



Surface Oxide Tester by Confident Instruments

The Surface Oxide Tester measures the film thickness' on copper in Angstroms with the speed, reliability & user-convenience required by QC Test Labs. It complies with the ASTM B 49 Standard. Uses include copper rod grading, rod production analysis, copper wire quality assurance and solder oxide analysis.

The system designers are industry experts and thus, have provided an instrument with efficient basic features, as well as, several advanced innovations for greater repeatability and ease of use. The system shown at the right includes the controller, the electrochemical cell and the EMM. (The gas tank and regulator are provided by the user.)



Basic Features

- Automatic Sample Detection
- Ethernet & RS-232 Communication
- Fast & Automatic Electrolyte Refreshing
- Automatic Electrolyte Deaeration
- Adjustable Electrolyte Level within Cell
- Stand-Alone System with a Dedicated Computer & Pre-Installed Firmware
- Graphical color Touch Screen which is Mounted in an Adjustable Holder
- Sealed NEMA Enclosure & Touch Screen
- Modular System
- Vibration-Isolated Circuit Boards
- Convenient Wire Testing Screen
- Generous Sample Tray
- Detachable and Easily Cleaned Cell
- Accessory Available for Up to 26 mm Rod

Advanced Features

- Cell designed for measuring as-received curved rod samples to eliminate the problematic straightening task.
- Thick-Walled PVC cell designed to provide long vessel life even under rough handling.
- Zero-maintenance reference electrode.
- Illuminated cell.
- Automatic constant current density control with varying sample size.
- Statistical Process Control (SPC) plotted for rapid trend observation.
- Electrical & physical calibration support.
- Remote updating of firmware via RS-232
- Dual Current Density (DCD) Test Method (see 2012 WAI article which introduces the DCD)
- Adjustable Touch Screen Holder



Software Provided with the Surface Oxide Tester

Confident Instruments' Surface Oxide Tester (SOT) performs all basic (and most advanced) functions without the requiring connection to an outside computer. However, three software products are provided to facilitate additional potent features.

Update SOT Software:

Unlike many laboratory instruments the SOT's firmware can be rapidly updated allowing users to take advantage of improved or added features that become available long after the system has been purchased. This capability is both user-friendly and powerful because in time the user can receive more features than originally purchased.

MySNMP Ethernet Open Source Example Software:

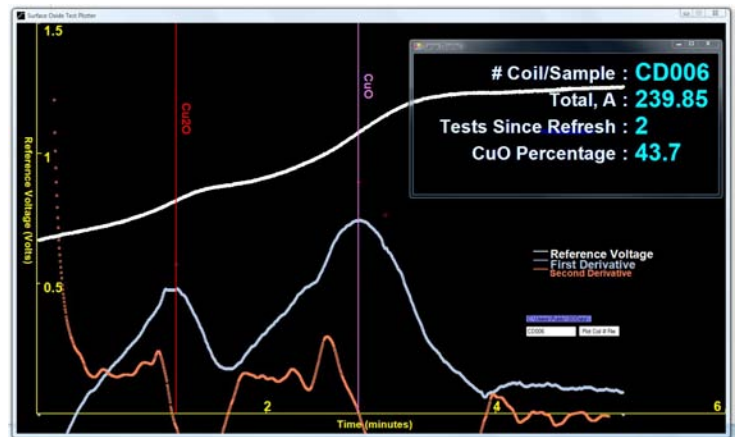
The MySNMP software demonstrates to Ethernet Administrators how to both receive data and send commands to the Surface Oxide Tester via the Ethernet. Once an Ethernet Administrator decides how they wish to impliment these communications they may copy portions of the source code to facilitate automation of the desired processes.

SOT RS232 Analysis and Control Software:

This analysis software provides sophisticated ability to receive information from and sent commands to the SOT:

Receiving Data:

- Store both summary and raw data files.
- Retrieve stored files and analyze with this or other software (such as MS Excel).
- This software can be installed on up to 20 computers so it is possible to email upper management and customers both the test files and a copy of this software with which to readily analyze test files.
- Higher resolution plots than the SOT on (typcially larger) computer screens.
- Adjust the solving of curves for scenario analysis.



Sending Commands:

- Remotely output commands to set-up the SOT.
- Configuration files can be created to for rapid changes between multiple SOT setting configurations.



Shown above (from left to right) is the Cell, the Controller and an external laptop (not supplied) communicating with the Controller using the SOT RS232 Analysis and Control Software.

The image above shows an example plot of a test curve produced by the software.



The Basic System Includes:

1	Controller
1	Electrochemical Cell
1	Tray for Holding the Cell and Samples
1	Electrolyte Maintenance Module (EMM) for auto refreshing & deaerating electrolyte with one Electrolyte Reservoir
1	CD containing User Manual, Updating Software & Advanced Software
1	Hardcopy of Manual Chapters 1 - 6 in English, Chinese or Spanish
1	Coil of Copper Foil 51 μ m x 51 mm x 15 m
1	Power Cord based on user's location

Conforms to ASTM B 49 Surface Oxide Testing

Controller Specifications:

Temperature[°C]: Operating: -20 - 70; Storage: -40-70
Universal Input Voltage 90-250 VAC, 130-250 VDC, 47-63 Hz, up to 120 Watts required
Cell Current selectable from 0.1 to 70 mAmps. (Cell voltage output does not exceed 10 VDC)
12 VDC output to the EMM at 4 Amps max.
RJ45 connector for Ethernet communication
DB-9 conn.: RS-232 (EIA/TIA-574) communication
Rugged connectors for Cell & EMM
Circuit boards internally vibration isolated
Buzzer with user selected number of beeps

LCD Touch Screen:

Waterproof and dustproof
Colors: 256/65,536
Horizontal viewing angle: 120° (typ.)
Vertical viewing angles: 50° Top, 40° Bot. (typ.)
Screen resolution: 320 x 240
High brightness LED display: 560 cd/m2 (typ.)

Dustproof Enclosure:

Powder coated steel (16-ga.) with hinged door
NEMA Type 3R, 4, 12 and 13 IEC 60529, IP66
Overall dimensions [mm max]: 407 x 407 x 508 (Shipping in 2016 and beyond, the position of the LCD is adjustable allowing a range of heights and depths.)

To order or for more information, contact: **Confident Instruments, Inc.**

Phone: 1.260.580.0800

contact@confident-instruments.com

www.confident-instruments.com/surface-oxides.htm

Control Firmware:

The controller comes pre-installed with firmware for all basic functions right out of the box.

Firmware Functions:

- Current Density & Current Control
- Test Graph and Histogram Plotting
- Curve solving by inflection points choosing
- Electrolyte Maintenance Management
- Ethernet and RS-232 Communications
- Convenient Wire Testing Screen
- Electrical Calibration Screen
- Physical Calibration Screen-Cu Foil Testing

Electrochemical Cell:

Overall dimensions within sample tray: H: 350 x W: 432 x D: 400 mm

Dimensions outside of sample tray (cell alone): H: 350 x W: 300 x D: 150 mm

Cell has an adjustable Level Sensing feature setting cell electrolyte volume from 3 to 4 Liters

PVC cell vessel with bottom padded with HDPE

Zero-maintenance auxiliary & reference electrodes

Quick disconnect couplings for mating with EMM

The Standard Cell tests up to 13 mm rod or a Large Cell can be ordered that accepts up to 26 mm rod

Electrolyte Maintenance Module

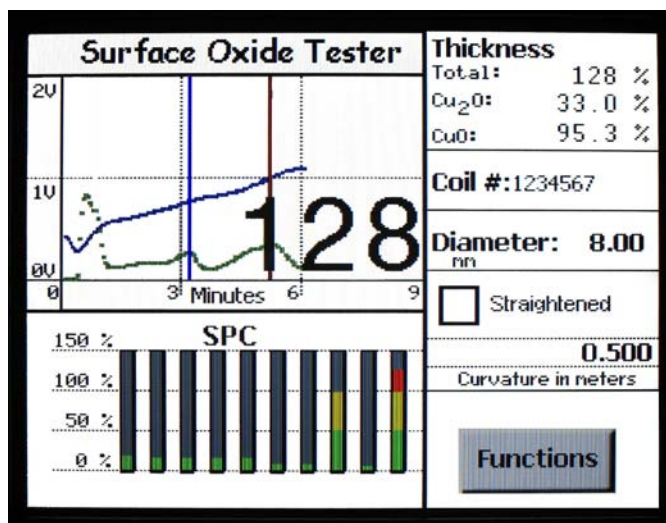
The EMM automatically maintains the electrolyte by rapid refreshing and consistent deaeration.

Overall dimensions: H: 152 x W: 305 x D: 305 mm

Cell mating tubing with quick disconnect couplings

19 L reservoir with quick disconnect in cap

Gas input limited by pressure (100 kPa) & flow rate



An example of results displayed on the main LCD screen.