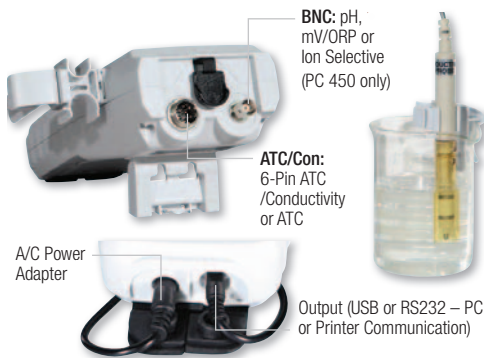


Models:



Getting Started/Connections

After installing (2) AA batteries and/or connecting the optional 110/220 VAC power supply, connect the desired sensors to the corresponding ports.



2 mm and 16 mm probes can utilize the **Grip-Clip™** to attach one or more sensors to a beaker and to the instrument as needed. The stand can be used as shown above or used for wall-mounting.

Keypad Functions

	Press once to power ON in the mode that was previously used. Press again to turn backlight on for one minute or off (450 series only). Hold for 3 seconds to power OFF.
	Toggle between measurement and calibration modes. In SETUP mode, BACK serves to return to the previous menu option or setting.
	Confirm calibration values in CAL mode. Confirm selections in SETUP mode. Freeze or release the measured reading.
	Customize instrument settings and preferences. (See also Setup Programs)
	Toggle between available measurement types.
	Save measurement into memory. Increase value or scroll up in SETUP or manual calibration.
	Recall saved values from memory. Decrease value or scroll down in SETUP or manual calibration.
	Send output data to printer or computer. (450 series only).

Setup Programs

To access the settings below, press **SETUP**. Up/down arrows will display the available options. Press **ENTER** to accept the desired setting, or **BACK** to return to the previous option and/or exit.

Configuration Options

- Ready indicator **ON** / **OFF** / or Automatic **HOLD** when stable
- Choose **°Celsius** or **°Fahrenheit**

Conductivity Cell Options

- Cell Constant. Choose (**0.10** / **1.00** / **10.0**)
- Temperature Coefficient. Adjust from **0.00** - **10.0** %/°C

- Total Dissolved Solids Factor. Adjust from (**0.00** - **1.00**)
- Normalization Temperature. Choose (**15.0** / **20.0** / **25.0** / **30.0** °C)
- Choose Single-Point Calibration (**SPC**) to apply a single calibration value across all ranges or Multi-Point Calibration (**MPC**) to calibrate individual range(s).

- Choose Automatic Calibration Standards or Manual Adjustment

Select Calibration Due Reminder

- Set number of days from **0-60** for desired parameter

View Calibration Data (for the parameter being measured)

- Press **ENTER** to view each point that is calibrated with the associated calibration range.

View Electrode Data (for the parameter being measured)

- Press **ENTER** to view the electrode efficiency of each point that is calibrated with the associated calibration range.

System Settings

- Data Logging:**
MANUAL upon key press only.
TIMED interval. Choose (**SEC** / **MIN** / **HOURLY**) interval.
- Automatic shut off after 10 minutes. Choose **ON** or **OFF**.
- Clock Settings:**
Date: Choose **USA** (MM/DD/YYYY) or **Euro** (DD/MM/YYYY).
Time: Choose (**24HR** or **12HR**). If 12HR, choose **AM** or **PM**.
- Set Printer Type:**
CSV (Comma Separated Values) – best format for computer
Printer (Text) – best format for printer.
Choose Manual (**MAN**) upon key press or **TIMED** interval.
If timed, choose (**SEC** / **MIN** / **HOURLY**).

Reset

- NO**. Exits from reset menu options without action.
- FACTORY RESET**. Returns all settings except date/time and ATC calibration to factory default values after **ENTER** is pressed then restarts meter.
- DATA RESET**. Erases data stored in memory while retaining other settings after **ENTER** is pressed.
- CALIBRATION RESET**. Erases non-ATC calibration data while retaining other settings after **ENTER** is pressed.

Conductivity/TDS/Salinity Calibration

For best results, periodic calibration with known accurate standards is recommended. Calibrate with standard(s) near your intended measuring range. Provide stirring for best results. After calibration, the electrode efficiency that corresponds to the active measurement will be visible on the bottom display. “- - -” will be shown if no calibration is performed. Press **MEAS** to return to measurement mode at any time.

Range #	Conductivity Range	Automatic Calibration Values	
		Normalization Temperature	
		25 °C	20 °C
r 1	0.00 - 19.99 µS	None	None
r 2	20.0 - 199.9 µS	84 µS	76 µS
r 3	200.0 - 1999 µS	1413 µS	1278 µS
r 4	2.00 - 19.99 mS	12.88 mS	11.67 mS
r 5	20.0 - 200.0 mS	111.8 mS	102.1 mS

Using Automatic Conductivity Recognition

- From Conductivity measurement mode, dip the sensor into your standard – either 84 µS, 1413 µS, 12.88 mS, or 111.8 mS, then press **CAL**. The primary display will search for the nearest standard. The secondary display will show the un-adjusted value and the bottom display will show the temperature. One calibration value in each range is allowed.
- When the **READY** indicator appears, press **ENTER** to accept. The primary reading will flash “**DONE**”.
- To calibrate another standard, rinse your electrode(s) then dip into your the next standard or press **MEAS** to return to measurement mode at any time. The primary display will search for the nearest standard value that has not yet been calibrated, while the secondary display will show the unadjusted value. When the **READY** indicator appears, press **ENTER** to accept.
- After the desired number of standards has been calibrated, the bottom display will show the efficiency in measurement mode.

Using Manual Adjustment

- From Conductivity/TDS/SALINITY measurement mode, dip the sensor into your standard then press **CAL**.
- When the **READY** indicator appears use up/down arrows to adjust the primary reading to match the standard value at the measured temperature, then press **ENTER**.
- Rinse your electrode(s) then dip the sensor into your next standard, or press **MEAS** to return to measurement mode. Repeat as necessary. After the desired number of standards have been calibrated, the bottom display will show the efficiency in measurement mode.

Temperature Calibration/Manual ATC

Temperature calibration is recommended prior to first use, after ATC sensor replacement, and periodically as needed.

- Press **CAL** from any measurement, then press **MODE**.
- Skip to step 3 for manual ATC, otherwise, dip the temperature sensor into a solution with a known accurate temperature. The upper display shows the active temperature while the lower display shows the factory default temperature without adjustment.
- Use up/down arrows to adjust the upper display. Press **ENTER** to accept the calibration temperature. The maximum adjustable value is ± 10 °C (or ± 18 °F) from factory default.

Error Messages

ERR “ERR” will appear when an error condition exists or the incorrect key is pressed. Common examples include:

- Pressing **ENTER** during calibration before the “**READY**” indicator appears. Wait for the “**READY**” indicator before pressing **ENTER**.
- UR** (Under Range) • **OR** (Over Range)

Intended Use, Maintenance & Precautions

These handheld meters use sensors to detect various parameters for water-based measurements. For routine maintenance disconnect the power cord or battery, then dust or wipe the display using a damp cloth. If necessary, warm water or a mild water based detergent can be used. Immediately remove any spilled substance from contact with the meter using the proper cleaning procedure for the type of spill.

- Do not use this equipment in potentially explosive atmospheres.
- Refer to the electrode instructions for use, storage and cleaning.
- Ensure that no liquid enters the instrument.
- Do not use any aggressive cleaning chemicals (solvents or similar agents).
- There are no user serviceable parts inside. Attempts to service internal parts may void the warranty.
- Not intended for medical applications or patient use.
- WARNING:** No modification of this equipment is allowed.

Instrument Operating Conditions

Operating Ambient Temp.	5 to 45 °C
Operating Relative Humidity	5 to 85 %, non-condensing
Storage Temp.	-20 to +60 °C
Storage Relative Humidity	5 to 85 %, non-condensing
Pollution	Degree 2
Overvoltage	Category II
Weight	500 g
Size (L x W x H)	21.15 x 9.87 x 5.85 cm
Regulatory & Safety	CE, TUV 3-1, FCC Class A
Power Rating	DC Input: 9 VDC 1 A
Battery Requirement	2 x AA (LR6) 1.5 V batteries (replace batteries when battery sign blinks)
Vibration	Shipping/handling per ISTA #1A
Shock	Drop test in packaging per ISTA #1A
Enclosure (Designed To Meet)	IP67 (using rubber covers)

Universal Power Adapter Operating Conditions

Operating Ambient Temp.	0 to 50 °C
Operating Relative Humidity	0 to 90 %, non-condensing
Storage Temp.	-20 to +75 °C
Storage Relative Humidity	0 to 90 %, non-condensing
Pollution	Degree 2
Overvoltage	Category II
Power Rating	I/P: 100 - 240 V, 50/60 Hz, 0.3A O/P: 9 VDC 1 A