B&W Densitometer
TRD-Series

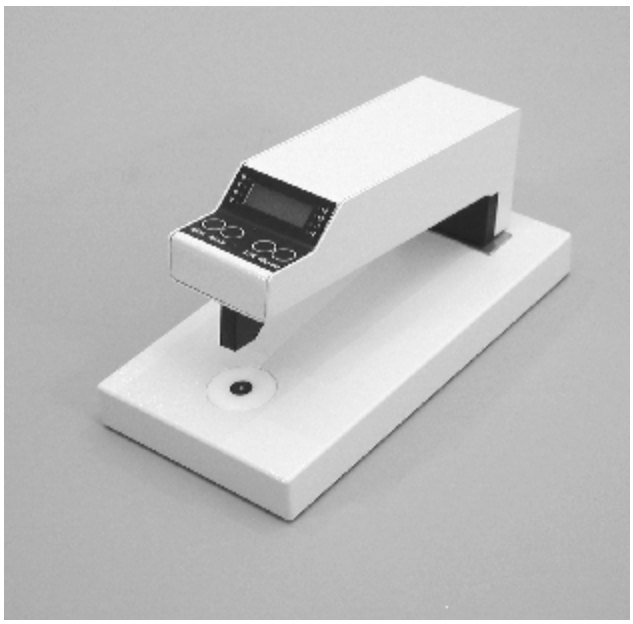
Measurement of B&W films and papers in reflection and transmission mode

Wide area of applications

Dual mode for reflection and transmission measurement. Suitable for density measurement of B&W RC, FB and inkjet papers as well as films for photographic, X-ray, graphics and pre-press applications. The measurement results are continuously taken and displayed in units of logarithmic density (log.D) or percent (TRD 4) or zones (TRD Z).
The following applications are given as a brief introduction how to benefit of density measurement.

- RIP and printer calibration
- Calibration of multigrade papers and enlargers
- Calibration of film and developer
- Determination of true film sensitivity
- Determination of contrast and range

Instrument description



Heiland densitometers are build in a solid metal box and are powered by 12VDC by means of a wall plug power supply, that is included in delivery. The densitometer consists of the base unit and the measurement arm (lever). Both parts are connected via a precise bearing, the integrated spring pushes the arm in the upper position after releasing. The probe is mounted underneath the lever.
The transmission measurement light is emitted through an opal diffuser, for reflection measurement, the directed light is emitted under 45 deg. to the paper. The top of the base unit serves as a platform, where the film or paper rests during measurement.
The illumination and display are activated automatically when the measuring arm is lowered down. The 3-digit LED display allows a precise reading. Using the "ZERO" button the display can be reset to "0.00".

Various models to meet your specific requirement

The **TRD 2** densitometer is mainly used in general photographic applications, like calibration of B&W films or multigrade paper. Additionally it is used for the process control of X-ray films. It is equipped with a fixed aperture (diameter can be selected prior to ordering).

TRD 4 This model is mainly used for pre press and press applications, like calibration of RIP and printers. After setting Dmin and Dmax, the density is measured in units of percent or logD.

The **TRD Z** instrument is specialised for usage in the zone system. The reading can be done in units of log. density or zones. The reference points Dmin and Dmax can be set independent.

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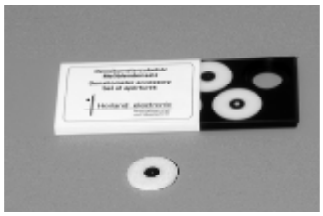
Options

All densitometers can be equipped with options, thus extending the range of applications without selling meaningless equipment.



Opt.02: A set of 4 exchangeable apertures of various diameters (0,5/1/2 and 3mm).

Opt.03: An USB port allows to transfer the actual displayed density value to a PC via standard RS232 interface. We are offering special PC software tools.

Opt. 05: Extends the measurement range in the transmission mode to 5,5 logD. This is useful for high density films created by a RIP.

Opt. 06: Extends the resolution of the display to 0.001 logD for densities lower than 1 logD.

Easy working procedure

Connect the instrument to main power and switch on using the main switch. Lower the lever slightly down. Choose the measurement mode (transmission/reflection) and the display mode (for the TRD4 logD or % and for the TRDZ logD or zone). Depending on the good to be measured, place the fog area of a film or the unexposed edge of a paper in the middle of the aperture. Reset the display using the “Min” button, for the TRD 4 and Z set also the max. density of the paper with the “Max” button. Centre the measurement area of your film or paper and fully press down the lever again for taking the measurement result. Measurements are done continuously and results are displayed (about 3 measurements per second), so the good may be shifted to various position while measuring.

Factory calibrated – a stable tool

The instrument is calibrated at the factory. A certification document is shipped with the instrument using two calibration strips with documented density values. Normally the densitometer does not need to be re-calibrated within years.

Technical data

Dimensions (length x width x height):	200 x 130 x 135 mm
Weight:	1 kg
Power supply:	12VDC, wall plug power supply included
Power consumption	6 VA
Available aperture diameters:	0,5 / 1 / 2 / 3 mm (Opt.02. includes all 4)
Light source Transmission:	2700 Kelvin, diffused
Light source Reflection:	2700 Kelvin, directed
Maximum object size (width x thickness):	260 mm x 2 mm (length: infinite)
Maximum measurable density	
• Transmission aperture 3,0mm:	4,0 D
aperture 2,0mm:	3,5 D
aperture 1,0mm:	3,0 D
aperture 0,5mm:	2,0 D
• Reflection aperture 3 mm:	2,5 D
Reading variation:	+/- (1% + 0,02 log.D.)
Repeat accuracy:	+/- 0,01 D
Temperature range:	17 ... 27° Celsius / 62 ... 81° Fahrenheit
Relative humidity:	0 ... 70 %
Accessories:	2 calibration strips

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