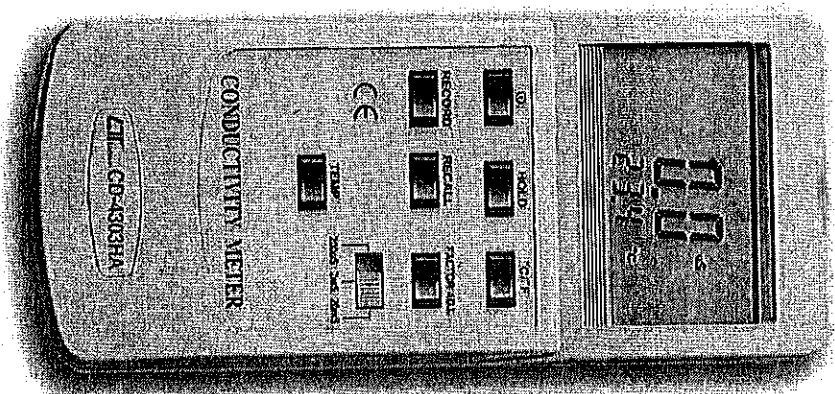


200 μ S/2 mS/20 mS, ATC

CONDUCTIVITY METER

Model : CD-4303HA



Your purchase of this CONDUCTIVITY METER marks a step forward for you into the field of precision measurement. Although this METER is a complex and delicate instrument, its durable structure developed. Please read the following instructions carefully and always keep this manual within easy reach.

OPERATION MANUAL

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1. FEATURES

- * Innovative feature with built-in automatic temperature compensation values adjustable between 0 to 5.0% per °C.
- * Selecting "0% per °C" of Temp. Coefficient Adjust, allows you to take uncompensated conductivity readings.
- * Wide automatic temperature compensation range from 0 °C to 50 °C.
- * Carbon rod electrode for long life.
- * Microprocessor circuit assures high accuracy and provides special functions and features.
- * Super large LCD display with contrast adjustment for best viewing angle.
- * Dual LCD display, show both conductivity & temp. values.
- * Heavy duty & compact housing case.
- * Records Maximum, Minimum and Average readings with RECALL facilities.
- * Data hold function.
- * Auto shut off prolongs battery life.
- * Operates from DC 9V battery, MN1604 (PP3) or equivalent.
- * Uses durable, long-lasting components, enclosed in a strong, light weight ABS-plastic housing case.
- * Use selectable temperature units, i.e. °C or °F.
- * Wide applications: water conditioning, aquariums, beverage, fish hatcheries, food processing, photography, laboratory, paper industry, plating industry, quality control, school & college, water conditioning.
- * The portable conductivity meter provides fast, accurate readings, with digital readability and the convenience of a remote probe.

2. SPECIFICATIONS

2-1 General Specifications

| | |
|--------------------------|--|
| Circuit | Custom one-chip microprocessor LSI circuit. |
| Display | Dual function display, 13 mm (0.5") Super large LCD display. |
| Measurement | Conductivity: 3 ranges 199.9 uS, 1,999 mS, 19,99 mS. Temperature: 0 - 60 °C / 32 - 140 °F. |
| Temperature Compensation | Automatic from 0 to 60 °C(32 - 140 °F), with temperature compensation factor variable between 0 to 5.0% per C. |
| Memory Recall | Records Maximum, Minimum and Average readings with RECALL facility. |
| Power off | Manual off by push button or Auto shut off after 10 minute(Not activated during memory record function). |
| Over load indication | Indicated by "-" - - -" |
| Sampling Time | Approx. 0.8 second. |
| Operating Temperature | 0 to 50 °C - main instrument. 0 to 60 °C - probe only. |
| Operating Humidity | Max. 80% RH. |
| Power Supply | DC 9V battery, MN1604(PP3) or equivalent. Heavy duty type. |
| Power Current | Approx. DC 7.8 mA. |

| | |
|----------------------|--|
| Weight | 350 g/0.77 LB (included batteries) |
| Size | Main instrument: 185 x 78 x 38 mm (7.3 x 3.0 x 1.5 inch). Probe: Round, 22 mm Dia. x 120 mm length. |
| Accessories Included | Instruction manual.....1 PC. Sensor probe.....1 PC. Carrying case.....1 PC. |

2-2 Electrical Specifications(23 ± 5°C)

A. Conductivity

| Range | Measurement | Resolution | Accuracy |
|--------|-----------------|------------|--|
| 200 uS | 0.1 to 199.9 uS | 0.1 uS | ± (2% F.S. + 1 d) * F.S. - Full scale |
| 2 mS | 0.2 to 1,999 mS | 0.001 mS | |
| 20 mS | 2 to 19,99 mS | 0.01 mS | |

* uS - micro Simens, mS - milli Simens

B. Temperature

| Measuring Range | Resolution | Accuracy |
|-------------------------------|---------------|---------------|
| 0 °C to 60 °C/32 °F to 140 °F | 0.1 °C/0.1 °F | 0.8 °C/1.5 °F |
| Resolution | | |

3. FRONT PANEL DESCRIPTION

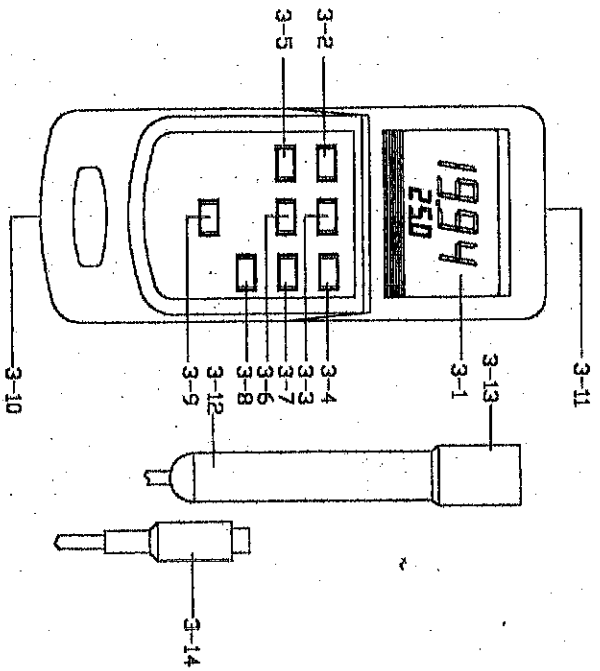


Fig. 1

- | | |
|--|--------------------------------|
| 3-1 Display | 3-8 Range Select Switch |
| 3-2 Power Off/On button | 3-9 Temp. Coefficient Button |
| 3-3 Data Hold Button | 3-10 Battery Compartment/Cover |
| 3-4 °C/°F button | 3-11 Input Socket |
| 3-5 Memory "Record" Button | 3-12 Electrode Handle |
| 3-6 Memory "Call" Button | 3-13 Conductivity Electrode |
| 3-7 Factor Button (Temp. Coefficient Adjust) | 3-14 Electrode Plug |

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4. MEASURING PROCEDURE

4-1 Conductivity measurement

- (1) Push the "Power Off/On Button" (3-2, Fig. 1) to power the instrument.
 - (2) The instrument will default to 2% per °C Temperature Compensation factor. The meter has built-in Automatic Temperature Compensation adjustable between 0 to 5% per °C.
- In order to change the default value carry out the following procedures :

- a. Push the "Temp. Compensation Button" (3-9, Fig. 1) , the display will show

2.0%
P °C

- b. Push the "Factor Adjust Button" (3-7, Fig. 1) to select the desired compensation factor. The value will increment in steps of 0.1 % per °C.
- c. Once the desired value is reached, push the "Temp. Compensation Button" (3-9, Fig. 1) to set the new value.

- (3) Select the applicable range, using the "Range Select Button" (3-8, Fig. 1).

* If the display shows " - - - - ", it indicates an overload condition, select the next higher range.

* If the display shows " _ _ _ _ _ ", it indicates an out-of-range condition, select the next lower range.

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(4) Immerse the "Conductivity Electrode" (3-13, Fig. 1) into the solution, up to the immersion level.

(5) During the measurement, the lower LCD Display will show the temperature of the solution.

* Push the "C/F Button" (3-4, Fig. 1) to change the temperature display unit from "°C to °F" or "°F to °C".

4-2 Data Hold

* During measurement, pushing the "Data Hold Button" (3-3, Fig. 1) will hold the display values & the LCD will show the "D.H" symbol.

* To cancel the Data Hold function, Press the Data Hold Button, once more.

4-3 Data Record (Max., Min., Average reading)

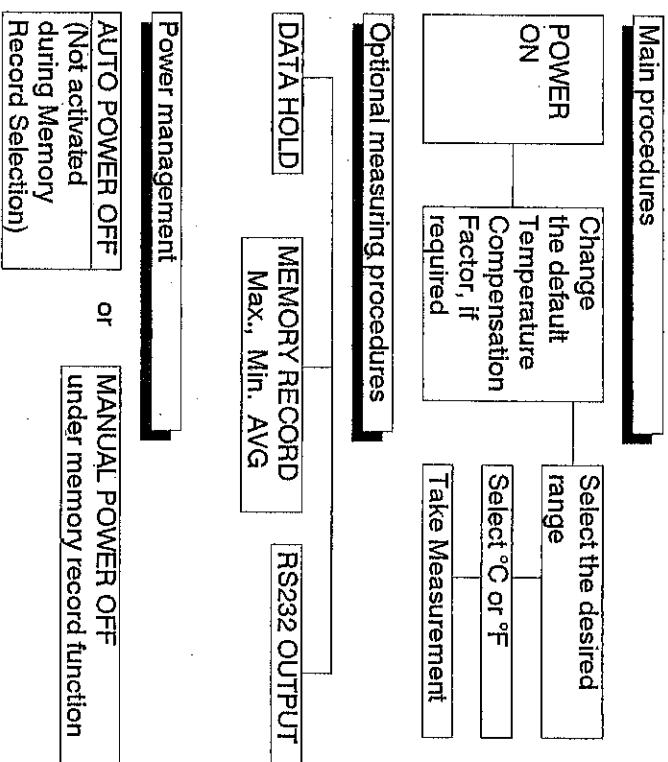
* The DATA RECORD function displays the maximum, minimum and average readings. To start the DATA RECORD function, press the "Record Button" (3-5, Fig. 1) once. "REC" symbol will appear on the LCD display.

- * With the "REC" symbol indicated on the display
 - (a) Push the "CALL Button" (3-6, Fig. 1) once, then the "Max" symbol with the maximum values recorded will appear on the LCD display.
 - (b) Push the "CALL Button" once again, the "Min" symbol with the minimum values recorded will appear on the LCD display.

(c) Push the "CALL Button" once more, the "AVG" symbol with the average values will appear on the LCD display.

(d) To de-activate the Data Record function, Press the "Record Button" (3-5, Fig. 1) once again. All associated annunciators will disappear from the display.

4-4 For quick measurement, follow the procedures shown below :



5. ADDITIONAL FEATURES

The instrument has built-in "Auto Power Shut-off" in order to prolong battery life. The meter will switch off automatically if none of the buttons are pressed within 10 min.

To de-activate this feature, Select the memory record function during measurement, by pressing the "RECORD" button(3-6, Fig.1).

6. CALIBRATION PROCEDURE

The meter has been calibrated during manufacture.

However, it may be necessary to re-calibrate periodically. Particularly if the instrument is used for a long period or if the conductivity electrode is changed.

To re-calibrate the instrument, follow the procedures shown below :

- (1) Prepare a " 1.413 mS Calibration Solution "
- (2) Slide the " Range Select Switch " (3-8, Fig. 1) to "2 mS" position.
- (3) Immerse the " Conductivity Electrode " (3-13, Fig. 1) into the solution up to the immersion level.
- (4) Adjust the " Calibration Adjust Pot " (VR4, Fig. 2), located within the battery compartment, until the display indicates the value of the calibration solution.

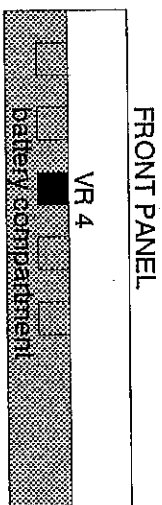


Fig. 2

FRONT PANEL

7. BATTERY REPLACEMENT

- (1) When the left corner of LCD display show "LBT", it is necessary to replace the battery. However, in-spec measurement may still be made for several hours after low battery indicator appears before the instrument become inaccurate.
- (2) Slide the " Battery Cover " (3-10, Fig. 1) away from the instrument and remove the battery.
- (3) Install a 9V battery(heavy duty type) and replace the cover.