

SMART TWEEZERS

Model ST5S-BT

LCR Meter and Component Identifier
In a Pair of Tweezers with  Bluetooth™



Smart Tweezers™ ST5S-BT

LCR Meter in a Pair of Tweezers with Bluetooth

An Efficient and Convenient Way to Test SMD Components

- Built-in high-precision LCR probe
- Convenient one-hand operation
- Ideal for Surface Mount Devices
- Automated component identification
- Automated test range selection
- Manual C, R, L, Z and ESR modes
- Adjustable test signal levels
- Swiss-made precise test leads
- Diode Polarity/Short Testing
- Secondary D, Q and ESR parameters
- Portable and ergonomic design
- Built-in Li-Ion battery



R_D 14.29 MΩ AM AF 10kHz

C 61.12 pF 

R_S 5.590 Ω AM AF 10kHz

L 101.6 μH 

Smart Tweezers™ greatly simplifies testing and troubleshooting process. Resistance, capacitance and inductance can be measured with automatic selection of the test parameters and range.

Smart Tweezers™ is a handheld LCR meter of a new concept. It provides a perfect solution for testing and identification of Surface Mount Devices as well as troubleshooting of complex electronic systems.

Its unique mechanical and electronic design combines a pair of precise gold-plated tweezers and a digital LCR meter in compact, lightweight, battery powered instrument. The probe is able to measure resistance, capacitance, inductance with high accuracy and automatic component identification

Testing Surface Mount Devices

Surface mount devices are usually tiny and without wire leads, making it more difficult to test and identify SMD than conventional components.

Smart Tweezers™ gives users an easy way to sort and evaluate loose components and to perform on-board measurements and debugging.

Precise leads produced by IDEAL-TEK S.A., Switzerland reliably contact even the smallest SMD components and take measurements from already mounted devices. The probe can also be used to test conventional components with wire leads too short to insert into the test terminals.

Automated Measurements

Do measurements faster with Smart Tweezers™ using the automatic component identification function eliminating unnecessary trial and error time.

Smart Tweezers™ automatically specifies L, C, or R with parallel and series mode and selects a proper measurement range and test frequency for high accuracy measurements. The unit displays component type and more detailed component analysis such as Z and ESR.

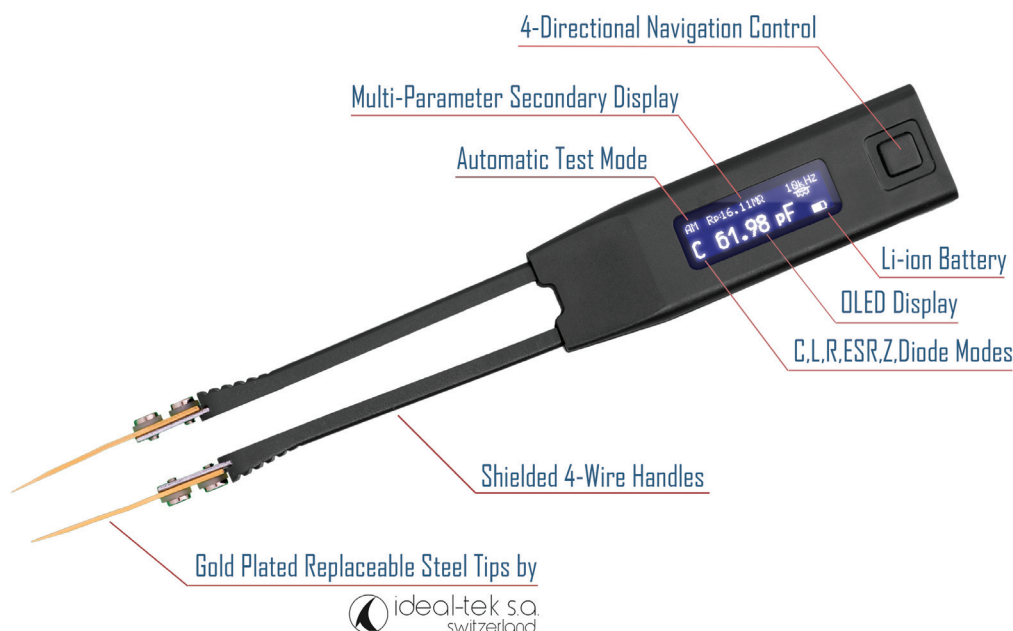
Lightweight and Ergonomic

The integrated measurement head allow the operator to use one hand and focus attention on the tested component and on the job at hand. Sorting, testing and troubleshooting become more efficient and cost effective.

4-wire shielded Smart Tweezers™ handles assure low capacitance and resistance offset during measurements.

Wide Spectrum of Additional Functions

- Smart Tweezers™ LCR meter allows you to test various component types, including secondary components of Dissipation Factor (D), Quality Factor (Q). This handheld also includes other functions that result in a more detailed component analysis.
- The built-in Equivalent Series Resistance (ESR) mode helps you better understand the inherent resistance - behavior typically found in capacitors across selected frequencies.
- In its DIODE mode Smart Tweezers™ tests diode polarity and indicates if it is short.
- Smart Tweezers™ has a continuity detector. Variable beeper sounds for resistance reading below set thresholds. Additionally, this function helps to locate shorted conductors (e.g. on a PCB).
- In manual modes Smart Tweezers™ measures a specific circuit parameter — L, C, R, Z or ESR. Manual modes also improves component type identification for in-circuit tests.
- Variable test signal output from 0.5 to 1.0 Vrms allows to improve test precision in different situation e.g. for in-circuit measurement and loose leaded ceramic capacitors.
- Visible and audible tolerance mode allows to perform component sorting.
- Math null function allows to store a pre-measured offset and improve measurement precision.



Technical Specifications

AC test mode Test frequency:	1 kHz, 10 kHz, 120 Hz, 100 Hz
Test frequency accuracy:	50 PPM (0.005%)
Test signal level:	0.5/1.0 +/- 5% Vrms Sine wave
Source impedance:	100Ω +/- 1%

Measurement Ranges

Resistance R:	0.05 Ω to 9.9 MΩ
Capacitance C:	0.5 pF to 4999 μF
Inductance L:	0.5 uH to 999 mH
Quality factor Q:	0.001 to 1000
Dissipation factor D:	0.001 to 1000

Physical Specifications

Size	15.0 x 1.8 x 1.5 cm (5.9 x 0.7 x 0.6 in)
Weight	29 grams (0.06 lb)
Operating temperature:	0°C to 50°C
Battery Type:	3.7V LiPO rechargeable 180mAh
Battery Life (continuous)	20 hours, 3 hours charging cycle

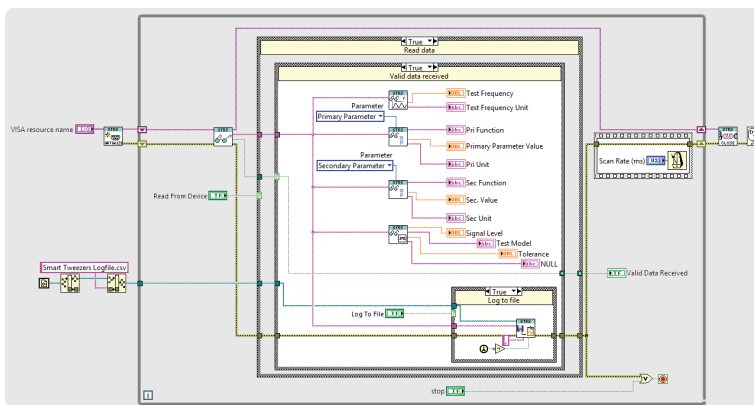
Bluetooth™ Connectivity

Smart Tweezers ST5S-BT features Bluetooth™ Low-Energy link to desktop and mobile platforms. The link allows to visualize measurements and measurement parameters, record measurement sets, configure data boundaries and value alerts.

National Instruments LabVIEW™ Driver

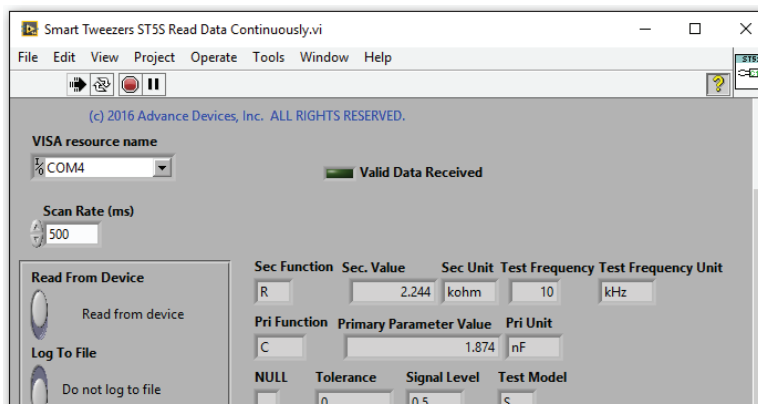
National Instruments LabVIEW™ is a de facto standard for instrumentation connectivity in the modern lab through the high quality and breadth of instrument drivers.

Smart Tweezers ST5S-BT is offered with a **certified National Instruments LabView™ driver** makes it easy to integrate Smart Tweezers into complex lab equipment setups.

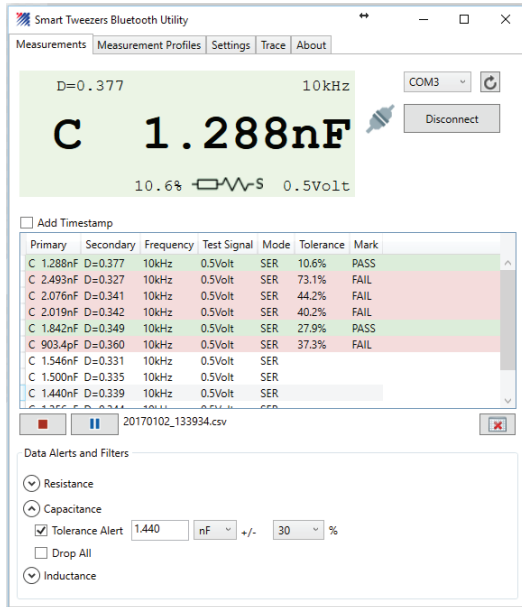


Driver VI allows for easy customizations

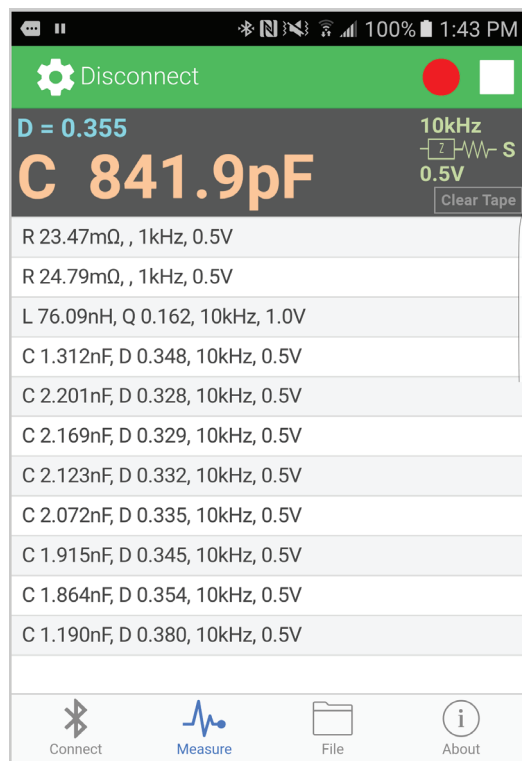
Smart Tweezers ST5S-BT LabVIEW™ instrument driver allows to seamlessly integrate the LCR meter in the lab environment and use extensive LabVIEW™ capabilities for data logging, database storage, charting and passing to the connected equipment.



Smart Tweezers ST5S-BT LabVIEW™ instrument driver has been certified and is fully supported by the National Instruments.



Windows desktop utility offers extensive data logging and value filtering



Apple iOS and Google Android apps offer portable connection and data recording solutions.

Dedicated Windows Application

Smart Tweezers™ ST5S-BT Bluetooth Utility offers a dedicated solution for connecting ST5S-BT to a Microsoft Windows desktop, laptop or a tablet. The utility supports complete measurement stream visualization and data logging capabilities.

Additionally, extensive data filtering and flagging can be applied. The user will be able assign or peak reference values for each measurement type and automatically compare the obtained actual values to those of reference with variations of tolerance boundaries and calculations of percentile differences.

Measurement stream can be recorded into CSV files allowing to utilize extensive charting and analysis capabilities of Microsoft Excel or similar programs.

Apple iOS and Google Android Apps

Smart Tweezers Bluetooth Companion iOS and Android apps enable ST5S-BT connection to mobile devices and tablets direct without additional receivers.

The apps reflect measurement streams and offer CSV data file recording, recorded CSV stream management as well as extensive data sharing capabilities.



Customized Data Processing Applications

ST5S-BT can easily be integrated into a customized data processing environment by an available USB Bluetooth receiver.

The receiver is based on an industry-standard FTDI bridge, creates a virtual RS232 serial port and enables an effortless integration in the processing environment.

Accuracy Specifications

Resistance, impedance.

Range	Resolution	100 Hz	1 kHz	10kHz
1 Ω	0.001 Ω	0.7% + 50	0.7% + 50	0.7% + 50
10 Ω	0.01 Ω	0.7% + 8	0.7% + 8	0.7% + 8
100 Ω	0.01 Ω	0.2% + 3	0.2% + 3	0.2% + 3
1000 Ω	0.1 Ω	0.2% + 3	0.2% + 3	0.2% + 3
10 k Ω	0.001 k Ω	0.2% + 3	0.2% + 3	0.2% + 3
100 k Ω	0.01 k Ω	0.5% + 5	0.5% + 5	0.5% + 5
1000 k Ω	0.1 k Ω	0.5% + 5	0.5% + 5	0.5% + 5
10 M Ω	0.001 M Ω	2.0% + 8	2.0% + 8	5.0% + 8

Accuracy for the ranges 1 R ~ 100 R is specified after subtract of the offset resistance.

Capacitance

Range	Resolution	100 Hz	120 Hz	1 kHz	10 kHz
1000 μ F	0.1 μ F	0.5% + 5	0.5% + 5	NA	NA
100 μ F	0.01 μ F	NA	0.3% + 3	0.5% + 5	NA
10 μ F	0.001 μ F	NA	0.2% + 3	0.2% + 3	0.5% + 5
1 μ F	0.1 nF	NA	0.2% + 3	0.2% + 3	0.2% + 3
100 nF	0.01 nF	NA	0.2% + 3	0.2% + 3	0.5% + 3
10 nF	0.001 nF	NA	0.5% + 5	0.2% + 3	0.5% + 3
1000 pF	0.1 pF	NA	NA	0.5% + 5	0.5% + 3
100 pF	0.01 pF	NA	NA	0.5% + 10	0.8% + 20
10 pF	0.001 pF	NA	NA	NA	1.0% + 50

Accuracy for the ranges of 10 pF~1000 pF is specified after subtract of stray capacitances for test leads.

Inductance

Range	Resolution	100 Hz	1 kHz	10 kHz
10 μ H	0.001 μ H	NA	NA	1.0% + 5
100 μ H	0.01 μ H	NA	1.0% + 5	0.7% + 3
1 mH	0.1 μ H	0.7% + 10	0.5% + 3	0.5% + 3
10 mH	0.001 mH	0.5% + 3	0.2% + 3	0.5% + 3
100 mH	0.01 mH	0.5% + 3	0.2% + 3	NA
1 H	0.1 mH	0.2% + 3	NA	NA

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