

sensION™+ Meters & Probes

Electrochemistry



Hach sensION+, an all-in-one system with guided menu navigation makes general electrochemistry testing fast and simple. Each system is designed to be used in a wide variety of applications and comes complete with everything you need to start testing.



DW

WW

PW

IW

E

FB

Features & Benefits

Comes Complete with Everything You Need to Start Testing

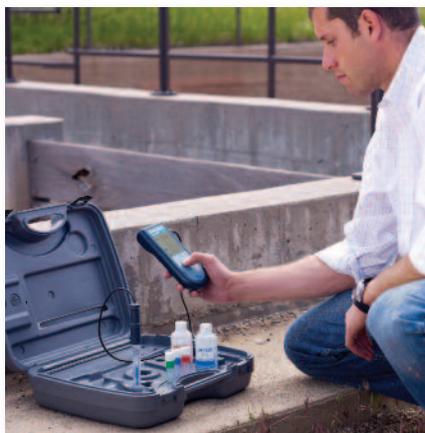
All kits come complete with meter, probe, carrying case and all required accessories, making it simple to grab the kit and begin testing immediately.

Simple and Fast Measurements

A guided navigation menu allows you to follow simple prompts to set up your measurements—reducing the time necessary to start testing, and improving the accuracy of measurements.

Available for a Wide Variety of Applications

The extensive number of probes built for sensION+ means that you have your choice of the appropriate probe for nearly every testing environment.



DW = drinking water WW = wastewater municipal PW = pure water / power
 IW = industrial water E = environmental C = collections FB = food and beverage



Be Right™

sensION+ Portable Meters



Hach sensION+, an all-in-one system with guided menu navigation makes general electrochemistry testing fast and simple.

Parameter	PH1 BASIC PORTABLE pH METER	MM110 PORTABLE pH/ORP MULTI-SENSOR METER	EC5 PORTABLE CONDUCTIVITY METER	D06 PORTABLE DISSOLVED OXYGEN METER	MM150 PORTABLE MULTI-PARAMETER MULTI-SENSOR METER
Temperature	■	■	■	■	■
pH	■	■			■
Conductivity			■		■
Salinity			■		■
TDS			■		■
Dissolved Oxygen				■	
ORP/Redox	■	■			■
Product Number	LPV2500.97.0002	LPV2600.97.0002	LPV3500.97.0002	LPV4500.97.0002	LPV4000.97.0002

sensION+ Portable Meters Specifications

Power

AA batteries (battery life: depending on model, for pH meter >500 hours)

Directives

Low Voltage and EMC According to 2004/95/EC. According to 2004/108/EC

Languages

User Interface is language independent (icon based).

Display

LCD with backlight (128 x 64 dot), 46x62 mm (visible area)

Temperature Correction/Compensation

pH: Automatic with temperature probe Pt 1000, NTC 10kOhm.

EC: TC (temperature coefficient) Linear, 0.00 to 9.99 % /°C. Non linear for natural waters (UNE EN 27888). TR (ref. temperature) 20°C (68°F), 25°C (77°F) or values between 0 to 99°C (0 to 210°F).

Temperature Readjustment

Correction of the temperature probe deviation (A.T.C.) at 25°C (77°F) and 85°C (185°F).

pH Calibration

DIN 19267: pH 2.00, 4.01, 7.00, 9.21 and 10.01 [values at 25°C (77°F)], manual or theoretical.

mV Calibration

Automatic recognition of redox standard 220 mV at 25°C (77°F). Calibration at any mV value.

Conductivity Calibration

Standards: 147 µS/cm, 1413 µS/cm, 12.88 mS/cm and 111.8 mS/cm [values at 25°C (77°F)]. Manual or introduction of cell constant at 1.000 cm⁻¹.

TDS Conversion Factor

Values between 0 to 4.44. Default 0.64.

Water Resistance

IP67

Dimensions

186 x 74 x 38 mm

Materials

Enclosure, ABS and PC. Keypad, PET with protective treatment

Weight

300 g

sensION+ Benchtop Meters

Each system is designed to be used in a wide variety of applications and comes complete with integrated stirrer and probe holder.



Parameter	PH3 BASIC BENCHTOP pH METER	PH31 GLP BENCHTOP pH METER	EC7 BENCHTOP CONDUCTIVITY METER	EC71 GLP BENCHTOP CONDUCTIVITY METER	MM340 BENCHTOP MULTI- PARAMETER METER	MM374 BENCHTOP MULTI- PARAMETER METER
Temperature	■	■	■	■	■	■
pH	■	■			■	■
Conductivity			■	■		■
Salinity			■	■		■
TDS				■		■
ORP/Redox	■	■			■	■
Nitrate					■	■
Fluoride					■	■
Sodium					■	■
Chloride					■	■
Ammonia					■	■
Ammonium					■	■
Product Number	LPV2000.97.0002	LPV2100.97.0002	LPV3010.97.0002	LPV3110.97.0002	LPV2200.97.0002	LPV4110.97.0002

sensION+ Benchtop Meters Specifications

Power

External power supply 100-240 V, 0.4 A, 47-63 Hz, with plug adapters

Directives

Low Voltage and EMC According to 2004/95/EC. According to 2004/108/EC

Languages

User Interface: English, German, Spanish, French, Italian, and Portuguese

Display

LCD with backlight (128 x 64 dot), 35 x 68 mm (visible area)

Data Memory

400 data points per channel (330 data points for pH models)

Data Storage

GLP features (Date/Time, Sample ID, User ID)

Data Export

RS-232C for Printer and PC (USB-RS-232C adapter available)

Temperature Correction/Compensation

pH: Automatic with temperature probe Pt 1000, NTC 10kOhm. Programmable isopotential pH, standard value at pH 7.00

EC: TC (temperature coefficient) Linear, 0.00 to 9.99 % /°C. Non linear for natural waters (UNE EN 27888). TR (ref. temperature) 20°C (68°F), 25°C (77°F) or values between 0 to 99°C (0 to 210°F). Exception PH 3 and EC 7 models.

Temperature Readjustment

Correction of the temperature probe deviation (A.T.C.) at 25°C (77°F) and 85°C (185°F). Exception PH 3 and EC 7 models.

pH Calibration

Technical buffers DIN 19267: pH 2.00, 4.01, 7.00, 9.21 and 10.01 (values at 25°C)(77°F). DIN 19266 buffers: 1.679, 4.006, 6.865, 7.000, 9.180, 10.012 and 12.454 at 25°C (77°F). Specific user's buffers. With 1, 2 or 3 buffers selectable inside the range. Calibration at any pH value (indirect calibration). Manual introduction of the calibration parameters. Programmable calibration validity between 0 h to 7 days. Automatic rejection of electrodes in poor condition.

mV Calibration

Automatic recognition of redox standard 220 mV at 25°C (77°F). Calibration at any mV value.

ISE Calibration

2 to 5 programmable standards. Selectable calibration units: mol/L, M, mmol/L, mM, µmol/L, g/L, mg/L, ppm and %. Up to 4 calibration curves per channel (only MM 340 and MM 374).

Conductivity Calibration

Standards: 147 µS/cm, 1413 µS/cm, 12.88 mS/cm and 111.8 mS/cm [values at 25°C (77°F)]. Demal, 1409 µS/cm, 12.85 mS/cm and 111.31 mS/cm (25°C). NaCl 0.05% (1014.9 µS/cm at 25°C). With 1, 2 or 3 standards selectable inside the range. Special calibration at any Conductivity, salinity or TDS value. Manual introduction of cell constant. Programmable calibration validity between 0 to 99 days. EC 5 and EC 7 models only 147 µS/cm, 1413 µS/cm, 12.88 mS/cm and 111.8 mS/cm [values at 25°C (77°F)].

TDS Conversion Factor

Values between 0 to 4.44. Default 0.64.

Connectable Peripherals

1 magnetic stirrer included (all benchtop)
1 optional magnetic stirrer (Multi-meters only)
Printer or PC External PC keyboard or barcode reader (Exception EC 7 and PH 3)

Water Resistance

IP42

Dimensions

350 x 200 x 110 mm

Materials

Enclosure, ABS and PC. Keypad, PET with protective treatment

Weight

1100 g (800 g PH 3 model)

sensION+ Probes for Portable Meters



Specifications	pH Combination General Use	pH Combination Wastewater	pH Combination Low Conductivity High Temperature	ORP / Redox	DO
Special feature		With Working Protector Open Junction	With Working Protector, PTFE Junction		
Range	0 to 14 pH	0 to 14 pH	0 to 14 pH	±2000 mV	0.03 mg/L to saturation
Temperature Range	0 to 80°C	0 to 80°C	0 to 100°C	0 to 80°C	0 to 60°C
Temperature Sensor	Pt 1000	Pt 1000	Pt 1000	—	NTC
Dimensions	12 mm (D) x 85 mm (w/o handle)	12 mm (D) x 85 mm (w/o handle)	12 mm (D) x 85 mm (w/o handle)	12 mm (D) x 85 mm (w/o handle)	12 mm (D) x 120 mm (w/o handle)
Sensor Type	Glass	Glass	Glass	Platinum Annular	Polarographic Silicone/PTFE Membrane
Body Material	Polycarbonate	Glass	Glass	Polycarbonate	PPS
Filling Solution	Gel	Solid	Gel	Gel	—
Product No.	LZW5050T.97.002	LZW5051T.97.002	LZW5052T.97.002	LZW5055.97.0002	LZW5120.97.0002



Specifications	Conductivity General Use	Conductivity Robust	Multij**	Multi*	Multi**
Special Feature	—	Robust Titanium Body	pH, Conductivity, ORP	pH, ORP	pH, Conductivity
Range	0.2 µS/cm to 200 mS/cm	5 µS/cm to 50 mS/cm	0 to 14 pH 25-200 mS/cm ±2000 mv	0 to 14 pH ±2000 mV	0 to 14 pH 5 µS/cm-30 mS/cm
Temperature Range	0 to 80°C	0 to 80°C	0 to 80°C	0 to 80°C	0 to 80°C
Temperature Sensor	Pt 1000	Pt 1000	Pt 1000	Pt 1000	Pt 1000
Dimensions	12 mm (D) x 85 mm (w/o handle)	12 mm (D) x 85 mm (w/o handle)	12 mm (D) x 85 mm (w/o handle)	12 mm (D) x 85 mm (w/o handle)	12 mm (D) x 85 mm (w/o handle)
Sensor Type	Platinum	Titanium	pH: Glass Cond: Platinum; ORP: Platinum	pH: Glass ORP: Platinum	pH: Glass Cond.: Titanium
Body Material	Polycarbonate	Titanium	Polycarbonate	Polycarbonate	Polycarbonate
Filling Solution	—	—	Gel	Gel	Gel
Product Number	LZW5060.97.0002	LZW5062.97.0002	LZW.5048.97.0002	LZW5045.97.0002	LZW5059.97.0002

*Only for use on MM110 Meter. **Only for use with MM150 Meter.

senION+ Probes for Benchtop Meters



Specifications	pH Combination General Use	pH Combination With Silver Ion Barrier	pH Combination Wastewater	pH Combination Low Ionic Strengths
Special Feature		2 Ceramic Junctions	Open Junction	Clog-free Sleeve Junction
Range	0 to 14 pH	2 to 14 pH	2 to 14 pH	0 to 14 pH
Temperature Range	0 to 80°C	-10 to 100°C	0 to 80°C	0 to 60°C
Temperature Sensor	Pt 1000	Pt 1000	Pt 1000	Pt 1000
Dimensions	12 mm (D) x 130 mm (w/o handle)	12 mm (D) x 130 mm (w/o handle)	12 mm (D) x 130 mm (w/o handle)	12 mm (D) x 130 mm (w/o handle)
Sensor Type	Glass	Glass	Glass	Glass
Body Material	Polycarbonate	Glass	Glass	Glass
Filling Solution	Gel	3 M KCl (refillable)	Solid Polymer	3 M KCl (refillable)
Product No.	LZW5010T.97.002	LZW5014T.97.002	LZW5011T.97.002	LZW5021T.97.002



Specifications	Conductivity General Use	ORP Gel	ORP Refillable
Special Feature	—	Gel	Refillable
Range	0.2 μ S/cm to 200 mS/cm	\pm 2000 mV	\pm 2000 mV
Temperature Range	0 to 80°C	0 to 80°C	0 to 80°C
Temperature Sensor	Pt 1000	—	—
Dimensions	12 mm (D) x 130 mm (w/o handle)	12 mm (D) x 130 mm (w/o handle)	12 mm (D) x 130 mm (w/o handle)
Sensor Type	Platinum	Platinum	Platinum
Body Material	Glass	Glass	Glass
Filling Solution	—	Gel	3 M KCl (refillable)
Product Number	LZW5070.97.0002	LZW5056.97.0002	LZW5057.97.0002

sensION+ ISE Probes



Specifications

	Sodium ISE	Chloride ISE	Fluoride ISE	Nitrate ISE
Design		No internal electrolyte or spare membranes required; maintenance free	No internal electrolyte or spare membranes required; maintenance free	No internal electrolyte or spare membranes required; maintenance free
Range	0.05 to 23,000 mg/L Na ⁺	1 to 35,000 mg/L Cl ⁻	0.02 to 20,000 mg/L F ⁻	0.4 to 62,000 mg/L NO ₃ ⁻
Temperature Range	0 to 60°C	5 to 50°C	5 to 50°C	5 to 40°C
Dimensions	12 mm (D) x 120 mm	12 mm (D) x 120 mm	12 mm (D) x 120 mm	12 mm (D) x 120 mm
Sensor Type	Sodium Selective Glass Membrane	Solid-State Chloride Selective Membrane	Solid-State Fluoride Selective Membrane	Solid-State Nitrate Selective Polymer Membrane
Body Material	Glass	ABS	ABS	ABS
Filling Solution	None	None	None	None
Product No.	LZW9650.97.0002	LZW9652.97.0002	LZW9655.97.0002	LZW9662.97.0002



Specifications

	Ammonium ISE	Ammonia ISE	Reference Electrode
Design	No internal electrolyte or spare membranes required; maintenance free	Combination	Double junction reference electrode for ISEs, large ceramic diaphragm
Range	0.9 to 1,800 mg/L NH ₄ ⁺	0.06 to 17,000 mg/L as NH ₃	—
Temperature Range	5 to 40°C	0 to 50°C	0 to 60°C
Dimensions	12 mm (D) x 120 mm	12 mm (D) x 149 mm	12 mm (D) x 120 mm
Sensor Type	Solid-State Ammonium Selective Polymer Membrane	Gas Sensing Ammonia Selective Membrane	—
Body Material	ABS	ABS	Glass
Filling Solution	None	None	Gel w/Lithium Acetate Electrolyte
Product No.	LZW9663.97.0002	5192700	LZW5044.97.0002

sensION+ Probes Specifications

Temperature

Range: See probe table or visit www.hach.com
 Resolution: 0.1°C (0.1°F)
 Accuracy: > 0.3 °C

pH

Range: 0 to 14
 (except 5011T and 5051T: 2 to 14 pH)
 Resolution: 0.1/0.01/0.001 (except portables and PH 3 models: 0.01)

ORP/Redox

Range: ±1999 mV (except MM 110 model)
 Resolution: 1/0.1 mV (except portables and PH 3 models: 0.1 mV)

Conductivity

Range: See probe table or visit www.hach.com
 Resolution: 0.00 to 199.9 mS/cm (Auto ranging, 5 digits maximum)

Total Dissolved Solids (TDS)

5060: 0.1 mg/L to 128 g/L,
 5062: 3 mg/L to 32 g/L,
 5070: 0.1 mg/L to 128 g/L (F=0.64)
 Resolution: 0 to 9.99, 99.9, 999 mg/L,
 9.99, 199.9 g/L

Salinity

5060: 0 mg/L to 200 g/L,
 5062: 3 mg/L to 30 g/L,
 5070: 0 mg/L to 200 g/L
 Resolution: 0.0 to 1999 mg/L, 2.0 to 50.0 g/L

Resistivity

Range: 0 Ohm to 500 MOhm
 Resolution: 0.0 to 1999 mg/L,
 2.0 to 50.0 g/L

Dissolved Oxygen

Range: See probe table or visit www.hach.com
 Resolution: 0 to 199.9%, 200 to 600,
 0.00 to 19.99 mg/L, 20.0 to 60.0 mg/L

Max Pressure

6 bar

Water Resistance

Portable: IP67 (except refillable electrodes)

Connector Type

Portable: MP-5 or MP-8 (Multi-sensors)
 Benchtop: pH/ISE/ORP with BNC connector (Banana connector for ATC)
 EC: Telephonic

Cable Length

pH: 1 meter (3.3 ft)
 EC: 1 meter (3.3 ft)
 ISE: 1.5 meter (4.9 ft)
 DO: 3 meter (9.8 ft)

Dimensions

12 x 85 mm (D x L without handle)

sensION+ Benchtop Meter & Probe Kits

Unique design developed as a complete workstation. All benchtop kits include: workstation with integrated stirrer, buffers, standards, storage solutions, calibration flasks, and accessories for quick start up.

Product No.	Description
LPV2010T.97.002	Basic pH (general) Benchtop Kit sensION+ PH3 meter with universal 5010T pH and temperature electrode. For general aqueous applications.
LPV2011T.97.002	Advanced pH (dirty samples) Benchtop Kit sensION+ PH3 meter with open junction 5011T pH and temperature electrode. For high solid content and/or viscous media samples.
LPV2014T.97.002	Advanced pH (high performance) Benchtop Kit sensION+ PH3 meter with dual junction 5014T pH and temperature electrode. For sulfurs, reducing sugars or media that reacts with Ag ⁺ ions.
LPV2021T.97.002	Advanced pH (difficult samples) Benchtop Kit sensION+ PH3 meter with clog-free 5021T pH and temperature electrode. For low ionic strength, colloidal, emulsions and cream samples.
LPV2110T.97.002	Basic pH (general) Benchtop Kit sensION+ PH31 GLP meter with universal 5010T pH and temperature electrode. For general aqueous applications.
LPV2111T.97.002	Advanced pH (general) Benchtop Kit sensION+ PH31 GLP meter with open junction 5011T pH and temperature electrode. For high solid content and/or viscous media samples.
LPV2114T.97.002	Advanced pH (high performance) Benchtop Kit sensION+ PH31 GLP meter with dual junction 5014T pH and temperature electrode. For sulfurs, reducing sugars or media that reacts with Ag ⁺ ions.
LPV2121T.97.002	Advanced pH (difficult samples) Benchtop Kit sensION+ PH31 GLP meter with clog-free 5021T pH and temperature electrode. For low ionic strength, colloidal, emulsions and cream samples.
LPV2210T.97.002	Basic pH (general) Benchtop Kit sensION+ MM340 pH & ISE GLP meter with universal 5010T pH and temperature electrode. For general aqueous applications.
LPV2211T.97.002	Advanced pH (dirty samples) Benchtop Kit sensION+ MM340 pH & ISE meter with open junction 5011T pH and temperature electrode. For high solid content and/or viscous media samples.
LPV2214T.97.002	Advanced pH (high performance) Benchtop Kit sensION+ MM340 pH & ISE GLP meter with dual junction 5014T pH and temperature electrode. For sulfurs, reducing sugars or media that reacts with Ag ⁺ ions.
LPV2221T.97.002	Advanced pH (difficult samples) Benchtop Kit sensION+ MM340 pH & ISE GLP meter with clog-free 5021T pH and temperature electrode. For low ionic strength, colloidal, emulsions and cream samples.
LPV3070.97.0002	Basic Conductivity Benchtop Kit sensION+ EC7 meter with universal 5070 conductivity and temperature cell. For general aqueous applications.
LPV3170.97.0002	Advanced Conductivity Benchtop Kit sensION+ EC71 GLP meter with universal 5070 conductivity and temperature cell. For general aqueous applications.
LPV4140.97.0002	Advanced pH (high performance) & Conductivity Benchtop Kit sensION+ MM374 pH, conductivity & ISE GLP meter with dual junction 5014 pH and universal 5070 conductivity with temperature cell. For sulfurs, reducing sugars or media that reacts with Ag ⁺ ions.

sensION+ Meter & Probe Field Kits

Specialized field carrying case acts as a portable laboratory. All field kits include: field carrying case, buffers, standards, storage solutions, calibration tubes, and accessories for quick start up.

Product No.	Description
LPV2550T.97.002	Basic pH (general) Field Kit sensION+ PH1 meter with universal 5050T pH and temperature electrode. For general aqueous applications.
LPV2551T.97.002	Advanced pH (dirty samples) Field Kit sensION+ PH1 meter with open junction 5051T pH and temperature electrode. For high solid content and/or viscous media samples.
LPV2552T.97.002	Advanced pH (difficult samples) Field Kit sensION+ PH1 meter with high contact 5052T pH and temperature electrode. For low ionic strength, colloidal, emulsions and cream samples.
LPV2555.97.0002	Basic ORP Field Kit sensION+ PH1 meter with 5055 ORP electrode. For chemical waste treatment, galvanic baths and general aqueous applications.
LPV3560.97.0002	Basic Conductivity Field Kit sensION+ EC5 meter with universal 5060 conductivity and temperature cell. For general aqueous applications.
LPV3562.97.0002	Advanced Conductivity Field Kit sensION+ EC5 meter with robust, Titanium 5062 conductivity and temperature cell. For difficult media applications.
LPV4551.97.0002	Basic Dissolved Oxygen Field Kit sensION+ DO6 meter with robust, polarographic 5120 DO and temperature probe. For general aqueous applications.
LPV2645.97.0002	Advanced pH & ORP Multi-sensor Field Kit sensION+ MM110 meter with 5045 pH, ORP and temperature multi-sensor. For general aqueous applications.
LPV4059.97.0002	Advanced pH and Conductivity Multi-sensor Field Kit sensION+ MM150 meter with 5059 pH, conductivity and temperature multi-sensor. For agriculture and general aqueous applications.
LPV4048.97.0002	Advanced pH, Conductivity & ORP Multi-sensor Field Kit sensION+ MM150 meter with 5048 pH, conductivity, ORP and temperature multi-sensor. For waste treatment and general aqueous applications.



sensION+ Accessories

Prod. No.	Description
LZW8201.99	Thermal printer, RS 232, for sensION+ benchtop
LZW9117.99	Thermal paper for printer LZW8201.99, bag with 5 rolls
LZW8200.99	Dot-impact printer, RS 232, for sensION+ instruments
LZW9000.99	Standard paper for printer LZW8200, bag with 10 rolls.
LZW9001.99	Ribbon for printer LZW8200.99, 3 units
LZW9135.99	RS232 cable, for sensION+ benchtop instruments
LZW9135USB.99	RS232 cable for sensION+ benchtop, with USB adapter
LZW9319.99	Magnetic stirrer with sensor holder, for sensION MM benchtop
LZW9267.99	Holder and clamp for one sensor, for portable sensION+
LZW9137.97	3x10 mL printed tubes, for portable pH calibration, US
LZW9138.99	3x10 mL printed tubes, for portable conductivity calibration
LZW5125.99	Spare membrane for D.O. electrode LZW5120
LZW5126.99	Protector-calibration flask for D.O electrode LZW5120
LZW9320.99	One-sensor holder, for sensION+ benchtop instruments
LZW9321.99	Three-sensor holder, for sensION+ benchtop instruments
LZW9110.97	3x50 ml printed flasks for benchtop pH calibration, US
LZW9111.99	3x50 ml printed flasks for benchtop conductivity calibration
LZW9155.99	Holder and clamp for three sensors, sensION+
LZW9118.99	Pyrex glass chamber, continuous flow measurements, sensION+
LZW9161.99	PP protector, electrode storage, sensION+
LZW9162.99	PP protector, for measurement, sensION+



Lit. No. 2714

110 Printed in U.S.A.

©Hach Company, 2010. All rights reserved.

In the interest of improving and updating its equipment, Hach Company reserves the right to alter specifications to equipment at any time.

At Hach, it's about learning from our customers and providing the right answers. It's more than ensuring the quality of water—**it's about ensuring the quality of life. When it comes to the things that touch our lives...**

Keep it pure.

Make it simple.

Be right.

For current price information, technical support, and ordering assistance, contact the Hach office or distributor serving your area.

In the United States, contact:

HACH COMPANY World Headquarters
P.O. Box 389
Loveland, Colorado 80539-0389
U.S.A.
Telephone: 800-227-4224
Fax: 970-669-2932
E-mail: orders@hach.com
www.hach.com

U.S. exporters and customers in Canada, Latin America, sub-Saharan Africa, Asia, and Australia/New Zealand, contact:

HACH COMPANY World Headquarters
P.O. Box 389
Loveland, Colorado 80539-0389
U.S.A.
Telephone: 970-669-3050
Fax: 970-461-3939
E-mail: intl@hach.com
www.hach.com

In Europe, the Middle East, and Mediterranean Africa, contact:

HACH LANGE GmbH
Willstätterstraße 11
D-40549 Düsseldorf
GERMANY
Tel: +49 (0) 211 5288-0
Fax: +49 (0) 211 5288-143
E-mail: info@hach-lange.de
www.hach-lange.com



Be Right™