

# Lovibond® Water Testing

## Tintometer® Group



## MultiDirect, without battery

The MultiDirect - a contemporary, microprocessor-controlled photometer with ergonomically designed keypad and largeformat graphic display



- Dual Beam Technology and Interference Filters for highest accuracy
- A wide range of pre-programmed methods
- Long-term stable LEDs as light sources
- Update of new methods and languages via Internet (free of charge)

Part Number: 210000

### 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 | Galvanization | Pool Water Control | Raw Water Treatment | Waste Water Treatment

### 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
Chloride T	0.5 - 25 mg/L Cl <sup>-</sup>	Silver Nitrate / Turbidity
Chlorine dioxide PP	0.04 - 3.8 mg/L ClO <sub>2</sub>	DPD

Test Name	Measuring Range	Chemical Method
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 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>b)</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 PP	0.05 - 5 mg/L Cu	Bicinchoninate
Copper T	0.05 - 5 mg/L Cu <sup>a)</sup>	Biquinoline
Copper VLR PP	2 - 210 µg/L Cu	Porphyrene Indicator
CyA HR T	10 - 200 mg/L CyA	Melamine
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
Fluoride 2 L	0.1 - 2 mg/L F <sup>-</sup>	SPADNS
Fluoride L	0.05 - 2 mg/L F <sup>-</sup>	SPADNS

Test Name	Measuring Range	Chemical Method
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 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>1)</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 C	0.01 - 0.7 mg/L N <sub>2</sub> H <sub>4</sub> <sup>2)</sup>	PDMAB
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 in Mo PP (224)	0.01 - 1.8 mg/L Fe	TPTZ
Iron PP	0.02 - 3 mg/L Fe <sup>3)</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 LR PP	0.01 - 0.7 mg/L Mn	PAN
Manganese T	0.2 - 4 mg/L Mn	Formaloxime
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 TT	1 - 30 mg/L N	Chromotropic Acid
Nitrite PP	0.01 - 0.3 mg/L N	Diazotation
Nitrite T	0.01 - 0.5 mg/L N	N-(1-Naphthyl)-ethylen-diamine
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>4)</sup>	Rhodazine D TM
Ozone T	0.02 - 2 mg/L O <sub>3</sub>	DPD / Glycine
PHMB T	2 - 60 mg/L PHMB	Buffer / Indicator
Phosphate h. TT	0.02 - 1.6 mg/L P <sup>5)</sup>	Phosphomolybdenum Blue
Phosphate HR C	1.6 - 13 mg/L P <sup>6)</sup>	Vanadomolybdate
Phosphate HR T	0.33 - 26 mg/L P	Vanadomolybdate
Phosphate LR C	0.02 - 1.6 mg/L P <sup>6)</sup>	Stannous Chloride
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>5)</sup>	Phosphomolybdenum Blue
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
Potassium T	0.7 - 16 mg/L K	Tetraphenylborat Turbidity
Silicate HR PP	1 - 90 mg/L SiO <sub>2</sub>	Silicomolybdate
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

Test Name	Measuring Range	Chemical Method
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
TN HR TT	5 - 150 mg/L N <sup>8)</sup>	Persulphate Digestion
TN LR TT	0.5 - 25 mg/L N <sup>8)</sup>	Persulphate Digestion
TOC HR M. TT	50 - 800 mg/L TOC <sup>9)</sup>	H <sub>2</sub> SO <sub>4</sub> / Persulphate / Indicator
Turbidity 24	10 - 1000 FAU	Attenuated Radiation Method
Urea T	0.1 - 2.5 mg/L Urea	Indophenol / Urease
Zinc T	0.02 - 1 mg/L Zn	Zincon

## Technical Data

<b>Optics</b>	6 temperature compensating LED, internal reference channel, photodiode in protected sample chamber 6 interference filters in one unit, λ 1 = 430 nm IF Δλ (nm) = 5, λ 2 = 530 nm IF Δλ (nm) = 5, λ 3 = 560 nm IF Δλ (nm) = 5, λ 4 = 580 nm IF Δλ (nm) = 5, λ 5 = 610 nm IF Δλ (nm) = 6, λ 6 = 660 nm IF Δλ (nm) = 5 IF = interference filter
<b>Display</b>	Graphic-display
<b>Interfaces</b>	RS 232
<b>Operation</b>	Acid and solvent resistant, touch-sensitive keypad with audible feedback
<b>Auto – OFF</b>	Yes
<b>Auto-Check</b>	By pressing ON/OFF-key
<b>Updates</b>	Software and methods update by means of the internet
<b>Internal Storage</b>	approx. 1000 data sets with date, time and registration number
<b>Power Supply</b>	7 NiMH-battery pack (AA/Mignon) Universal (90 - 240 VAC), via external power supply
<b>Portability</b>	Benchtop
<b>Environmental Conditions</b>	up to max. 90 % humidity (non condensing) approx. 5 - 40 °C
<b>Compliance</b>	CE
<b>Dimensions</b>	265 x 70 x 195 mm
<b>Weight</b>	1000 g (with rechargeable batteries)
<b>Weight with Packaging</b>	(with rechargeable batteries)

## Delivery Scope

- in case
- 7 rechargeable batteries
- mains charger 100-240 V with international power supply plug in
- 3 vials ø 24 mm
- 3 tubes ø 16 mm
- connection cable for PC
- adapter for 16 mm tubes
- 3 syringes
- plastic beaker 100 ml
- instruction manual
- certificate
- warranty information
- without reagents
- Please name the required reagent set or parameter in your order.

Title	Part Number
Stirring rod, 10 cm length, set of 10	364130
Plastic syringe, 5 ml	366120
Membrane filter set for use when preparing samples, 25 membrane filters 0.45 µm, 2 syringes 20 ml	366150
Plastic syringe, 2 ml	369080
Plastic syringe, 10 ml	369090
250 mL bottle, AF 631	375069
Brush, 11 cm length	380230
Measuring beaker, 100 ml	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
Automatic pipette, 1-5 ml	419076
Screw caps TOC	420757
Plastic funnel with handle (white)	471007
ValidCheck Chlorine 1,5 mg/l	48105510
Factory calibration certificate ISO 9001 for MD600/MD610/MD640/MultiDirect	999752

## Accessories

Title	Part Number
Water sampler with bottle 250 mL and lid, AF 631	170500
Adapter (13 mm) MultiDirect for Vacu-vial	192075
Mains charger, 100-240 V, 50-60 Hz, with international adapters	193010
Lithiumbattery CR2032	1950017
Ni-MH-Akku AA Mignon, 1100 mAh, set of 7	1950020
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
Round cuvette 16 mm ø, set of 10	197665
Adapter for round cuvettes 16 mm MultiDirect	19801094
Lid for adapter	19801100
Rubber seal cap	19801501
Adapter for round cuvettes 13 mm Ø	19802192
Mixing cylinder, 25 ml	19802650
Fixed price service package for MultiDirect	19802705
Service plan - 3 years for MultiDirect	19802805
Connection cable to a PC, seriell 9-pins	198198
Verification Standard Kit MultiDirect	215650
Thermoreactor RD 125	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
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
Stirring rod, 13 cm length	364100
Stirring rod, 10 cm length	364109
Stirring rod, 13 cm length, set of 10	364120

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