

Bench type, RS232/USB, Data logger

pH/ORP, DO, CD/TDS METER

Model : WA-2015

ISO-9001, CE, IEC1010



DO
OXPB-11
(optional)



CD/TDS/Salt
CDPB-03
(optional)



pH
PE-03
PE-11
PE-01
(optional)



pH ATC
TP-07
(optional)



LUTRON ELECTRONIC

The Art of Measurement

Bench type, RS232/USB, Data logger
pH/ORP, DO, CD/TDS METER
Model : WA-2015

1. FEATURES

* Professional bench type meter with large size LCD display with green color back light.
* One meter for multi purpose operation : pH/ORP, CD/TDS (Total dissolved solids), Dissolved Oxygen.
* pH : 0 to 14.00 pH, ORP : ± 1999 mV.
* Conductivity : 200 uS/2 mS/20 mS/200 mS.
* Dissolved oxygen : 0 to 20.0 mg/L.
* Real time data logger (record year, month, date, hour, minute, second), 16,000 data logger.
* Auto data record, 16,000 Data logger no.
* Wide sampling time adjustment range from one second to 8 hours 59 minutes 59 seconds.
* Auto data logger, manual data logger.
* RS232 computer interface.
* Max., Min., Data hold.
* Can default auto power off or manual power off.
* Optional pH, ORP, CD/TDS, Dissolved Oxygen and ATC probe.
* DC 1.5V (UM-3, AA) x 8 PCs or DC 9V adapter in.
* pH meter function can select pH or ORP.
* pH measurement can select ATC or manual temperature adjustment.
* pH measurement can make the auto calibration for pH 7, pH 4 and pH 10 or other value.
* Conductivity measurement can select uS/mS or TDS
* Conductivity measurement can select Temp. Coefficient of measurement solution.
* ATC for the conductivity measurement.
* Dissolved oxygen meter use the polar graphic type oxygen probe with temperature sensor, high precision measurement for Dissolved Oxygen (DO) and temperature measurement.
* Heavy duty dissolved oxygen probe, probe head can connect with BOD bottle.
* DO use the automatic Temp. compensation.
* DO meter build in " % SALT " & " Mountain Height " compensation value adjustment.
* Super large LCD display with LCD backlight ON/OFF.
* Separate probe, easy for operation of different measurement environment.
* Wide applications: water conditioning, aquariums, beverage, fish hatcheries, food processing, photography, laboratory, paper industry, plating industry, quality control, school & college, water conditioning.

2-1 GENERAL SPECIFICATIONS

Circuit	Custom one-chip of microprocessor LSI circuit.
Display	LCD size : 82 mm x 61 mm. * with green color backlight.
Measurement	pH/ORP Conductivity/TDS(Total Dissolved Solids) Dissolved Oxygen
Sampling Time of Data Logger	Auto data logger : 1 sec to 8 hour 59 min. 59 sec. Manual data logger : Set sampling time to 0 second.
Data Hold	Freeze the display reading.
Memory Recall	Maximum & Minimum value.
Power off	Auto shut off saves battery life or manual off by push Button. @ Can default auto power or manual power off. @ When default auto power function, power will off automatically after 10 MIN, if no Button be pressed.
Sampling Time of display	Approx. 1 second.
Data Output	RS 232 PC serial interface.
Operating Temperature	0 to 50 °C. - Main instrument.
Operating Humidity	Less than 80% R.H.
Power Supply	DC 1.5 V battery (UM3) x 8 PCs, (Heavy duty type). DC 9V adapter input. @ AC/DC power adapter is optional.
Power Consumption	Operation (LCD backlight ON) : Approx. DC 32 mA Operation (LCD backlight OFF) : Approx. DC 8 mA Power OFF (only internal clock running) : Approx. DC 1.8 uA.
Weight * meter @ Meter	1049 g/2.3 LB. 225 X 125 X 64 mm (8.86 X 4.92 X 2.52 inch)
Accessories Included	Instruction manual..... 1 PC
Optional Accessories	* pH electrode..... PE-03, PE-11, PE-01, PE06HD PE-04HD, PE-05T, PE-03K7 PE-02, PE-08, PE-21 * ATC (Automatic Temperature Probe)..... TP-07 * pH 7 buffer solution..... pH-07 * pH 4 buffer solution..... pH-04 * pH electrode holder..... EH-20 * ORP electrode..... ORP-14 * Conductivity probe..... CDPB-03 * 1.413 mS Conductivity Standard Solution..... CD-14 * Oxygen probe..... OXPB-11 * Spare Probe head with diaphragm set OXHD-04 * Probe-filling Electrolyte..... OXEL-03 * Carrying case..... CA-08

Optional Accessories	* AC to DC 9V adapter. * RS232 cable, UPCB-02. * USB cable, USB-01 * Data Acquisition software, SW-U801-WIN. * Data Logger software, SW-DL2005.
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2-2 ELECTRICAL SPECIFICATIONS (23± 5 °C)

A. pH/mV

pH Electrode	Optional, Any pH electrode with BNC connector.
Measurement	pH 0 to 14 pH mV -1999 mV to 1999 mV
Input Impedance	10 ¹² ohm
Temperature Compensation for pH measurement	Manual 0 to 100 °C, be adjusted by push button on front panel. Automatic (ATC) With the optional temperature probe (TP-07) 0 to 65 °C.
pH Calibration	pH7, pH4, and pH10, 3 points calibration ensure the best linearity and accuracy.
Optional probe and accessories	* pH electrode..... PE-03, PE-11, PE-01, PE06HD PE-04HD, PE-05T, PE-03K7 PE-02, PE-08, PE-21 * ATC (automatic temperature probe)..... TP-07 * pH 7 buffer solution..... pH-07 * pH 4 buffer solution..... pH-04 * ORP electrode..... ORP-14

Measurement	Range	Resolution	Accuracy
pH	0 to 14 pH	0.01 pH	± (0.02 pH + 2 d)
mV	0 to 1999 mV	1 mV	± (0.5% + 2 d)

* pH accuracy is based on calibrated meter only.

B. Conductivity

Conductivity probe	Optional, Carbon rod electrode for long life.
Function	* Conductivity (uS, mS) * TDS (Total Dissolved Solids, PPM) * Temperature (°C, °F)
Temperature Compensation	Automatic from 0 to 60 °C (32 - 140 °F), with temperature compensation factor variable between 0 to 5.0% per C.
Probe Operating Temperature	0 to 60 °C.
Probe Dimension	Round, 22 mm Dia. x 120 mm length.
Optional probe and accessories	* Conductivity probe..... CDPB-03 * 1.413 mS Conductivity Standard Solution..... CD-14

1. Conductivity (uS, mS)

Range	Measurement	Resolution	Accuracy
200 uS	0 to 200.0 uS	0.1 uS	
2 mS	0.2 to 2.000 mS	0.001 mS	± (2% F.S. + 1d)
20 mS	2 to 20.00 mS	0.01 mS	* F.S. - Full scale
200 mS	20 to 200.0 mS	0.1 mS	

* Temperature Compensation :
Automatic from 0 to 60 °C (32 - 140 °F), with temperature compensation factor variable between 0 to 5.0% per C.
* The accuracy is specified under measurement value ≤ 100 mS.
* mS - milli Simens * @ 23± 5°C

2. TDS (Total Dissolved Solids)

Range	Measurement	Resolution	Accuracy
200 PPM	0 to 132 PPM	0.1 PPM	
2,000 PPM	132 to 1,320 PPM	1 PPM	± (2% F.S. + 1d)
20,000 PPM	1,320 to 13,200 PPM	10 PPM	* F.S. - Full scale
200,000 PPM	13,200 to 132,000 PPM	100 PPM	

* Temperature Compensation :
Automatic from 0 to 60 °C (32 - 140 °F), with temperature compensation factor variable between 0 to 5.0% per C.
* The accuracy is specified under measurement value ≤ 66,000 PPM.
* PPM - parts per million * @ 23± 5°C

3. Temperature

Function	Measuring Range	Resolution	Accuracy
°C	0 °C to 60 °C	0.1 °C	± 0.8 °C
°F	32 °F to 140 °F	0.1 °F	± 1.5 °F

* @ 23± 5°C

C. Dissolved oxygen

Oxygen Probe	Optional, The polarographic type oxygen probe with
Measurement & Range	Dissolved Oxygen 0 to 20.0 mg/L (liter). Oxygen in Air 0 to 100.0 % Temperature 0 to 50 °C.
Resolution	Dissolved Oxygen 0.1 mg/L. Oxygen in Air 0.1 % O2 Temperature 0.1 °C.

Accuracy (23± 5 °C)	Dissolved Oxygen ± 0.4 mg/L. Oxygen in Air ± 0.7% O2 Temperature ± 0.8 °C / 1.5 °F.
Probe Compensation & Adj.	Temperature 0 to 50 °C. Automatic Salt 0 to 50 % Salt Height (M. T.) 0 to 8900 meter
Probe Weight	335 g/0.74 LB (batteries & probe included)
Probe Size	190 mm x 28 mm Dia. (7.5" x 1.1" Dia.)
Optional Accessories	* Oxygen probe..... OXPB-11 * Spare Probe head with diaphragm set OXHD-04 * Probe-filling Electrolyte..... OXEL-03