maintaining sharp focus. Numerical input of linear or percentage magnification, or by entering negative and print size. Optional manual settings. Repeatability 0.1%, print size tolerance 0.05%.



Electronic filter control

Numerical filter and density control by direct input of CC values (0 to 130 for colours and 0 to 90 for density diaphragm). Stepless filter settings; entering correction values automatically compensates density. Closed-loop system compensates colour or density fluctuations during the exposure. Normal operation: Entering filter corrections automatically corrects density setting. Filter settings corrected via offset values on switching mixing boxes.



Translator

VCNA (video colour negative analyser) operation: Entering filter corrections automatically corrects exposure time with allowance for reciprocity failure. Colour values established by VCNA matched internally to any lens and mixing box combination.



Exposure control

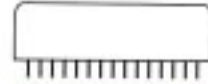
Built-in timer range from 0.1 to 999.9 sec; exposure times automatically corrected when changing aperture or density settings or when switching mixing boxes. Automatic reciprocity failure compensation on magnification change, twenty paper data memories each (AC: ten) for the three process types (colour negative, colour slide/transparency and black-and-white printing). Process drift correction via channels allocated to the process types.

Storage and recall of all exposure settings

Printing data automatically stored after every exposure. Exposure data traced via order numbers, stored paper data copied. Test function with different print magnifications and user-settable test standard.

System programming with user prompts

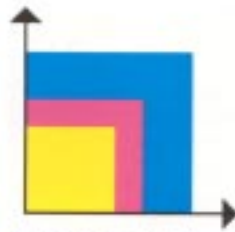
Matching of different accessories. Determining material-specific exposure data. Autofocus programming.



System interfaces

Built-in output printer for exposure and system data. Outlet for on-line data handling via bar code reader and Optoscan analyser. Interfaces for roll paper magazine, Optodens (reflection densitometer) and network outlet for enlarger groups (PIDAM network). Data bank access, order monitoring, operating data recording.

Additional Optimo AC functions



Exposure control
Built-in meter cells scan film. Centre-weighted analysis of image information, microprocessor-controlled colour correction, separate exposure times for the three exposure-terminating filters. Real-time control during exposures.

Auto dead head
Partial shading (dodging) or local spot printing possible without colour cast by presetting filtration and simultaneous swinging in of all three exposure-terminating filters.



CF film channel
Twenty film channels each for colour negatives, colour slides and B&W negatives, calibrated via plug-in reflection densitometer. Correction values for under- and overexposed films for automatic compensation of deviations from stored reference values.



VC variable correction
Can set ten correction levels for unbalanced colour or density distribution [e. g. flash shots against dark background]. Avoids overcompensation when computing corrections.



Subject failure
Ten freely selectable correction levels for specific subject conditions or fixed filtration values (e. g. daylight shots on tungsten type film).



Size compensation
Compensation of differences arising with different film sizes of a given film type. Film-specific corrections are not affected by film size.



Sample and hold
Storing a film reading and recalling the stored data for further exposures.

Correction hold
Storing manual corrections for further exposures with measured negatives or slides.

FXFF
Fixed exposure, fixed filtration
Retains stored colour and density settings for subsequent negatives or slides. Automatic reciprocity failure compensation for magnification changes. Simple production of contacts: Films are read, then contact printed on baseboard.

VXFF
Variable exposure, fixed filtration
Retains stored colour settings for subsequent negatives or slides, with automatic exposure correction. For uniform printing of exposure sets with a standard background.

Accessories

Wall mounting and easel arrangements

for Optimo CL/AL
Optowal, Optobrc
Labom Table
Labom Table M (magnetic)
Labom STN Optimo
Slide Table Opto

Wall mounting and easel arrangements for Optopia

Optowal
Labom Table Optigon
Labom Table M Optigon
Labom STN Optopia
Slide Table Opto

Lens carriers for Optimo CL

Optouno SH (Shutter)
with Lapla 50, 42, 39, 1139
Optotris SH with adapter rings
Optotrimot SH 1
with 50, 105 and 150 mm Rodagon lenses
Optotrimot SH 2
with 50, 80 and 150 mm Rodagon lenses

Lens carriers for Optimo AC

Optouno
with Lapla 50, 42, 39, 1139
Optotris with adapter rings
Optotrimot 1
with 50, 105 and 150 mm Rodagon lenses
Optotrimot 2
with 50, 80 and 150 mm Rodagon lenses

Lens carriers for Optopia

Optouno 138 SH
with Lapla 58, 55, 50, 42, 39, 1439
Optitris 138 SH with adapter rings



Optouno
Optotris
Optotrimot SH
Optotris 138N

* Included in standard outfit

Mixing boxes for Optimo CL/AC

- Optimobox 35
- Optimobox 77
- Optimobox 550* (CL)
- Optimobox 450* (AC)

Mixing boxes for Optopia

- Optopiabox 35
- Optopiabox 77
- Optopiabox 550
- Optopiabox 138*

Negative carriers for Optimo CL/AC

- Femoneg/Cofemneg (AC)
- Femomask 35N
- Femomask 45N
- Femomask 66N
- Femomask 67N
- Femomask 69N
- Femomask 92
- Femomask 450
- Femogla
- Femogla AN
- Optoneg 35
- Optoneg 45
- Optoneg 66
- Optoneg 67
- Optoneg 69
- Optoneg 92
- Optoneg 450
- Optocrop Carrier
- Optodap Neg and Optodap Box

Negative carriers for Optopia

- Trineg
- Trinomask 35N
- Trinomask 66N
- Trinomask 67N
- Trinomask 92N
- Trinomask 450N
- Trinomask 138
- Reglas 139
- Reglas 139 AN

Test negatives for Optimo CL

- Focus Target
- Test film CL 450*

Test negatives for Optimo AC

- Focus Target
- Test film AC 450*
- AC test negatives*
- Test slides
- Black-&-white test negatives

Test negatives for Optopia

- Focus Target
- Test film CL 450*

General accessories and spares

- Optodens
- Optoreader
- Opto Control*
- Opto stand
- Labom tablet
- Colamp 750*
- Reflector 750*
- Mivalo (register punch)



Optimobox 35
Optimobox 77
Optopiabox 550



Femoneg
Femomask 35N
Femomask 69N
Femomask 450
Optoneg 66



Optodens
Optoreader
Mivalo

Technical data

Light source

Tungsten-halogen lamp:	750 watts, 120 volts
Burning life:	approx. 200 hours
Separate glass reflector life:	approx. 1000 hours
Twin fan for lamphouse and mixing box	
Thermal overload cutout noise level:	max. 58 dBA

Closed-loop

Spectral colour readings at light mixing exit, automatic compensation of colour temperature fluctuations	
Max. deviation when changing lamps or reflectors:	+/- 0.015 D at gamma 1.0
Cold/warm drift:	+/- 0.01 D for Y-M-C
Reproducibility:	+/- 0.016 D
Luminous flux with mixing box 550, 150 mm lens at f/8, 2.5 x mag.:	30.7 lux
with mixing box 138, 240 mm lens at f/8, 1.5 x mag.:	30.6 lux

Filters

Dichroic yellow, magenta and cyan filters	
Maximum filter density:	130 CC values (1.3 D)
Adjustable in 1/2 steps (Full steps with AC)	
Density diaphragm:	90 CC values (0.9 D)
Adjustable in 1/2 steps	
Exposure time range:	0.1 to 999.9 sec (0.8 to 999.9 sec in AC mode)

Filter and exposure control by microprocessor (integrating film readings with AC). Electronically controlled shutter built into lens carrier (three exposure-terminating filters in AC)

Adjustment rates

Enlarger head, fast:	120 mm/sec
Enlarger head, slow:	6 mm/sec
Lens carrier, fast:	14 mm/sec
Lens carrier, slow:	0.7 mm/sec

Film sizes

Optimo AC/CL	Optopia
18 x 24 mm	18 x 24 mm
to 4 x 5 inch	to 13 x 18 cm (5 x 7 inch)

Dimensions

Maximum height:	Optimo AC/CL	Optopia
Optical axis/column base distance:	1960 mm (77 in.)	2055 mm (81 in.)
Baseboard size:	358 mm (14.1 in.)	445 mm (17.5 in.)
	840 x 800 mm (33.1 x 31.5 in.)	1128 x 865 mm (44.4 x 34.1 in.)

Magnifications (linear)

On baseboard:	Optimo AC/CL	Optopia
with 50 mm lens	min. 1.5	min. 2.0
80 mm lens	max. 26	max. 26
105 mm lens	0.3	0.8
150 mm lens	0.4	0.4
210 mm lens	11	11
240 mm lens	0.4	0.4
	7.2	7.2
		0.6
		4.6
		0.8
		3.5

Outlets for:

Roll paper magazine, remote control, On-line reflection densitometer, RS 232 serial interface for bar code reader or On-line Optoscan analyser, RS 232 serial interface for PIDAM net

AC mains unit

Supply voltage:	100/110/220 volts, 50-60 Hz
Stabilisation:	+/- 15% accurate within +/- 1% approx. 1100 watts
Power consumption:	
Fan-cooled transformer with additional mains outlet	

Recommended operating conditions

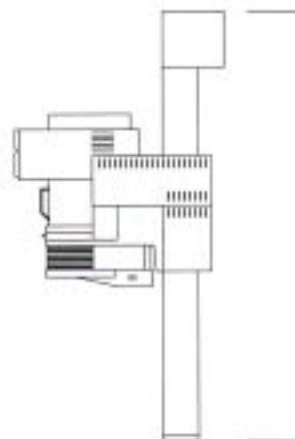
Temperature:	15-30 °C (77-130 °F)
Relative humidity:	30% to 95%

Optotrimot

Three Rodagon lenses (50, 105, 150 or 50, 80, 150 mm)	
Motorised aperture setting:	2.5 sec from largest to smallest
Reproducibility of aperture settings:	+/- 0.005 D
Max. f-stop deviation:	1st stop 0-0.15 D All other stops +/- 0.02 D

Optodens

Reading filters:	Status A
Linearity:	+/- 3% of density reading
Reproducibility:	+/- 0.01 D at 1.00 D +/- 0.02 D at 1.00-2.00 D





durst

Durst Phototechnik
GmbH
Division Phototechnik
Postfach 223
Vittorio Veneto Straße 59
I-39042 Brixen
Telefon 0472/30620
Telefax 0472/30980
Telex 400109/DURST

