

# MD 200 Photometer



Precise results  
using high-quality  
interference filters

## Highlights

- Scroll Memory
- Automatic Switch-Off
- Real-Time-Clock and Date
- Calibration mode indicator
- Backlit Display
- Storage Function
- One Time Zero (OTZ)
- Waterproof<sup>\*)</sup>

\*) as defined in IP 68, 1 hour at 0.1 meter, buoyant

## Single Parameter

Test	Code
<b>COD</b> , tube tests, without reagents 0 - 150 mg/l O <sub>2</sub> (ø 16 mm) 0 - 1500 mg/l O <sub>2</sub> (ø 16 mm) 0 - 15000 mg/l O <sub>2</sub> (ø 16 mm)	28 92 502

## 4in1

Test	Code
<b>Chlorine, pH, Stabilizer, Alkalinity-M</b> tablet reagents 0.01 - 6.0 mg/l Cl <sub>2</sub> / 0.1 - 10 mg/l Cl <sub>2</sub> * 6.5 - 8.4 pH / 0 - 160 mg/l cyanuric acid 5 - 200 mg/l CaCO <sub>3</sub> (TA)	28 60 502
<b>Chlorine, pH, Stabilizer, Alkalinity-M</b> liquid reagents for chlorine and pH 0.02 - 4 mg/l Cl <sub>2</sub> / 6.5 - 8.4 pH 0 - 160 mg/l cyanuric acid / 5 - 200 mg/l CaCO <sub>3</sub> (TA)	28 60 542

## 6in1

Test	Code
<b>Chlorine, Bromine, pH, Stabilizer, Alkalinity-M, Calcium hardness</b> tablet reagents 0.01 - 6.0 mg/l Cl <sub>2</sub> / 0.1 - 10 mg/l Cl <sub>2</sub> * 0.05 - 13 mg/l Br / 6.5 - 8.4 pH 0 - 160 mg/l cyanuric acid / 5 - 200 mg/l CaCO <sub>3</sub> (TA) 0 - 500 mg/l CaCO <sub>3</sub> (CaH)	28 61 902
<b>Chlorine, pH, Stabilizer, Alkalinity-M, Copper, Iron</b> tablet reagents 0.01 - 6.0 mg/l Cl <sub>2</sub> / 0.1 - 10 mg/l Cl <sub>2</sub> * 6.5 - 8.4 pH / 0 - 160 mg/l cyanuric acid 5 - 200 mg/l CaCO <sub>3</sub> (TA) / 0.05 - 5 mg/l Cu 0.02 - 1 mg/l Fe <sup>2+/3+</sup>	28 62 102

## 2in1

Test	Code
<b>Chlorine, pH</b> , tablet reagents 0.01 - 6.0 mg/l Cl <sub>2</sub> / 0.1 - 10 mg/l Cl <sub>2</sub> * 6.5 - 8.4 pH	28 89 402
<b>Chlorine, pH</b> , liquid reagents 0.02 - 4 mg/l Cl <sub>2</sub> / 6.5 - 8.4 pH	28 89 412
<b>Copper, pH</b> tablet reagents 0.05 - 5 mg/l Cu / 6.5 - 8.4 pH	28 72 102
<b>Hydrogen peroxide, pH</b> (no OTZ) liquid reagents 1 - 50 mg/l H <sub>2</sub> O <sub>2</sub> / 40 - 500 mg/l H <sub>2</sub> O <sub>2</sub> 6.5 - 8.4 pH	28 88 102

## 5in1

Test	Code
<b>Chlorine, pH, Stabilizer, Alkalinity-M, Calcium hardness</b> tablet reagents 0.01 - 6.0 mg/l Cl <sub>2</sub> / 0.1 - 10 mg/l Cl <sub>2</sub> * 6.5 - 8.4 pH / 0 - 160 mg/l cyanuric acid 5 - 200 mg/l CaCO <sub>3</sub> (TA) / 0 - 500 mg/l CaCO <sub>3</sub> (CaH)	28 61 202

\* Delivery without reagents  
for measuring range 0.1 - 10 mg/l Cl<sub>2</sub>

## 3in1

Test	Code
<b>Chlorine, pH, Bromine</b> tablet reagents 0.01 - 6.0 mg/l Cl <sub>2</sub> / 0.1 - 10 mg/l Cl <sub>2</sub> * 6.5 - 8.4 pH / 0.05 - 13 mg/l Br	28 61 802
<b>Chlorine, pH, Stabilizer</b> tablet reagents 0.01 - 6.0 mg/l Cl <sub>2</sub> / 0.1 - 10 mg/l Cl <sub>2</sub> * 6.5 - 8.4 pH / 0 - 160 mg/l cyanuric acid	28 60 102
<b>Chlorine, pH, Stabilizer</b> liquid reagents for chlorine and pH 0.02 - 4 mg/l Cl <sub>2</sub> / 6.5 - 8.4 pH 0 - 160 mg/l cyanuric acid	28 82 002
<b>Chlorine, pH, Alkalinity-M</b> tablet reagents 0.01 - 6.0 mg/l Cl <sub>2</sub> / 0.1 - 10 mg/l Cl <sub>2</sub> * 6.5 - 8.4 pH / 5 - 200 mg/l CaCO <sub>3</sub> (TA)	28 89 002
<b>Chlorine, pH, Alkalinity-M</b> liquid reagents for chlorine and pH 0.02 - 4 mg/l Cl <sub>2</sub> / 6.5 - 8.4 pH 5 - 200 mg/l CaCO <sub>3</sub> (TA)	28 89 302

## Delivery Content

- Instrument in carrying case
- 4 batteries (AA)
- 3 round vials (glass) with lid
- 1 stirring rod, 1 brush & 1 syringe
- Tablet reagents and/or liquid reagents
- Guarantee sheet
- Certificate (Certificate of Compliance)
- Instruction Manual



# MD 200 Photometer

Designed to meet the latest technical requirements, the MD 200 photometer can be used in practically every area of water analysis.

The high-precision optics with its top-quality interference filters uses long-term stable LEDs as light-source. Because there are no moving parts, the entire measurement device requires absolutely no maintenance.

Precise and reproducible analysis results are obtained in a short time. The units impress with their user-friendliness, ergonomic design, compact dimensions and easy handling.

The tests are conducted using either Lovibond® tablet reagents with long-term stability and a guaranteed minimum 5 or 10 year shelf life or using liquid reagents.

## Scroll Memory (SM)

For multi-parameter instruments, the order of the various methods is determined. To avoid unnecessary scrolling for the required test method, the instrument memorizes the last method used before switching off the instrument. When the instrument is switched on again, the scroll list comes up with the last used test method first. This allows for faster access to favored methods.

## Zero Setting (OTZ)

It is not necessary to zero the instrument each time. The zero setting is held in memory until the device is turned off (**One Time Zero - OTZ**). The zero setting can be confirmed whenever it is useful.

## Technical Data

<b>Optics</b>	LEDs, interference filters (IF) and photo sensor in transparent sample chamber. Depending on the version, up to 3 different interference filters are used. Wavelength specifications of interference filters: 430 nm $\Delta\lambda = 5$ nm 530 nm $\Delta\lambda = 5$ nm 560 nm $\Delta\lambda = 5$ nm 580 nm $\Delta\lambda = 5$ nm 610 nm $\Delta\lambda = 6$ nm 660 nm $\Delta\lambda = 5$ nm
<b>Wavelength Accuracy</b>	$\pm 1$ nm
<b>Photometric Accuracy<sup>4)</sup></b>	3% FS (T = 20°C – 25°C)
<b>Photometric Resolution</b>	0.01 A
<b>Power Supply</b>	4 batteries (AA), capacity approx. 53 hours or 15000 tests (continuous operation without display lighting)
<b>Auto - OFF</b>	automatic switch-off
<b>Display</b>	backlit LCD (on keypress)
<b>Storage</b>	internal ring memory for 16 data sets
<b>Interface</b>	infrared interface for test data transfer to IRiM
<b>Additional feature</b>	real time clock and date
<b>Calibration</b>	factory calibration and user calibration. Reset to factory calibration possible
<b>Dimensions</b>	190 x 110 x 55 mm (L x W x H)
<b>Weight</b>	basic unit approx. 455 g (with batteries)
<b>Environmental conditions</b>	temperature: 5 – 40 °C rel. humidity: 30 – 90% (non condensing)


## CE-Conformity

<sup>4)</sup> tested with standard solutions

## Accessories

Item	Code
Set of 12 round vials with lid Height 48 mm, Ø 24 mm	19 76 20
Set of 5 round vials with lid Height 48 mm, Ø 24 mm	19 76 29
Adapter for round vials ø 16 mm	19 80 21 90
Membrane filter set for use when preparing samples, 25 membrane filters, 0,45 µm, 2 syringes 20 ml	36 61 50
Vial stand for 6 round vials Ø 24 mm, acrylic glass	41 89 51
Vial stand for 10 vials (Ø 16 mm or □ 13,5 mm), acrylic glass	41 89 57
Cleaning cloth for vials	19 76 35
Set of 12 sealing rings for round vial ø 24 mm	19 76 26
4 batteries (AA)	19 50 025
Battery lid	19 80 22 41
Measuring beaker, volume 100 ml	38 48 01
Plastic stirring rod, 13 cm length	36 41 00
Plastic stirring rod, 13 cm length, (10 pc.)	36 41 20
Plastic stirring rod, 10 cm length	36 41 09
Plastic stirring rod, 10 cm length, (10 pc.)	36 41 30
Infra-red data transfer modul IRiM	21 40 50



 Please see pages 78 onwards for reagents (order codes)



## Data Transfer

The optional available IRiM (infra-red interface modul) uses modern infra-red technology to transmit measurement data from the MD 200 photometer to one of 3 optional interfaces. These interfaces can be used to connect to a PC, a USB printer<sup>1)</sup> or alternatively a serial printer<sup>2)</sup>.

The unit is supplied complete with data logging software providing easy and rapid transfer of data to the PC. As an option, the data can be saved as an Excel sheet or a .txt file.

Measurement data can quickly be printed out, using a specified<sup>1)</sup> USB or alternatively a printer with a serial plug-in connected to the IRiM.

Applicable for the following operating systems: Windows XP, Windows Vista and Windows 7.

<sup>1)</sup> USB printer: HP Deskjet 6940 ; <sup>2)</sup> each ASCII printer

## Manufacturers Test Certificate M

Besides the "Certificate of Compliance" which is supplied with the MD 200, manufacturers test certificates M are available at cost on request. Manufacturers test certificates M are individually supplied per instrument and per method.

The manufacturers test certificate M has to be ordered together with the new instrument and cannot be delivered at a later stage.

## Verification Standard Kit

The verification standard kit for the MD 200 is designed to assure the user of the accuracy and the reliability of the results.

The kit contains one zero standard, 6 different vials for checking 6 different wave lengths and allows checking the complete range of MD 200 photometers.

The shelf life of the verification standard kit is two years from the date of production, provided that storage and use are in accordance with the instructions provided.

Measurements are taken in mAbs.

**Verification Standard Kit** 21 56 70

## Reference Standard Kits

The reference standards are designed to check the accuracy and the reliability of the results.

It is not possible to calibrate the photometer with the reference standards.

The shelf life of reference standards is two years from the date of production, provided that storage and use are in accordance with the instructions provided.

**Kit Chlorine** for instruments with tablet / liquid reagent 0.2\* and 1.0\* mg/l 27 56 50

**Kit Chlorine** for instruments with tablet / liquid reagent 0.5\* and 2.0\* mg/l 27 56 55

**Kit Chlorine** for instruments with tablet / liquid reagent 1.0\* and 4.0\* mg/l 27 56 56

**Kit pH** for instruments with tablet / liquid reagent 7,45\* pH 27 56 70

\* Approximate figure, actual figure specified in certificate of analysis enclosed



➔ Please see pages 78 onwards for reagents (order codes)