Applications

- Drinking water
- Waste water
- Industrial water
- Quality control

Digital electrochemistry

pH, Conductivity, DO, ISE, ORP, Fluoride, Nitrate, Ammonia, Chloride

Have confidence in your results!
High quality digital lab instruments deliver accurate measuring results with the aid of intelligent electrodes: Digital INTELLICAL electrodes always measure correctly due to their integrated calibration. INTELLICAL electrodes are recognised automatically and are interchangeable. This principle of mix + match provides reliability and flexibility across the HQD range.

Optimised handling
HQD lab instruments are easy to use thanks to the intuitive user interface. Measuring intervals can be defined by the user. Progress of stabilisation is automatically indicated on the display and readings are automatically logged.

Reliable O_2 results with minimum effort
Luminescence based LDO technology is an established HACH LANGE innovation launched in 2003.
The INTELLICAL LDO is a drift-free sensor providing error-free and accurate results at high and low O_2 concentrations with minimum effort. There is no calibration and no replacement of electrolyte. Since it was launched, LDO has proved itself everywhere where O_2 is measured!

User friendly
Large illuminated graphic displays are easy to read, even in difficult light conditions. The key pads are icon based and immediately understandable.
User interface and operating instructions are available in more than 10 European languages.

Fully GLP compliant communication and documentation
All the necessary information about each reading is automatically saved. A USB port is integrated into the instruments. PC, printer and keyboard can be connected with all read and write functions.

HQD lab instruments: HQ411D, HQ430D, HQ440D

Key features

Power
115/230 V with universal Power Adapter Kit; optional/ backup power: 4 AA batteries

Languages of user interface
English, French, German, Italian, Spanish, Danish, Dutch, Polish, Portuguese, Turkish, Swedish, Czech, Russian

Data memory
500 results

Data storage
GLP/ISO compliant reading data stored with calibration details. Calibration details are documented in data log. Automatical storage in 'press to read' mode and interval mode. Manual storage in 'continuous read' mode.

Outputs
Integrated USB type A (USB flash memory device, printer, keyboard); integrated USB type B (PC)

Data export
Download via USB connection to PC or flash stick. Automatic transfer of entire data log or per reading.

Communication
Direct to PC (Bi-directional) via USB virtual serial port

Temperature compensation
Automatic (parameter dependent), off, manual

Automatic buffer recognition
pH: Colour-coded: 4.01, 7.00, 10.01
IUPAC: 1.679, 4.005, 7.000, 10.012, 12.45
DIN: 1.09, 4.65, 9.23; user defined custom buffer sets
IUPAC standards (DIN 19266) or technical buffer (DIN 19267) or 4-7-10 series or customer defined

Conductivity: Demal (1D / 0.1D / 0.01D);
Molar (0.1M / 0.01M / 0.001M);
NaCl (0.05%; 25 µS/cm; 1000 µS/cm; 18 mS/cm);
Standard sea water; user defined

Keyboard
External PC keyboard via USB connection

Protection class
Meter casing: spray water resistant and dust resistant (IP54)

Dimensions
86 mm × 175 mm × 235 mm

Weight
850 g

Warranty
3 years

Subject to change without notice.

Order information

Digital lab meters
HQ411D.98.00002: One channel pH meter
HQ430D.98.00002: One channel multi meter
HQ440D.98.00002: Two channel multi meter

Digital lab meters with probe holder
HQ411D.98.00012: One channel pH meter with probe holder
HQ430D.98.00012: One channel multi meter with probe holder
HQ440D.98.00012: Two channel multi meter with probe holder

HQD lab instruments: HQ411D, HQ430D, HQ440D

Technical data

	HQ411D	HQ430D	HQ440D
Digital electrodes inputs	1	1	2
DO range		0.00 to 20.0 mg/L DO	0.00 to 20.0 mg/L DO
DO resolution		0.01 mg/L or 0.1% DO saturation	0.01 mg/L or 0.1% DO saturation
DO accuracy		±1% of measurement range	±1% of measurement range
Pressure compensation		Automatic	Automatic
pH range	0 to 14 pH	0 to 14 pH	0 to 14 pH
pH resolution	Selectable between 0.001 and 0.1 pH	Selectable between 0.001 and 0.1 pH	Selectable between 0.001 and 0.1 pH
pH accuracy	±0.002 pH	±0.002 pH	±0.002 pH
ORP range	-1,500 to 1,500 mV	-1,500 to 1,500 mV	-1,500 to 1,500 mV
ORP resolution	0.1 mV	0.1 mV	0.1 mV
ORP accuracy	0.1 mV	0.1 mV	0.1 mV
ISE range		Depending on probe	Depending on probe
ISE resolution		5 digits max.; 0.1/0.01/0.001	5 digits max.; 0.1/0.01/0.001
ISE accuracy		±0.1 mV	±0.1 mV
Temperature range	-10 to 110 °C	-10 to 110 °C	-10 to 110 °C
Temperature resolution	0.1 °C	0.1 °C	0.1 °C
Temperature accuracy	±0.3 °C	±0.3 °C	±0.3 °C
Conductivity range		0.01 µS/cm to 200 mS/cm	0.01 µS/cm to 200 mS/cm
Conductivity resolution		5 digits with 2 digits after decimal point	5 digits with 2 digits after decimal point
Conductivity accuracy		±0.5% in 1 µS/cm to 200 mS/cm range	±0.5% in 1 µS/cm to 200 mS/cm range
Conductivity temperature correction		Non linear (natural waters DIN 38404 + EN ISO 7888 or NaCl), linear coefficient, no compensation	Non linear (natural waters DIN 38404 + EN ISO 7888 or NaCl), linear coefficient, no compensation
Resistivity range		2.5 Ωcm to 49 MΩcm	2.5 Ωcm to 49 MΩcm
Resistivity resolution		5 digits max.	5 digits max.
Resistivity accuracy		±0.5%	±0.5%
TDS range		0.0 to 50.0 g/L	0.0 to 50.0 g/L
TDS resolution		3 digits max.	3 digits max.
TDS accuracy		±0.5% of measurement range	±0.5% of measurement range
Salinity range		0 to 42 (g/kg, ppt, no unit)	0 to 42 (g/kg, ppt, no unit)
Salinity resolution		0.01 ppt	0.01 ppt
Salinity accuracy		±0.1 mg/L for range <8 mg/L	±0.1 mg/L for range <8 mg/L

Subject to change without notice.

HQD lab instruments: HQ411D, HQ430D, HQ440D

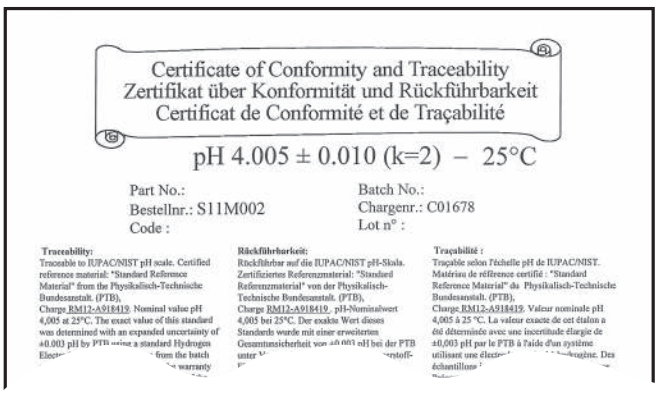
INTELLICAL: Digital electrodes with built-in temperature sensor

Parameter	Product description	Cable length	Article number	Cable length	Article number
pH	pH combination gel electrode, low maintenance	1 m	PHC10101	3 m	PHC10103
	pH combination refillable electrode	1 m	PHC30101	3 m	PHC30103
	pH combination refillable electrode for low ionic strength	1 m	PHC28101	3 m	PHC28103
Conductivity	Conductivity 4 pole cell, graphite	1 m	CDC40101	3 m	CDC40103
LDO	Luminescent DO sensor	1 m	LDO10101	3 m	LDO10103
LBOD	Luminescent BOD sensor	1 m	LBOD10101	3 m	-
ORP	ORP Gel electrode, low maintenance	1 m	MTC10101	3 m	MTC10103
	ORP Refillable electrode	1 m	MTC30101	3 m	MTC30103
F^-	Fluoride combination ion selective electrode	1 m	ISEF12101	3 m	ISEF12103
NO_3^-	Nitrate combination ion selective electrode	1 m	ISENO318101	3 m	ISENO318103
Na^+	Sodium combination ion selective refillable electrode	1 m	ISENA38101	3 m	ISENA38103
NH_3	Ammonia combination gas-sensing electrode with refillable outer body	1 m	ISENH318101	3 m	ISENH318103
NH_4^+	Ammonium combination ion selective electrode	1 m	ISENH418101	3 m	ISENH418103
Cl^-	Chloride combination ion selective electrode	1 m	ISECL18101	3 m	ISECL18103

pH buffer and conductivity standard solutions

Article number	Product description	
S11M001	IUPAC pH Standard, pH 1.679	Certified buffer solution, traceable to certified reference materials (CRM). The unopened standard is stable for 4 years (2 years for pH 12.45). Each bottle (500 mL) is supplied with a DKD Verification Certificate and Certificate of Conformity and Traceability drawn up according to ISO 31.
S11M002	IUPAC pH Standard, pH 4.005	
S11M004	IUPAC pH Standard, pH 7.000	
S11M007	IUPAC pH Standard, pH 10.012	
S11M008	IUPAC pH Standard, pH 12.45	
S51M001	IUPAC conductivity standard KCl 1 D, 111.3 mS/cm	Certified conductivity standard according to IUPAC, with certificate. Each bottle (500 mL) is supplied with a DKD Verification Certificate and Certificate of Conformity and Traceability drawn up according to ISO 31.
S51M002	IUPAC conductivity standard KCl 0.1 D, 12.85 mS/cm	
S51M003	IUPAC conductivity standard KCl 0.01 D, 1408 µS/cm	
S51M004	IUPAC conductivity standard NaCl 0.05%, 1015 µS/cm	
S51M013	IUPAC conductivity standard NaCl 25, 25 µS/cm	

Small selection of our standard solutions.
The use of standards manufactured by an accredited laboratory gives you confidence in the traceability chain and calculated uncertainties.


Certificate of Conformity and Traceability
Zertifikat über Konformität und Rückführbarkeit
Certificat de Conformité et de Traçabilité

pH 4.005 ± 0.010 (k=2) – 25°C

Part No.:
Bestellnr.: S11M002
Code :

Batch No.:
Chargenr.: C01678
Lot n° :

Traceability:
Traceable to IUPAC/NIST pH scale. Certified reference material: "Standard Reference Material" from the Physikalisch-Technische Bundesanstalt. (PTB), Charge RM12-A918419. Nominal value pH 4,005 at 25°C. The exact value of this standard was determined with an expanded uncertainty of ±0.003 pH by PTB using a standard Hydrogen from the batch

Rückführbarkeit:
Rückführbar auf die IUPAC/NIST pH-Skala. Zertifiziertes Referenzmaterial: "Standard Referenzmaterial" von der Physikalisch-Technische Bundesanstalt. (PTB), Charge RM12-A918419. pH-Nominalwert 4,005 bei 25°C. Der exakte Wert dieses Standards wurde mit einer erweiterten Gesamtunsicherheit von ±0.003 pH bei der PTB unter

Traçabilité :
Traçable selon l'échelle pH de IUPAC/NIST. Matériau de référence certifié : "Standard Reference Material" du Physikalisch-Technische Bundesanstalt. (PTB), Charge RM12-A918419. Valeur nominale pH 4,005 à 25 °C. La valeur exacte de cet étalon a été déterminée avec une incertitude élargie de ±0,003 pH par le PTB à l'aide d'un système utilisant une électr