

HI991300 · HI991301

pH/EC/TDS/ Temperature Meters

- Simultaneous, pH, EC/TDS and temperature measurements on a large three-line LCD display;
- User-friendly Design
 - With only two buttons, meter operation could not be simpler. Two buttons allow you to quickly adjust settings, select the measurement range, and choose calibration buffer sets.



- **Watertight Connection**
 - A Quick Connect DIN connector makes attaching and removing the probe simple and easy. The rubber coating protects the cable and creates a sealed connection for added reliability.
- **Probe Condition**
 - An on-screen indicator provides visual confirmation that your probe is working at its best.
- **Large LCD**
 - A multilevel display provides at-a-glance readings of your most important numbers from any angle.
- **Durable IP67 waterproof casing**
 - Designed to withstand the knocks, drops, and spills of real life, the new IP67 body ensures top performance in any environment. These meters are totally protected against dust and water intrusion from any direction.
- **On-screen calibration tags**
- **mV of pH measurement for electrode check**
- **Selectable temperature unit (°C or °F)**
- **Battery life indication and low battery detection**



- **Optional shockproof silicon rubber boot**
 - Specially designed to protect your instrument from damage or impact

HI710028 Orange
HI710029 Blue

The HI991300 and HI991301 are light weight, portable pH, conductivity (or total dissolved solids) and temperature meters for portable applications requiring both a pH and conductivity (or TDS) measurement. Applications include measurements for greenhouses irrigation, hydroponics and groundwater monitoring from agriculture nutrient pollution.

The HI991300 and HI991301 meters feature 2 button operation and are simple to use. All operations and settings, including calibration buffers and temperature scale selections, are made through these 2 buttons. They have a waterproof and compact casing rated for IP67 conditions and a large Tri-line display. The meters have automatic pH calibration at one or two points and a single conductivity calibration. Other user selectable features include different TDS factors from 0.45 to 1.00, and a range of temperature coefficients (β) from 0.0 to 2.4% for better conductivity or TDS solution temperature compensation. These meters are supplied with a multi-parameter probe specifically designed for these meters. To increase conductivity accuracy, two meter models are available, with different conductivity ranges, for applications from purified to brackish waters.

The HI12883 multi-parameter probe, incorporates a domed shaped pH bulb rated from 0-13 pH, a single junction Ag/AgCl reference electrode with gelled electrolyte and a retractable cloth wick junction, a graphite EC/TDS cell, and a temperature sensor in one convenient, rugged polypropylene body. In addition, to ensure against interference from transient electrical noise to pH, a solidstate preamplifier is integrated into the probe. The probe is rated from 0 to 50°C.

HI1288 amplified pH electrode

- 3 sensors in a single probe
- Pre-amplified pH electrode for resistance to electrical noise
- Extractable cloth junction to clear any clogging
- Graphite EC/TDS sensor

The HI991301 and HI991300 are supplied with an amplified polypropylene body pH/EC/TDS/temperature probe. The built in amplifier will reduce the effects of electrical noise on the high impedance pH measurement. Examples of sources of electrical noise include rectifiers, motors and ballasts.

The HI1288 pH electrode also features an extractable cloth junction. Every pH electrode has a junction. Many use a single ceramic frit

which acts as a barrier between the inside reference cell to the outside sample. This barrier allows for a diffusion electrolyte that is necessary for the pH measurement. Any clogging of the junction will result in a reduced diffusion and as a result the readings will become erratic. Most probes will have to have this junction cleaned and if not possible then the probe has to be replaced. The extractable cloth junction of the HI1288 allows for the renewing of the junction. Simply extract $\frac{1}{8}$ " of the junction by pulling on the junction will expose a new portion. Any clogging that was present will be cleared and the response time will be back to normal extending the life of the pH electrode.

The EC/TDS sensor is made of graphite. A common problem with amperometric sensors is a polarization effect. With amperometric sensors there are two poles in which a voltage is alternated. The positive and negative ions



in the solution migrate to one of the negative or positive poles. When the charges build up on one of these poles a polarization effect occurs. Having a conductivity sensor made of graphite reduces the polarization effect.

| Specifications | HI991300 | HI991301 | |
|--|----------------------------------|---|---|
| pH | Range* | -2.00 to 16.00 pH / -2.0 to 16.0 pH | -2.00 to 16.00 pH / -2.0 to 16.0 pH |
| | Resolution | 0.01 pH / 0.1 pH | 0.01 pH / 0.1 pH |
| | Accuracy (@25°C/77°F) | ±0.02 pH / ±0.1 pH | ±0.02 pH / ±0.1 pH |
| | Calibration | automatic, 1 or 2 points choose between 2 sets of buffers (standard: 4.01; 7.01; 10.01 or NIST: 4.01; 6.86; 9.18) | automatic, 1 or 2 points choose between 2 sets of buffers (standard: 4.01; 7.01; 10.01 or NIST: 4.01; 6.86; 9.18) |
| pH-mV | Range | ±825 mV | ±825 mV |
| | Resolution | 1 mV | 1 mV |
| | Accuracy (@25°C/77°F) | ±1 mV | ±1 mV |
| EC | Range | 0 to 3999 µS/cm** | 0.00 to 20.00 mS/cm** |
| | Resolution | 1 µS/cm | 0.01 mS/cm |
| | Accuracy (@25°C/77°F) | ±2% F.S. | ±2% F.S. |
| TDS | Range | 0 to 2000 ppm (mg/L) | 0.00 to 10.00 ppt (g/L) |
| | Resolution | 1 ppm (mg/L) | 0.01 ppt (g/L) |
| | Accuracy (@25°C/77°F) | ±2% F.S. | ±2% F.S. |
| Temperature | Range* | -5.0 to 105.0°C / 23.0 to 221.0°F | -5.0 to 105.0°C / 23.0 to 221.0°F |
| | Resolution | 0.1°C/0.1°F | 0.1°C/0.1°F |
| | Accuracy (@25°C/77°F) | ±0.5°C / ±1.0°F | ±0.5°C / ±1.0°F |
| Ordering Information | EC/TDS Calibration | automatic, one point at: 1413 µS/cm or 1382 ppm (CONV=0.5) or 1500 ppm(CONV=0.7) | automatic, one point at: 12880 µS/cm or 6.44 ppt (CONV=0.5) or 9.02 ppt (CONV=0.7) |
| | pH Temp. Compensation | automatic | automatic |
| | EC/TDS Temperature Compensation | automatic with β selectable from 0.0-2.4%/°C with 0.1 increments | |
| | TDS Conversion Factor | selectable from 0.45 to 1.00 with 0.01 increments | |
| | Probe (included) | HI12883 pH/EC/TDS/temperature sensor, DIN connector and 1 m (3.3') cable | |
| | Battery Type/Life | 1.5V AAA (3) /approx. 600 hours of continuous use | |
| | Auto-off | user selectable: after 8 min, 60 min or disabled | |
| | Environment | 0 to 50°C (32 to 122°F); RH max. 100% | |
| | Meter Dimensions | 154 x 63 x 30 mm (6.1 x 2.5 x 1.2") | |
| | Meter Mass (with batteries) | 196 g (6.91 oz.) | |
| | Casing Ingress Protection Rating | IP67 | |
| <p>HI991300 is supplied with HI12883 pH/EC/TDS probe with built-in temperature sensor, DIN connector and 1m (3.3') cable, pH 4.01 and 7.01 buffer sachets, HI70031 1413 µS/cm and HI70032 1382 ppm calibration solution sachets, HI700601 Electrode cleaning solution sachets (2), 100 mL beaker, 1.5V AAA batteries (3), calibration certificate of meter, calibration certificate of probe, instruction manual and HI710142 rugged carrying case.</p> <p>HI991301 is supplied with HI12883 pH/EC/TDS probe with built-in temperature sensor, DIN connector and 1m (3.3') cable, pH 4.01 and 7.01 buffer sachets, HI70030 12880 µS/cm and HI70038 6.44 ppt calibration solution sachets, HI700601 electrode cleaning solution sachets (2), 100 mL beaker, 1.5V AAA batteries (3), calibration certificate of meter, calibration certificate of probe, instruction manual and HI710142 rugged carrying case.</p> | | | |

* the pH range is limited from 0 to 13 pH and the temperature range from 0 to 50°C (32 to 122°F) using HI12883 probe
 ** displays µS for µS/cm
 *** displays mS for mS/cm

pH solutions begin on page 2.154; EC and TDS solutions begin on page 5.34;
 See page 7.60 for probe specifications