

Photometry

History

More than three decades have passed since the appearance of the first PC 100 photometer system.

Since that time, Tintometer has become a world-famous name as the manufacturer of photometer systems sold under the brand name of Lovibond®.

Our range of photometer systems extends from the **MD 100*** and **MD 110*** as hand-held models, the multi parameter photometer **MD 200*** as desktop model to the **SpectroDirect** spectrophotometer for laboratories.

The new **XD 7000** (VIS) and **XD 7500** (UV/VIS) spectrophotometers include all available Lovibond® methods and give the professional user a wide range of options in all areas of water analysis.

These devices also cover special administrations and demanding applications in research and development, as well as everyday routine lab work.

The multi-functional **PM photometers** provide the answer to all requirements relating to the analysis of water used in modern swimming pools and baths. They offer a wide variety of pre-programmed methods and are therefore suitable for the demands of modern water analysis.

The **MultiDirect** offers a wide variety of pre-programmed methods and is therefore suitable for the demands of modern water and drinking water analysis.

Representing particularly robust, portable photometers for fast, flexible on-site analysis are the two **MD 600** and **MD 610** devices. Thanks to the additional fluorescein and PTSA parameters, the **MD 640** is optimally suited for tracer measurement in closed water treatment systems.

The **PM 630**, the **MD 610** and the **MD 640** are equipped with state-of-the-art data transmission and feature a **Bluetooth®** interface. Together with the free app AquaLX® or the separately offered Bluetooth® dongle, data exchange is fast and wireless.

* The photometer series MD 100, MD 110 and MD 200 do not contain all the mentioned parameters in one device. Number and type of parameters are version dependent (see corresponding chapter).

Parameter	MD 100* & MD 110*	MD 200*	MD 600 & MD 610 & MD 640	MultiDirect	PM 620 & PM 630	PM 600	SpectroDirect	XD 7000	XD 7500	also compatible to Hach® instruments*
Acid Capacity K _{S4.3}	■	■	■	■	■	■	■	■	■	
Alkalinity-M	■	■	■	■	■	■	■	■	■	
Alkalinity-P			■	■			■	■	■	
Aluminium	■		■	■			■	■	■	s. page 114
Ammonia	■		■	■			■	■	■	s. page 114
Arsenic							■	■	■	
Boron			■	■			■	■	■	
Bromine	■	■	■	■	■	■	■	■	■	s. page 114
Cadmium							■	■	■	
Calcium Hardness	■	■	■	■	■	■	■	■	■	
Chloride	■	■	■	■	■	■	■	■	■	
Chlorine	■	■	■	■	■	■	■	■	■	s. page 114
Chlorine Dioxid	■	■	■	■	■	■	■	■	■	s. page 114
Chromium			■	■			■	■	■	
COD	■	■	■	■	■	■	■	■	■	s. page 114
Copper	■	■	■	■	■	■	■	■	■	s. page 116
Cyanide			■	■			■	■	■	
Cyanuric Acid	■	■	■	■	■	■	■	■	■	
DEHA	■	■	■	■	■	■	■	■	■	s. page 116
Fluoresceine (only MD 640)			■							
Fluoride	■	■	■	■	■	■	■	■	■	
Formaldehyde							■	■	■	
Hazen (Pt-Co-Units ; APHA)	■		■	■			■	■	■	
Hydrazine	■	■	■	■	■	■	■	■	■	s. page 116
Hydrogen Peroxide		■	■	■	■	■	■	■	■	
Iodine			■	■	■	■	■	■	■	
Iron (Fe ²⁺ , Fe ³⁺), soluble	■	■	■	■	■	■	■	■	■	s. page 116
Langelier Water Balance System		■	■	■	■	■				
Lead							■	■	■	
Manganese	■	■	■	■	■	■	■	■	■	s. page 116
Molybdate / Molybdenum	■	■	■	■	■	■	■	■	■	s. page 116
Nickel			■	■			■	■	■	
Nitrate			■	■			■	■	■	s. page 116
Nitrite			■	■			■	■	■	s. page 116



MD 100 / 110



MD 200



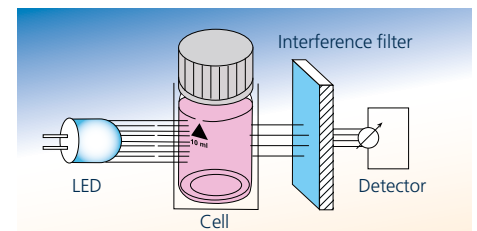
PM 630

Parameter	MD 100* & MD 110*		MD 600 & MD 610 & MD 640		MultiDirect		PM 620 & PM 630		PM 600		SpectroDirect		XD 7000		XD 7500		also compatible to Hach® instruments*
	MD 100*	MD 110*	MD 600	MD 610	MD 640	MultiDirect	PM 620	PM 630	PM 600	SpectroDirect	XD 7000	XD 7500	XD 7000	XD 7500			
Oxygen, active			■	■	■	■					■	■					
Oxygen, dissolved	■		■	■	■	■					■	■					
Ozon	■		■	■	■	■					■	■					
pH-Value	■	■	■	■	■	■					■	■					
Phenole											■	■					
PHMB (Biguanide)			■	■	■	■					■	■					
Phosphate	■		■	■	■	■					■	■					s. page 116
Phosphonate		■	■						■		■	■					s. page 118
Polyacrylates		■									■	■					
Potassium			■	■						■	■	■					
PTSA (only MD 640)			■														
Silicia	■		■	■	■					■	■	■					s. page 118
Sodiumhypochlorite		■	■	■	■	■					■	■					
Spectral Absorption Coefficient (436 nm/525 nm/620 nm)									■		■	■					
Spectral Absorption-Coefficient (254 nm)																■	
Sulphate	■		■	■	■	■				■	■	■					s. page 118
Sulphide			■	■	■					■	■	■					
Sulphite			■	■	■					■	■	■					
Surfactants (anionic, cationic, non ionic)			■	■	■					■	■	■					
Suspended Solids	■		■	■	■					■	■	■					
TOC			■	■	■					■	■	■					
Total Hardness	■		■	■	■	■				■	■	■					
Total Nitrogen			■	■	■					■	■	■					s. page 118
Triazoles	■		■								■	■					
Turbidity (attenuated radiation method)			■	■	■					■	■	■					
Urea	■	■	■	■	■	■				■	■	■					
Zinc	■		■	■	■	■				■	■	■					

The principle of photometry

When specific reagents are added, the water sample takes on a degree of coloration that is proportional to the concentration of the parameter being measured. The photometer measures this coloration.

When a light beam passes through the coloured sample, energy with a specific wavelength is absorbed by the test substance. The photometer determines the coloration of the sample by measuring the transmission or absorption of light of this wavelength (in other words, monochromatic light). High-quality interference filters precisely limit the wavelength and are a prerequisite for obtaining high-precision measurement results. The use of such interference filters is one Lovibond® filter photometers to the quality standard. The photometer then uses a microprocessor to calculate the required concentration and displays the result.



Mode of operation of the photometer



* HACH® is a registered trademark of Hach Company, Loveland, Colorado. The use of the HACH® trademark does not imply any affiliation with or approval by Hach Company regarding the formulation, testing or compatibility of these products for use in HACH® brand spectrophotometers or other devices or systems.