

# Lovibond® Water Testing Tintometer® Group



## MD 640

Modern, mobile photometer for rapid, reliable water testing



- PTSA and Fluorescein testing capabilities
- All of the colorimetric tests a Boiler or Cooling Water Technician would need - in one device
- Rugged, but lightweight, it is ideal for use out in the field

Part Number: 214140

### Easy Access to new testing parameter and ranges

Never have an outdated instrument again! As additional test methods become available, the new software update is available as a free download on our website.

### On-screen access to important test information

Using the correct reagent and sample cell for a preprogrammed calibration curve is essential to achieving accurate results. With the push of a button, it's easy to confirm what is required for the test. The method information will also show which conversion factors can be automatically applied to a method, so results are displayed in the required reporting units.

### No Need to memorize method numbers to access a testing method

The scroll-driven menu system allows you to navigate to the test you need without the need to memorize the test method number. In addition, a Users Favorite Menu can be defined so that the instrument displays only the testing methods you want to see,

### Data Storage and Transfer Capabilities

Store up to 1,000 readings with location ID, time and date stamp. Test data stored on the instrument can be easily exported using the IRiM accessory, which uses an infrared connection to export data directly to an Excel or .txt file.

### Choice of Reagent Platforms

With over 120 pre-programmed testing methods on one instrument, many parameters offer the choice of using Tablet, Powder Pack or Liquid reagents.

### Create User-Defined Calibration Curves

Have a proprietary testing method or a requirement to conform to a specific governmental or organizational standard method? Tired of converting ABS or %T values into meaningful values? It's easy to create and store as many as 35 user-defined methods on the MD 600 series. Up to a 25 order polynomial along with test parameters such as wavelength, measuring range, unit type and number of decimals displayed can be defined and implemented.

### Accurate, Reproducible Results

The optical system of the MD 600 series operates with six unique wavelengths. By utilizing LEDs and interference filters, the instrument quickly gives you results that you can be confident in.

### One-time-Zero Function

Don't waste time waiting for your instrument to Zero after each test. When testing a new sample, zero the instrument once and all subsequent tests of that sample do not require you to re-zero the instrument.

### Industry

Chemical Industry | Food and Beverage Industry | Industries Others | Marine Industry | Municipalities | NGO | Oil and Gas | Pharmaceutical Industry | Power and Energy

### Application

Boiler Water | Cooling Water | Disinfection Control | Drinking Water Treatment | Food and Beverage | Galvanization |

## MD 640

Featuring the ability to measure PTSA and Fluorescein, over 120 pre-programmed photometric tests and a **Bluetooth®** interface for data transfer, the MD 640 is the ultimate testing device for testing the water quality of a Boiler or Cooling Tower system.

## Measuring Range

Test Name	Measuring Range	Chemical Method
Alkalinity-m HR T	5 - 500 mg/L CaCO <sub>3</sub>	Acid / Indicator
Alkalinity-m T	5 - 200 mg/L CaCO <sub>3</sub>	Acid / Indicator
Alkalinity-p T	5 - 500 mg/L CaCO <sub>3</sub>	Acid / Indicator
Aluminium PP	0.01 - 0.25 mg/L Al	Eriochrom Cyanine R
Aluminium T	0.01 - 0.3 mg/L Al	Eriochrom Cyanine R
Ammonia HR TT	1.0 - 50 mg/L N	Salicylate
Ammonia LR TT	0.02 - 2.5 mg/L N	Salicylate
Ammonia PP	0.01 - 0.8 mg/L N	Salicylate
Ammonia T	0.02 - 1 mg/L N	Indophenole Blue
Bromine PP	0.05 - 4.5 mg/L Br <sub>2</sub>	DPD
Bromine T	0.05 - 13 mg/L Br <sub>2</sub>	DPD
Chloramine (M) PP	0.02 - 4.5 mg/L NH <sub>2</sub> Cl as Cl <sub>2</sub>	Indophenole method
Chloride L (B)	0.5 - 20 mg/L Cl <sup>-</sup>	Mercury Thiocyanate / Iron Nitrate
Chloride T	0.5 - 25 mg/L Cl <sup>-</sup>	Silver Nitrate / Turbidity
Chlorine (free) and Monochloramine	0.02 - 4.50 mg/L Cl <sub>2</sub>	Indophenole method
Chlorine dioxide PP	0.04 - 3.8 mg/L ClO <sub>2</sub>	DPD
Chlorine dioxide T	0.02 - 11 mg/L ClO <sub>2</sub>	DPD / Glycine
Chlorine HR (KI) T	5 - 200 mg/L Cl <sub>2</sub>	KI / Acid
Chlorine HR PP	0.1 - 8 mg/L Cl <sub>2</sub> <sup>a)</sup>	DPD
Chlorine HR T	0.1 - 10 mg/L Cl <sub>2</sub> <sup>a)</sup>	DPD
Chlorine L	0.02 - 4.0 mg/L Cl <sub>2</sub> <sup>a)</sup>	DPD
Chlorine MR PP	0.02 - 3.5 mg/L Cl <sub>2</sub> <sup>a)</sup>	DPD
Chlorine PP	0.02 - 2 mg/L Cl <sub>2</sub> <sup>a)</sup>	DPD
Chlorine T	0.01 - 6.0 mg/L Cl <sub>2</sub> <sup>a)</sup>	DPD
Chromium PP	0.02 - 2 mg/L Cr <sup>6)</sup>	Diphenylcarbazide
COD HR TT	200 - 15000 mg/L COD <sup>b)</sup>	Dichromate / H <sub>2</sub> SO <sub>4</sub>
COD LMR TT	15 - 300 mg/L COD <sup>b)</sup>	Dichromate / H <sub>2</sub> SO <sub>4</sub>
COD LR TT	3 - 150 mg/L COD <sup>b)</sup>	Dichromate / H <sub>2</sub> SO <sub>4</sub>
COD MR TT	20 - 1500 mg/L COD <sup>b)</sup>	Dichromate / H <sub>2</sub> SO <sub>4</sub>
Copper L	0.05 - 4 mg/L Cu <sup>a)</sup>	Bicinchoninate
Copper PP	0.05 - 5 mg/L Cu	Bicinchoninate
Copper T	0.05 - 5 mg/L Cu <sup>a)</sup>	Biquinoline
Cyanide L	0.01 - 0.5 mg/L CN <sup>-</sup>	Pyridine-barbituric Acid
CyA T	10 - 160 mg/L CyA	Melamine
DEHA PP	0.02 - 0.5 mg/L DEHA	PPST
DEHA T (L)	0.02 - 0.5 mg/L DEHA	PPST
Fluorescein	10 - 400 ppb	Fluorescence
Fluorescein 2P	10 - 300 ppb	Fluorescence
Fluoride 2 L	0.1 - 2 mg/L F <sup>-</sup>	SPADNS
Fluoride L	0.05 - 2 mg/L F <sup>-</sup>	SPADNS
H <sub>2</sub> O <sub>2</sub> HR L	40 - 500 mg/L H <sub>2</sub> O <sub>2</sub>	Titanium Tetrachloride / Acid
H <sub>2</sub> O <sub>2</sub> LR L	1 - 50 mg/L H <sub>2</sub> O <sub>2</sub>	Titanium Tetrachloride / Acid
H <sub>2</sub> O <sub>2</sub> T	0.03 - 3 mg/L H <sub>2</sub> O <sub>2</sub>	DPD / Catalyst
Hardness Ca and Mg L	0.05 - 4 mg/L CaCO <sub>3</sub>	Calmagite

Test Name	Measuring Range	Chemical Method
Hardness Ca and Mg MR TT	10 - 360 mg/L CaCO <sub>3</sub>	Calmagite
Hardness Calcium (B) T	20 - 500 mg/L CaCO <sub>3</sub>	Murexide
Hardness Calcium (B) T	50 - 900 mg/L CaCO <sub>3</sub>	Murexide
Hardness total HR T	20 - 500 mg/L CaCO <sub>3</sub> <sup>i)</sup>	Metallphthaleine
Hardness total T	2 - 50 mg/L CaCO <sub>3</sub>	Metallphthaleine
Hazen 24	10 - 500 mg/L Pt	(APHA) Platinum Cobalt Standard Method
Hydrazine L	0.01 - 0.6 mg/L N <sub>2</sub> H <sub>4</sub>	Dimethylaminobenzaldehyde
Hydrazine P	0.05 - 0.5 mg/L N <sub>2</sub> H <sub>4</sub>	Dimethylaminobenzaldehyde
Hypochlorite T	0.2 - 16 % NaOCl	Potassium Iodide
Iron (TPTZ) PP	0.02 - 1.8 mg/L Fe	TPTZ
Iron HR L	0.1 - 10 mg/L Fe	Thioglycolate
Iron in Mo PP (224)	0.01 - 1.8 mg/L Fe	TPTZ
Iron LR L (A)	0.03 - 2 mg/L Fe	Ferrozine / Thioglycolate
Iron LR L (B)	0.03 - 2 mg/L Fe	Ferrozine / Thioglycolate
Iron PP	0.02 - 3 mg/L Fe <sup>9)</sup>	1,10-Phenanthroline
Iron T	0.02 - 1 mg/L Fe	Ferrozine / Thioglycolate
K <sub>S4.3</sub> T	0.1 - 4 mmol/L K <sub>S4.3</sub>	Acid / Indicator
Iodine T	0.05 - 3.6 mg/L I	DPD
Manganese HR PP	0.1 - 18 mg/L Mn	Periodate Oxidation
Manganese L	0.05 - 5 mg/L Mn	Formaloxime
Manganese LR PP	0.01 - 0.7 mg/L Mn	PAN
Manganese T	0.2 - 4 mg/L Mn	Formaloxime
Molybdate HR L	1 - 100 mg/L MoO <sub>4</sub>	Thioglycolate
Molybdate HR PP	0.3 - 40 mg/L Mo	Mercaptoacetic Acid
Molybdate LR PP	0.03 - 3 mg/L Mo	Ternary Complex
Molybdate T	1 - 50 mg/L MoO <sub>4</sub>	Thioglycolate
Nickel L	0.2 - 7 mg/L Ni	Dimethylglyoxime
Nitrate MR PP	1 - 30 mg/L NO <sub>3</sub> -N	Zinc Reduction
Nitrate T	0.08 - 1 mg/L N	Zinc Reduction / NED
Nitrate TT	1 - 30 mg/L N	Chromotropic Acid
Nitrite HR PP	2 - 250 mg/L NO <sub>2</sub> <sup>-</sup>	Ferrous Sulfate Method
Nitrite HR TT	0.3 - 3 mg/L N	Sulfanilic / Naphthylamine
Nitrite LR TT	0.03 - 0.6 mg/L N	Sulfanilic / Naphthylamine
Nitrite PP	0.01 - 0.3 mg/L N	Diazotation
Nitrite T	0.01 - 0.5 mg/L N	N-(1-Naphthyl)-ethylendiamine
Nitrite VHR L	25 - 2500 mg/L NO <sub>2</sub> <sup>-</sup>	Ferrous Sulfate Method
Oxygen active T	0.1 - 10 mg/L O <sub>2</sub>	DPD
Oxygen dissolved C	10 - 800 µg/L O <sub>2</sub> <sup>c)</sup>	Rhodazine D TM
Ozone PP	0.015 - 1.2 mg/L O <sub>3</sub>	DPD / Glycine
Ozone T	0.02 - 2 mg/L O <sub>3</sub>	DPD / Glycine
Phenol T	0.1 - 5 mg/L C <sub>6</sub> H <sub>5</sub> OH	4-Aminoantipyrine
PHMB T	2 - 60 mg/L PHMB	Buffer / Indicator
Phosphate h. TT	0.02 - 1.6 mg/L P <sup>b)</sup>	Phosphomolybdenum Blue
Phosphate HR C	1.6 - 13 mg/L P <sup>c)</sup>	Vanadomolybdate
Phosphate HR L	5 - 80 mg/L PO <sub>4</sub>	Vanadomolybdate
Phosphate HR T	0.33 - 26 mg/L P	Vanadomolybdate
Phosphate HR TT	1 - 20 mg/L P	Vanadomolybdate
Phosphate LR C	0.02 - 1.6 mg/L P <sup>c)</sup>	Stannous Chloride
Phosphate LR L	0.1 - 10 mg/L PO <sub>4</sub>	Phosphomolybic Acid / Ascorbic Acid
Phosphate LR T	0.02 - 1.3 mg/L P	Phosphomolybdenum Blue
Phosphate PP	0.02 - 0.8 mg/L P	Phosphomolybdenum Blue
Phosphate t. TT	0.02 - 1.1 mg/L P <sup>b)</sup>	Phosphomolybdenum Blue

Test Name	Measuring Range	Chemical Method
Phosphate TT	0.02 - 1.63 mg/L P	Phosphomolybdenum Blue
Phosphonate PP	0.02 - 125 mg/L PO <sub>4</sub>	Persulfate UV Oxidation Method
pH-value HR T	8.0 - 9.6 pH	Thymol Blue
pH value L	6.5 - 8.4 pH	Phenol Red
pH-value LR T	5.2 - 6.8 pH	Bromocresolpurple
pH-value T	6.5 - 8.4 pH	Phenol Red
Polyacrylate L	1 - 30 mg/L Polyacryl	Turbidity
Potassium T	0.7 - 16 mg/L K	Tetraphenylborat Turbidity
PTSA	10 - 400 ppb	Fluorescence
PTSA	10 - 1000 ppb	Fluorescence
Silicate HR PP	1 - 90 mg/L SiO <sub>2</sub>	Silicomolybdate
Silicate L	0.1 - 8 mg/L SiO <sub>2</sub>	Heteropolyblue
Silicate LR PP	0.1 - 1.6 mg/L SiO <sub>2</sub>	Heteropolyblue
Silicate T	0.05 - 4 mg/L SiO <sub>2</sub>	Silicomolybdenum Blue
Sulphate HR PP	50 - 1000	Bariumsulphate Turbidity
Sulphate PP	5 - 100 mg/L SO <sub>4</sub> <sup>2-</sup>	Bariumsulphate Turbidity
Sulphate T	5 - 100 mg/L SO <sub>4</sub> <sup>2-</sup>	Bariumsulphate Turbidity
Sulphide L	15 - 1400 µg/L S <sup>2-</sup>	Methylene Blue
Sulphide T	0.04 - 0.5 mg/L S <sup>2-</sup>	DPD / Catalyst
Sulphite T	0.1 - 5 mg/L SO <sub>3</sub>	DTNB
Surfactants M. (anion.) TT	0.05 - 2 mg/L SDSA	Methylene Blue
Surfactants M. (cation.) TT	0.05 - 1.5 mg/L CTAB	Disulphine Blue
Surfactants M. (not ionic) TT	0.1 - 7.5 mg/L Triton X-100	TBPE
Suspended solids 24	10 - 750 mg/L TSS	Turbidity / Attenuated Radiation Method
Tannin L	0.5 - 20 mg/L Tannin	
TN HR TT	5 - 150 mg/L N <sup>b)</sup>	Persulphate Digestion
TN LR TT	0.5 - 25 mg/L N <sup>b)</sup>	Persulphate Digestion
TOC HR M. TT	50 - 800 mg/L TOC <sup>b)</sup>	H <sub>2</sub> SO <sub>4</sub> / Persulphate / Indicator
TOC LR M. TT	5 - 80 mg/L TOC <sup>b)</sup>	H <sub>2</sub> SO <sub>4</sub> / Persulphate / Indicator
Triazole PP	1 - 16 mg/L Benzotriazole or Tolyltriazole	Catalyzed UV Digestion
Turbidity 24	10 - 1000 FAU	Attenuated Radiation Method
Urea T	0.1 - 2.5 mg/L Urea	Indophenol / Urease
Zinc L	0.1 - 2.5 mg/L Zn	Zincon / EDTA
Zinc T	0.02 - 1 mg/L Zn	Zincon

## Technical Data

<b>Optics</b>	LEDs, interference filters (IF) and photo sensor in transparent sample chamber. Wavelength range: 430 nm IF Δλ = 5 nm 530 nm IF Δλ = 5 nm 560 nm IF Δλ = 5 nm 580 nm IF Δλ = 5 nm 610 nm IF Δλ = 6 nm 660 nm IF Δλ = 5 nm IF = interference filter
<b>Wavelength Accuracy</b>	± 1 nm
<b>Suitable Vials</b>	Multi vial 10 mm Round Cuvettes 13 mm Round Cuvettes 16 mm Round Cuvettes 24 mm
<b>Display</b>	Graphic-display
<b>Interfaces</b>	Bluetooth
<b>Operation</b>	Acid and solvent resistant, touch-sensitive keypad with audible feedback via integrated beeper
<b>Updates</b>	Software updates via internet
<b>Internal Storage</b>	approx. 500 data sets
<b>Battery Life Time</b>	approx. 26 h
<b>Beeper</b>	existing
<b>Portability</b>	Benchtop
<b>Compliance</b>	CE
<b>Languages User Interface</b>	German, English, French, Spanish, Italian, Portuguese, Polish, Indonesian
<b>Dimensions</b>	3.74 x 1.77 x 8.27"

## Delivery Scope

- In case
- 4 Batteries (AA)
- 3 Vials 24 mm ø
- 3 Vials 16 mm ø
- 1 Adapter each (16 mm and 13 mm cuvettes)
- Plastic stirring rod 13 cm
- Brush 11 cm
- Screw driver
- Quickstart Guide
- Certificate
- Warranty information
- Without reagents
- Please name the required reagent set or parameter in your order

Title	Part Number
Water sampler with bottle 250 mL and lid, AF 631	170500
Batteries (AA), set of 4	1950025
Multy cuvette-3, set of 12	197605
Round cuvette 24 mm ø, set of 12	197620
Sealing ring for round vials 24 mm ø, set of 12	197626
Round cuvette 24 mm ø, set of 5	197629
Cleaning cloth	197635
Sample cuvettes with lid, Height 95 mm, ø 24 mm, set of 6	197646
Sample cuvettes with black lid, Height 48 mm, ø 24 mm, set of 12	197657
Round cuvette 16 mm ø, set of 10	197665
Adapter for round cuvettes 16 mm ø	19802190
Adapter for round cuvettes 13 mm Ø	19802192
Rubber seal cap	19802223
Mixing cylinder, 25 ml	19802650
Update cable	214030
Update cable set with USB/R232 adapter	214031
Reference Standard Kit Chlorine - 0.2 and 1.0 mg/l (MD/PM 600 series)	215630
Reference Standard Kit Chlorine - 0.5 and 2.0 mg/l (MD/PM 600 series)	215635
Reference Standard Kit Chlorine - 1.0 and 4.0 mg/l (MD/PM 600 series)	215636
Verification Standard Kit MD 600	215640
RD125 Thermoreactor, 16mm tubes, 24 slots	2418940
Standard Solution Ammonia, 1.3 mg/l NH <sub>4</sub> = 1.0 mg/l N	2420800
Standard Solution Ammonia, 5.2 mg/l NH <sub>4</sub> = 4.0 mg/l N	2420801
Standard Solution Ammonia, 26 mg/l NH <sub>4</sub> = 20 mg/l N	2420802
Standard Solution COD 100 mg/l	2420803
Standard Solution COD 500 mg/l	2420804
Standard Solution COD 5000 mg/l	2420805
Standard Solution Nitrate, 40 mg/l NO <sub>3</sub> = 9.0 mg/l N	2420806
Standard Solution Nitrate, 5 mg/l NO <sub>2</sub> = 1.5 mg/l N	2420807

Title	Part Number
Standard Solution Phosphate, 4.6 mg/l PO <sub>4</sub> = 1.5 mg/l P	2420808
Standard Solution Phosphate, 20 mg/l PO <sub>4</sub> = 6.5 mg/l P	2420809
Kit of BT data transfer software and Bluetooth Dongle	2444480
Stirring rod, 13 cm length	364100
Stirring rod, 10 cm length	364109
Stirring rod, 13 cm length, set of 10	364120
Stirring rod, 10 cm length, set of 10	364130
Pipette, 1000 µl	365045
Membrane filter set for use when preparing samples, 25 membrane filters 0.45 µm, 2 syringes 20 ml	366150
250 mL bottle, AF 631	375072
Brush, 11 cm length	380230
Measuring beaker, 100ml	384801
Measuring spoon, 1 g	384930
UV Pen Lamp, 254 nm	400740
UV protection glasses, orange	400755
Cuvette stand for 6 round cuvettes Ø 24 mm	418951
Cuvette stand for 10 round cuvettes Ø 16 mm	418957
Pipette tips, 1-5 ml (white) 100 pc.	419066
Pipette tips, 0,1-1 ml (white), 1000 pc.	419073
Automatic pipette, 1-5 ml	419076
Screw caps TOC	420757
Measuring spoon no. 8, black	424513
PTSA standard addition solution, 200 ppb	461200
PTSA standard addition solution, 1000 ppb	461210
Fluoresceine standard addition solution, 400 ppb	461230
Fluoresceine calibration set (0, 75, 400 ppb)	461240
PTSA calibration set (0, 200, 1000 ppb)	461245
Plastic funnel with handle (white)	471007
ValidCheck Chlorine 1,5 mg/l	48105510
Stirring rod and spoon	56A006601

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