

# IV1 - LC Tester for Ion, Resistivity, VHR, and RDC

INSTECH® FOCUS ON EXCELLENCE



#LCT-IV1-61001

Instec designed the IV1 specifically with the industrial customers in mind. Its electronics are capable of exceedingly sensitive current measurement and low leakage voltage measurement. Its cables and connectors are triaxial in order to allow guarding against external leakages. The IV1 can be configured to measure any or all of the following:

- Ion Density
- Liquid Crystal Resistivity
- Voltage Holding Ratio (VHR)
- Residual DC (RDC)

Ion density and liquid crystal resistivity are critical components in the proper functioning of any LC display but especially active matrix LCDs. With too many contaminant ions or too low a resistivity, displays are prone to problems such as image retention and flicker. These measurements are useful to LC manufactures both in the development of liquid crystals and quality control. In addition, display manufacturers can use them for both incoming and in line quality inspection and as a diagnostic tool to trace down root causes of problems on the line.

VHR and RDC are a more direct probe for potential problems. Lowered Voltage Holding Ratios can result in noticeable flicker to a display user. Elevated Residual DC values can also produce flicker and/or image retention (or image sticking).

In measuring VHR, the IV1's built in function generator outputs to the sample under test an AC pulse train of user adjustable frequency, amplitude, and duration. Simultaneously, the IV1's internal electrometer senses changes in voltage on the sample, in particular the voltage droop between pulses. For the measurement of RDC, the IV1 applies a set DC voltage to the liquid crystal cell of user selectable magnitude and duration. The built in electrometer then records the residual DC voltage left on the sample cell, again for a user selectable duration. Since the duration of the initial DC voltage may be an hour or more, while the measurement time may be set to ten or more minutes, a single RDC determination can be a long process. With that in mind we designed the IV1's electronics with a modular structure and options exist to add up to 8 channels.



www.instec.com e-mail: sales@instec.com tel: +1 303-444-4608 fax: +1 303-444-4607

Instec, Inc. 5589 Arapahoe Avenue #208 Boulder Colorado 80303 USA

## Technical Specifications

Ion/Resistivity	
Voltage (Min)	± 10mV
Voltage (Max)	± 10V (± 100V optional)
Resolution	100 µV
Frequency	0.01 ~ 1kHz
Current Range	100pA to 1mA
Current Resolution	1pA
Electrical Connections	Triaxial
Voltage Holding Ratio / Residual DC Voltage Measurement	
Voltage (Min)	± 10mV
Voltage (Max)	± 10V
Resolution	100 µV
Output Current	± 100mA (Max)
Offset Voltage	± 0.1mV
Input Capacitance (Hold Mode)	< 1pF
Leak Current (Hold Mode)	< ± 0.1pA
V.G Offset (Hold Mode)	± 0.1mV
Charge Injection	± 5pC
Electrical Connections	Triaxial

## Ordering Information

Part Number	Description
LCT-IV1A	IV1 unit, for ion, resistivity, VHR, and RDC measurement. Configured for 100 to 120V voltage input.
LCT-IV1U	IV1 unit, for ion, resistivity, VHR, and RDC measurement. Configured for 200 to 240V voltage input.

Contact Instec today for further product information. Inquires for a hot and cold stage, a hot and cold chuck, a hot and cold plate, and/or the liquid crystal testing products customized to your special requirements are also welcome. Above information is subject to changes without notice.