SPECIFICATIONS

Conductivity—

Range:	0 to 1999 µS (micromhos)
Resolution:	1
Range:	0.00 to 19.99 mS (mhos)
Resolution:	0.01

Automatic Temperature Compensation—

Range:	32.0 to 122.0 °F / 0.0 to 50.0 °C
Normalization:	20 °C or 25 °C (user selectable)
Coefficient:	0.0 to 4.0% per °C, 0.1 increments

Temperature Measurement—

Range:	32.0 to 122.0 °F / 0.0 to 50.0 °C
Resolution:	0.1°

OPERATION

This section contains basic operating instructions, to insure accurate results and for more advanced functions, refer to the additional sections that follow.

1. Remove the protective cover from the probe head.
2. Turn the meter on by pressing the ON/OFF SET button.
3. Place the probe head into the solution to be measured.
4. To insure Automatic Temperature Compensation, immerse the probe head and temperature sensor completely. For accurate Automatic Temperature Compensation, the temperature sensor must reach equilibrium with the liquid being measured, this could take several minutes.
5. Insure that there is adequate movement of the liquid around the tip of the probe head (0.2 - 0.3 meters per second minimum). This can be achieved by stirring the meter in the liquid.

The meter will automatically select the range that is the most appropriate for the value being measured. For example, when measuring a 500 µS solution, the meter will select the µS range and display 500 µS as opposed to displaying 0.50 mS. To manually select the range, press and hold the ⬆ button for approximately three (3) seconds, if the value being measured is able to be displayed in the alternate range, the meter will switch ranges (see the "Range Mode Selection" section).

6. Take the desired measurements.
7. Press the ON/OFF SET button to turn the meter off. To preserve battery life, always turn the meter off when not in use.
8. Rinse the probe head with distilled/deionized water and replace the protective cover. Always replace the protective cover to prevent damage to the probe head.

If no button is pressed for twenty (20) minutes, the meter will turn off automatically to preserve battery life (see the "Automatic Shutoff" section).

POWER ON DISPLAY SEQUENCE

When the meter is turned on (by pressing the ON/OFF SET button), the display will cycle through showing the following items:

All Segments - Display check

TNR	Normalization temperature value (see the "Selecting Temperature Normalization Value" section)
TCO	Temperature Compensation Coefficient value (see the "Setting Temperature Compensation Coefficient" section).
RAN	Range display mode (see the "Range Mode Selection" section).

CONDUCTIVITY CALIBRATION

One calibration point may be entered for each of the measurement ranges (0 to 1999 µS and 0.00 to 19.99 mS).

To insure accuracy:
–Always use Traceable® Conductivity Standards
–Select a Traceable® Conductivity Standard with a value as close as possible to the value of the unknown sample.
–If possible, the Traceable® Conductivity Standard and unknown sample should be at the same temperature. The ideal temperature is 25 °C.

Previous calibration points are cleared when the meter is calibrated to a new value.

1. Remove the protective cover from the probe head.
2. Turn the meter on by pressing the ON/OFF SET button.
3. Place the probe head into the Traceable® Conductivity Standard.
4. To insure Automatic Temperature Compensation, immerse the probe head and temperature sensor completely. For accurate Automatic Temperature Compensation, the temperature sensor must reach equilibrium with the liquid being measured, this could take several minutes.
5. Insure that there is adequate movement of the liquid around the tip of the probe head (0.2 - 0.3 meters per second minimum). This can be achieved by stirring the meter in the liquid.
6. Press and hold the ⬇ HLD/CAL button for approximately three (3) seconds, CAL will appear at the top of the display and the conductivity measurement will flash.
7. Press the ⬆ and/or ⬇ HLD/CAL buttons to adjust the display to the know value of the Traceable® Conductivity Standard. *The meter may only be adjusted by ±30% of the detected value.*
8. With the the know value of the Traceable® Conductivity Standard appearing and CAL no longer flashing, press the ON/OFF SET button, the meter will return to the measurement display.

VIEWING CALIBRATION DATA

1. Turn the meter on by pressing the ON/OFF SET button.
2. Press and hold the ON/OFF SET button for approximately three (3) seconds, P1.0 will appear at the bottom of the display.
3. Press the ⬆ button two (2) times, P4.0 will appear at the bottom of the display.
4. Press the ON/OFF SET button, P4.1 will appear at the bottom of the display. The top of the display will show the value that the meter was calibrated to for the range of 0 to 1999 µS. (If no user calibration has been performed, "---" will appear.)
5. Press the ⬆ button, P4.2 will appear at the bottom of the display. The top of the display will show the value that the meter was calibrated to for the range of 0 to 19.99 mS. (If no user calibration has been performed, "---" will appear.)
6. Press the ON/OFF SET button, P4.0 will appear at the bottom of the display.
7. Press and hold the ON/OFF SET button for approximately three (3) seconds, the meter will return to the measurement display.

SELECTING °F OR °C

1. Turn the meter on by pressing the ON/OFF SET button.
2. Press and hold the ON/OFF SET button for approximately three (3) seconds, P1.0 will appear at the bottom of the display.
3. Press the ON/OFF SET button, the temperature unit of measure will flash on the display.
4. Press the ⬆ button, the temperature reading will switch to the opposite unit of measure. If the meter had been displaying °F, it will now display °C, and vice-versa. Each press of the ⬆ button will switch the display to the opposite unit of measure.
5. With the desired unit of measure appearing, press the ON/OFF SET button three (3) times, P1.0 will appear at the bottom of the display.
6. Press and hold the ON/OFF SET button for approximately three (3) seconds, the meter will return to the measurement display.

The unit of measure selected will be the default unit of measure until changed.

RANGE MODE SELECTION

The meter will automatically select the range that is the most appropriate for the value being measured. For example, when measuring a 500 µS solution, the meter will select the µS range and display 500 µS as opposed to displaying 0.50 mS.

To manually select the display range, press and hold the ⬆ button for approximately three (3) seconds, if the value being measured is able to be displayed in the alternate range, the meter will switch ranges.

Each time the ⬆ button for pressed and held, the range mode will cycle through the available modes:

RTO	Automatic range selection
1	0 to 1999 µS
2	0.00 to 19.99 mS

HOLD FUNCTION

The hold function allows the readings on the display to be "frozen" so that they may be recorded.

1. Press and release the ⬇ HLD/CAL button to "freeze" the display at the current reading. "HOLD" will appear at the top of the display.
2. Once the reading has been recorded, press and release the ⬇ HLD/CAL button to return the display to the current reading. "HOLD" will no longer appear on the display.

AUTOMATIC SHUTOFF (Disable)

If no button has been pressed for twenty (20) minutes, the Automatic Shutoff feature will turn the meter off to preserve battery life.

To disable the Automatic Shutoff feature:

1. With the meter turned off, press and hold the ⬇ HLD/CAL button, then press and hold the ON/OFF SET button until "N" appears on the display.
2. Release the ⬇ HLD/CAL and ON/OFF SET buttons. The meter will power on and the Automatic Shutoff feature will be disabled.

The Automatic Shutoff feature is automatically enabled when the meter is powered off and turned back on.

SELECTING TEMPERATURE NORMALIZATION VALUE

Conductivity is greatly influenced by temperature. Most fluids increase in conductivity as temperature increases. Depending on the value selected here, Automatic Temperature Compensation (ATC) will automatically make corrections to the reading and display a value as if the sample was 25 °C or 20 °C, no matter what the actual sample temperature is. The international standard temperature normalization value is 25 °C.

The following procedure is used to change the temperature normalization value from 25 °C to 20 °C, or from 20 °C to 25 °C.

1. Turn the meter on by pressing the ON/OFF SET button.
2. Press and hold the ON/OFF SET button for approximately three (3) seconds, P1.0 will appear at the bottom of the display.
3. Press the ON/OFF SET button two (2) times, the temperature normalization value will flash on the display.
4. Press the ⬆ button, the temperature normalization value will change. Each press of the ⬆ button will switch between 25.0 °C (77.0 °F) and 20.0°C (68.0°F).
5. With the desired temperature normalization value appearing, press the ON/OFF SET button two (2) times, P1.0 will appear at the bottom of the display.
6. Press and hold the ON/OFF SET button for approximately three (3) seconds, the meter will return to the measurement display.

The temperature normalization value selected will be the default value until changed.

SETTING TEMPERATURE COMPENSATION COEFFICIENT

Conductivity is greatly influenced by temperature. Most fluids increase in conductivity as temperature increases. The value set here will determine how much the Automatic Temperature Compensation (ATC) feature will adjust the value for every 1 °C in order to automatically make corrections to the reading and display a value as if the sample was 25 °C or 20 °C (see the "Selecting Temperature Normalization Value" section), no matter what the actual sample temperature is.

Although every fluid will have a different temperature coefficient, a temperature compensation coefficient of 2.0% is a generally accepted standard compensation value. If the temperature coefficient of the solution being measured is known, that value should be entered in order to obtain the most accurate results. To take non-temperature compensated measurements, a temperature compensation coefficient of 0.0% should be entered.

The following procedure is used to set the temperature compensation coefficient.

1. Turn the meter on by pressing the ON/OFF SET button.
2. Press and hold the ON/OFF SET button for approximately three (3) seconds, P1.0 will appear at the bottom of the display.
3. Press the ON/OFF SET button three (3) times, the temperature coefficient value will flash on the display.
4. Press the ⬆ and/or ⬇ HLD/CAL buttons to adjust the display to the desired temperature coefficient value.
5. With the desired temperature coefficient value appearing, press the ON/OFF SET button one (1) time, P1.0 will appear at the bottom of the display.
6. Press and hold the ON/OFF SET button for approximately three (3) seconds, the meter will return to the measurement display.

The temperature coefficient value selected will be the default value until changed.

RESET TO FACTORY DEFAULTS

Resetting the meter will clear all calibration data and reset the user selectable values to the factory defaults. Factory defaults are as follows:

Temperature display:	°C
Normalization Temperature:	25 °C
Temperature Coefficient:	2.1%

The following procedure is used to reset the meter to the factory default values.

1. Turn the meter on by pressing the ON/OFF SET button.
2. Press and hold the ON/OFF SET button for approximately three (3) seconds, P1.0 will appear at the bottom of the display.
3. Press the ⬆ button one (1) time, P3.0 will appear at the bottom of the display.
4. Press the ON/OFF SET button, the n will flash on the display.
5. Press the ⬆ button, the y will flash on the display.
6. With y appearing, press the ON/OFF SET button, P3.0 will appear at the bottom of the display and the values will have been reset to the factory defaults.
7. Press and hold the ON/OFF SET button for approximately three (3) seconds, the meter will return to the measurement display.

DISPLAY MESSAGES

Upper Display Messages:

---	Indicates that the meter is in the manual range selection mode and the value being measured is higher than 1999 µS.
E03	Indicates that the value of the solution being measured exceeds the measurement range of the unit.
E04	Indicates that the value of the solution being measured exceeds the measurement range of the unit based on a temperature measurement error (see the "Lower Display Messages" section).

Lower Display Messages:

E01	Indicates that the temperature sensor is damaged.
E02	Indicates that the temperature of the solution being measured is below the measurement range of the unit.
E03	Indicates that the temperature of the solution being measured is above the measurement range of the unit.

ALL OPERATION DIFFICULTIES

If this meter does not function properly for any reason, replace the batteries with a new, high quality batteries (see the "Battery Replacement" section). Low battery power can occasionally cause an number of "apparent" operational difficulties. Replacing the batteries with new fresh batteries will solve most difficulties.

BATTERY REPLACEMENT

An erratic display, faint display, no display, or a battery symbol appearing on the display are all indicators that the batteries need replacement. The battery cover is located at the top of the unit. Unscrew the battery cover by turning it counter-clockwise. Remove the exhausted batteries and replace them with four (4) new #357/LR44 size silver oxide batteries. Make certain to insert the new batteries with the proper polarity as indicated by the "+" and "–" symbols in the battery compartment. The "+" side of the silver oxide battery is the flat side with the engraving. Replace the battery cover and tighten securely.

TRACEABLE® CONDUCTIVITY METER INSTRUCTIONS