



### 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<sub>2</sub> 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<sub>2</sub> concentrations with minimum effort. There is no calibration and no replacement of electrolyte. Since it was launched, LDO has proved itself everywhere where O<sub>2</sub> 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.

**LANGE**

# 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. Automatic 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  $\mu$ S/cm; 1000  $\mu$ S/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  $\times$  175 mm  $\times$  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

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# 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 <sup>-</sup>	Fluoride combination ion selective electrode	1 m	ISEF12101	3 m	ISEF12103
NO <sub>3</sub> <sup>-</sup>	Nitrate combination ion selective electrode	1 m	ISEN0318101	3 m	ISEN0318103
Na <sup>+</sup>	Sodium combination ion selective refillable electrode	1 m	ISENA38101	3 m	ISENA38103
NH <sub>3</sub>	Ammonia combination gas-sensing electrode with refillable outer body	1 m	ISENH318101	3 m	ISENH318103
NH <sub>4</sub> <sup>+</sup>	Ammonium combination ion selective electrode	1 m	ISENH418101	3 m	ISENH418103
Cl <sup>-</sup>	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.

