

Darklight Duo Combination Sensitometer & Densitometer

Two products in one easy to use, compact unit

Quality Assurance in X-Ray Film Processing

Why Quality Assurance?

X-ray examinations can lead to an increased radiation dose to the patient. To minimize this risk as much as possible, quality assurance methods are crucial requirements.

In x-ray film processing, quality assurance is required for high-quality images.

Gradual changes in x-ray quality can be noticed in time saving film costs while ensuring diagnostic quality images.

The Application

To ensure a constant high level of film processing quality, a daily performance check of the film processor is required.

A sensitometer is used to expose a grey wedge with 21 steps on a test strip of the x-ray film. After developing the film, a densitometer will be used to measure the density of various steps of the grey step wedge.

Errors in the film processing such as changes in speed and contrast of the exposed film are detected by this method.

The Concept

Capintec has made thorough studies for this special application. The result is the darklight® concept offering both the functions of a sensitometer and densitometer in one device. (Stand-alone Sensitometer and Densitometer is also available for individual purchase) Special attention was paid to an esthetic and practical design that meets the requirements of everyday routine film processor QC.

Useful details such as the variable positioning



Darklight Duo Combination Sensitometer and Densitometer

pins for different film formats, the one-hand operation of the densitometer, an optional scan function for the automatic measurement of all 21 grey steps and the calculation of the daily deviations characterize the design of the darklight® and facilitates the QC job.



Darklight Duo... large easy to read display

Radiology & Dosimetry

Combined Sensitometer- and Densitometer

- For constancy tests of film processors according to German Standard DIN 6868 and International Standard IEC 61223-2-1
- High precision and reliability
- Sensitometer according to DIN 6868-2
- Densitometer with digital display

Optional:

Combined Sensitometer and Densitometer

with integrated PC interface and user menu

darklight® duo

- RS232 Interface (9- poles serial socket) for datatransmission to PC
- Integrated user menu for guiding the user through the operation steps for constancy test
- Stored reference values for up to 25 working locations
- Output of logarithmic speed and average gradient (LS and G) as defined in ISO 9236-1
- Automatic function for connection measurements for new film batches
- Output of new reference values according to DIN V 6868-55 (Dmin, sensitivity index SI, contrast ind. CI)

Technical Data

Size: 240 x 165 x 60 mm

Weight: 800g (without batteries)

Power: 4 x AA/ 1.5 V (Alkaline or NiCd) or darklight® power supply

Sensitometer

Specification by German Standard

DIN 6868-2 and DIN V 6868-55

- Spectral characteristic: blue/green switchable
- Peak wave length: blue 460 nm + 10 nm; green 510 nm + nm
- Exposure: adjustable in 5 steps, divided for every exposure color; +0.3 log exp.; +0.15 log exp.; -0.15 log exp.; -0.3 log exp.
- Long term exposure stability; + 0.02 log exp.
- Grey wedge: 21 steps
- Grey wedge constant: 0.15 log exp.
- Homogeneity of the steps: + 0.01 log exp
- Precision of the steps: + 5% (0.05) for sensi/duo; + 1% (0.01) for sensi ref/ duo re; Step 1 covered (Measuring value for base and fog = Dmin)



Darklight Densitometer

Densitometer

Specification by German Standard DIN 6868-2, DIN V 6868-55 and International Standard IEC 61223-2-1

- Spectral characteristics: visual optical density according to German standard DIN 4512-3; internal light source
- Measuring orifice aperture: Ø 3mm
- Measuring range: D = 0 up to D > 4.5
- Measuring accuracy for D < 3: + 0.01 (max. + 0.02)
- Repeat accuracy for D: + 0.01
- Optional: RS 232 Interface (9- poles serial socket) for data transmission to PC; integrated user menu

Darklight Duo-Combination Sensitometer/Densitometer with Automatic Scanning

Darklight® Duo scan with integrated PC interface, user menu, and automatic scanning

- For constancy tests of film processors according to German Standard DIN 6868 and International Standard IEC 61223-2-1
- High precision and reliability
- Sensitometer according to DIN 6868-2
- Densitometer with digital display
- RS232 Interface (9- poles serial socket) for data transmission to PC
- Integrated user menu for guiding the user through the operation steps for constancy test
- Stored reference values for up to 25 locations
- Output of logarithmic speed and average gradient (LS and G) as defined in ISO 9236-1
- Automatic function for connection measurements for new film batches
- Output of new reference values according to DIN V 6868-55 (Dmin), sensitivity index SI, contrast ind. CI)
- Automatical evaluation of all 21 sensitometer steps; measuring time less than 5 seconds!
- Manual measurement at any place with 180 mm arm length



Darklight Duo Combination Sensitometer and Densitometer with Automatic Scanning

Technical Data

- Size: 240 x 165 x 60 mm
- Weight: 800g (without batteries)
- Power: 4 x AA/ 1.5 V (Alkaline or NiCd) or darklight® power supply



Darklight Duo Combination Sensitometer and Densitometer

SENSITOMETER SPECIFICATIONS

Specification by German Standard DIN 6868-2 and DIN V 6868-55

- Spectral characteristic: blue/green switchable
- Peak wave length: blue 460 nm + 10 nm; green 510 nm + nm
- Exposure: adjustable in 5 steps, divided for every exposure color; +0.3 log exp.; +0.15 log exp.; -0.15 log exp.; -0.3 log exp.
- Long term exposure stability: + 0.02 log exp.
- Grey wedge: 21 steps
- Grey wedge constant: 0.15 log exp.
- Homogeneity of the steps: + 0.01 log exp
- Precision of the steps: 5% wedge for duo scan; 1% wedge for duo scan ref; + 0.05 for D<1 (duo scan); + 0.01 for D<1 (duo scan ref); Step 1 covered (measuring value for vase and fog = Dmin)

DENSITOMETER SPECIFICATIONS

Specification by German Standard DIN 6868-2, DIN V 6868-55 and International Standard IEC 61223-2-1

- Spectral characteristics: visual optical density according to German standard DIN 4512-3; internal light source
- Measuring orifice aperture: Ø 3mm
- Measuring range: D = 0 up to D> 4.5
- Measuring accuracy for D< 3: + 0.01 (max. + 0.02)
- Repeat accuracy for D: + 0.01
- RS 232 Interface (9-poles serial socket) for data transmission to PC
- Integrated user menu
- Measuring modes: manual single measurement; 21 step automatic passage; 21 step manual measurement
- Film speed: manual on touch, typical 5 sec.; speed variable 3-20 sec.; all formats possible

ITEM #	DESCRIPTION
0695-0083	Darklight Sensitometer
0695-0082	Darklight Densitometer
0695-0084	Darklight Duo EC Combination Sensitometer and Densitometer
0695-0085	Darklight Duo Combination Sensitometer and Densitometer with PC Interface
0695-0086	Darklight Duo Combination Sensitometer and Densitometer with Automatic Scanning and PC Interface