SMART TWEEZERS ST5S-BT BLUETOOTH UTILITY

Version 1.0.1

User Manual



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INSTALLATION.

The installer package is available on the USB drive supplied with the ST5SBT or as a download from our website.

Run the installer executable and follow its prompts.

It is recommended to install the supplied FTDI VCP (Virtual COM Port) drivers from the package to ensure proper connectivity to the BT receiver.

CONNECTING TO SMART TWEEZERS ST5SBT

Insert the supplied BT receiver into an available USB port.

Note: If there are several USB-to-COM adapters connected to the PC, note the COM port number which appears in the Windows Device Manager after the ST5SBT receiver is inserted into the USB port. For example:



Start the application and check that a COM port is available in the application's dropdown box or select the receiver's assigned COM port.

🎆 Smart Twee	zers Bluetooth Utility								
Measurements	Measurement Profiles	Settings	Set Device	e Over BT	About				
							🗌 Add T	imestamp	
					COM3	Ċ	Primary	Secondary	Frequen
					Connect				
						Connect /	Disconnect	selected CO	DM port

Note: If there is no COM port is listed in the dropdown box, verify the hardware installation in the Windows Device Manager and/or reinstall FTDI drivers.

Click CONNECT button. This connects the application to the selected COM port.



Enable Bluetooth functionality on your Smart Tweezers device by entering menu and selecting SYSTEM->BLUETOOTH->ON

Check the connectivity by measuring any electronic component.

Note: To troubleshoot connectivity

- Make sure that Bluetooth is enabled in the Smart Tweezers device
- Close the application
- Remove and re-insert the receiver
- Open the application and re-connect.

MEASUREMENTS SCREEN

Current measurement readings are displayed on the main display area and logged into the history tape.

🎆 Smart Twee	zers Bluetooth Utility											+	•	-		×
Measurements	Measurement Profiles	Settings	Set Device	Over BT	About											
0-024			10-11-					Add Tim	estamp							
K-924.	9mc2		IUKHZ		COM3	~	C	Primary	Secondary	Frequency	Test Signal	Mode	Tolerance	Sec.	Tolerance	
		1 7						C 9.913nF	R=924.9mΩ	10kHz	0.5Volt	SER				
C	9.9	T 7	nŀ		Disconr	nect		C 9.913nF	R=571.7mΩ	10kHz	0.5Volt	SER				
-				~ 🗸	l			C 9.913nF	R=808.5mΩ	10kHz	0.5Volt	SER				
								C 9.913nF	R=732.0mΩ	10kHz	0.5Volt	SER				
	^	∧~s (0.5Volt					C 9.913nF	R=619.6mΩ	10kHz	0.5Volt	SER				
								0.0010.0	0 0000 0	10111	0.017.0	CCD.				

ADDING TIMESTAMPS

Timestamps could be added to the history tape by checking the Add Timestamp checkbox.

CLEAR HISTORY TAPE

To clear the history tape click the Clear History Tape button.

48kΩ 10kHz 28kΩ 10kHz	0.5Volt 0.5Volt	SER SER	
48kΩ 10kHz	0.5Volt	SER	
-			Clear History Tape

RECORDING MEASUREMENTS INTO FILES.

Measurements can be recorded into CSV (Comma-separated values) files. The format is compatible with the Microsoft Excel and can be processed by other similar software systems for subsequent analysis.

To start recording, click on the Record button.



To pause recording, click on the Pause button

C 1.571nF R=3.148kΩ 10kHz 0.5Volt SER	
C 1.204nF K=4.328K12 10kHz U.5Volt SER	
C 700.9pF R=8.248k12 TUKHZ U.SVOIT SER	

To stop recording, click on the Stop Button

C 1.264nF R=4.328kΩ 10kHz 0.5Volt C 766.9pF R=8.248kΩ 10kHz 0.5Volt	SER SER
20170403_223	224.csv
Stop Recording (Ctrl + S)	

The default output folder and file name prefix can be altered on the **Settings** tab of the application.

DATA TOLERANCE ALERTS

Smart Tweezers Bluetooth Utility can be set to trigger alerts if a measured value falls outside of the selected tolerance brackets.

The alerts can be set for Resistance, Capacitance or Inductance and accompanying secondary parameters independently.

In addition any kind of measurement can be marked as an outlier and it will not be recorded in the history tape and in the CSV files. For example if the user measures a set of capacitors, all resistances and inductances can be set as outliers (they will be ignored).

CONFIGURING TOLERANCE ALERTS

MANUAL CONFIGURATION

Tolerance alerts are configured in the same way for Resistance, Capacitance and Inductance.

Each configuration area contains controls for entering of reference values for primary and secondary values as well as a controls for marking the measurement kind as an outlier (ignoring).

Capacitance	
✓ Primary Value Alert	1.184 nF ~ +/- 20 ~ %
Secondary Value Alert	R ~ 4.833 kΩ ~ +/- 20 ~ %
Ignore All Values	

To configure alert for primary values, enter the reference value, select unit of measurement and tolerance brackets.

To configure alerts on secondary values select context-specific value descriptor, reference value, unit of measurement (if any) and tolerance brackets.

To enable a value alert triggering check the related checkbox.

Note: Secondary values are not available for resistance measurements.

Note: If both primary and secondary values alerts are enabled then measurements would be graded as PASS if both Primary and Secondary values are inside the tolerance brackets (AND relationship).

To set a specific kind of measurements as outliers, check the Ignore All Values checkbox.

PREFILLING ALERTS FROM THE HISTORY TAPE

Alert configuration can be prefilled by a measured value from the history tape.

To prefill an alert:

- Measure a reference value component
- Find the corresponding line in the history tape.
- Right-click on the line
- Select "Set Alert from the Measured Value"
- The corresponding alert control will be prefilled with the measured readings

		cotamp					
COM3 Y	Primary	Secondary	Frequency	Test Signal	Mode	Tolerance	Sec. Tolerance
	C 1.341nF	R=3.523kΩ	10kHz	0.5Volt	SER		
Disconnect	C 891.4pF	R=6.389kΩ	10kHz	0.5Volt	SER		
	C 1.314nF	R=3.448kΩ	10kHz	0.5Volt	SER		
	C 1.086nF	R=4.619kΩ	10kHz	0.5Volt	SER		
	C 2.522nF	R=1.401kΩ	10kHz	0.5Volt	SER		
Clear All	C 2.495nF	R=1.432kΩ	10kHz	0.5Volt	SER		
Clear All	C 2.468nF	R=1.464kΩ	10kHz	0.5Volt	SER		
	C 2.432nF	R=1.500kΩ	10kHz	0.5Volt	SER		
	C 2.393nF	R=1.547kO	10kHz	0.5Volt	SER		
~ %	C 2.345nF	🐥 Set a	lert from se	lected measu	ire		
	C 2.273nF	R=1.688kΩ	10kHz	0.5Volt	SER		
	C 2.183nF	R=1.791kΩ	10kHz	0.5Volt	SER		
	C 2.066nF	R=1.937kΩ	10kHz	0.5Volt	SER		
~ %	C 1.891nF	R=2.247kΩ	10kHz	0.5Volt	SER		
~	C 713.6pF	R=7.347kΩ	10kHz	0.5Volt	SER		
-/- 20 ~ %	C 2.013nF	R=1.993kΩ	10kHz	0.5Volt	SER		
	C 1.934nF	R=2.201kΩ	10kHz	0.5Volt	SER		
	C 1.837nF	R=2.422kΩ	10kHz	0.5Volt	SER		
	C 1.736nF	R=2.674kΩ	10kHz	0.5Volt	SER		
	C 1.571nF	R=3.148kΩ	10kHz	0.5Volt	SER		
~ %	C 1.264nF	R=4.328kΩ	10kHz	0.5Volt	SER		
·/- × %	C 766.9pF	R=8.248kΩ	10kHz	0.5Volt	SER		
		_					
	•						*

MEASURING WITH SET TOLERANCE ALERTS

With tolerance alerts configured and enabled The Smart Tweezers BT Utility triggers alerts if the measured value of the corresponding kind falls outside the selected tolerance brackets.

The FAIL status will be indicated by:

- Main display background changed to pink
- The corresponding line in the history tape will be highlighted by pink background
- The value will be highlighted by red in the history tape
- Audio cue will sound (configurable on the Settings screen)

For example, on the sample screens below:

The tolerance alert has been set for a capacitance primary value (failed, outside the tolerance brackets)



The tolerance alert has been set for a capacitance secondary value (passed, inside the tolerance brackets)



The tolerance alert has been set for both primary and secondary values (primary passed, secondary failed)



The tolerance alert has been set for capacitance's both primary and secondary values (both values passed)

🎆 Smart Twee	zers Bluetooth Utility			_	_						**	-	- 🗆	×
Measurements	Measurement Profiles	Settings	Set Device	Over BT	About									
R=168	4m0		10087				Add Time	estamp						
					COM3	~ C	Primary	Secondary	Frequency	Test Signal	Mode	Tolerance	Sec. Tolera	nce
C	060	5	- 17				C 862.5µF	R=168.4mΩ	100Hz	1.0Volt	SER	0.3%	5.2%	
	002	. 5	μr	×	Disconne	ect	C 862.5µF	R=170.1mΩ	100Hz	1.0Volt	SER	0.3%	6.3%	
			-											
	0.3%	∕∕~s :	1.0Volt											
Tolerance Aler	ts and Value Filters					Clear All								
Resistance	2													
Primary	Value Alert		~ +/-	v	%									
Ignore 4	All Values													
 Capacitan 	ce													
Primary	Value Alert 860	μF	~ +/-	1.0 ~	%									
Seconda	ary Value Alert R 🗸	160	mΩ	~ +/-	10 ~	%								

SETTING SMART TWEEZERS OVER BLUETOOTH

Smart Tweezers ST5SBT can be controlled over the Bluetooth connection. Smart Tweezers Bluetooth Utility allows to set most measurement modes and device configuration options by sending Bluetooth requests.

Note: Control via Bluetooth function is implemented in the device firmware version 19.24 and later.

ENABLING CONTROLS

To enable the control function check the Set Device over BT option on the Settings tab

🎇 Smart Twee	zers Bluetooth Utili	ity			
Measurements	Measurement Pro	ofiles	Settings	Set Device Over	BT About
	Output folder	C:\1	Jsers\ima	lamoud\Docum	6
	File Prefix				
AI	lert Audio Cue	✓			
Set I	Device Over BT	✓			
Show 1	frace Exchange				

The **Set Device over BT** tab would appear.

🎆 Smart Twee	zers Bluetooth L	Jtility			
Measurements	Measurement	Profiles	Settings	Set Device Over BT	About
	Mode 🗌	L		¥	Set
Test	Frequency 🗌	10kHz		v	Set
	Test Signal 🗌	1.0V		v	Set
Secondary	Parameter 🗌	-		v	Set
	Hold	-		v	Set
	Period	-		v	Set
	Display 🗌	-		v	Set
Autoset	Set Sel	ected			

SETTING SMART TWEEZERS OVER BLUETOOTH

On the Set Device over BT tab a set of dropdown boxes lists various device modes.

To reset the device into the default automatic mode click the **Autoset** button. Smart Tweezers would switch into A/AM/AF mode. To change a single mode, select it in the dropdown box and click the **Set** button beside the selected dropdown box.

To change several modes at once, select them in dropdown boxes, check checkboxes besides the modes to change and click the **Set Selected** button. For example on the picture below a configuration to set the mode to L and the testing frequency to 10 kHz is shown.

🎆 Smart Twee	zers Bluetooth l	Jtility			
Measurements	Measurement	Profiles	Settings	Set Device Over BT	About
	Mode 🗸	L		¥	Set
Test	Frequency 🔽	10kHz		~	Set
	Test Signal 🗌	1.0V		~	Set
Secondary	Parameter 🗌	D/Q		v	Set
	Hold	-		v	Set
	Period	1.0 sec		v	Set
	Display 🗌	-		~	Set
Autoset	Set Sel	ected			

MEASUREMENT PROFILES

Smart Tweezers BT Utility allows to save the current application state as named profiles including

- Configured alert conditions
- Selected set of measurement parameters from the Set Device over BT tab
- Application settings

This is useful, for example in a case when complex alert conditions are required for later retrieval without reconfiguring.

CREATING MEASUREMENT PROFILES

Measurement profiles can be managed on the Measurement Profiles tab of the application.

Measurements	Measurement Profiles	Settings	Set Device Over BT	About	
Name:					Profile:
					Apply Selected
Alert820uF					Save/Update
CapacitorAnd	nductor				Delete
					Profile Export File:
					Open
					Save As
Apply Prese	ts				

To create a measurement profile:

- configure an alert condition and (optionally) device settings. For example:

Tolerance Alerts and Value Filters	Clear All
Resistance	
Primary Value Alert /- %	
✓ Ignore All Values	
Capacitance	
✓ Primary Value Alert 1 µF → +/- 20 → %	
✓ Secondary Value Alert R → 12 Ω → +/- 20	~ %
Ignore All Values	
 Inductance 	
$✓$ Primary Value Alert 20 μ H \checkmark +/- 5 \checkmark %	
✓ Secondary Value Alert R → 30 Ω → +/- 1.0	~ %
Ignore All Values	
Mode 🗌 Auto	× Set
Test Frequency 🗌 10kHz	~ Set
Test Signal 🔲 1.0V	 Set
Secondary Parameter	~ Set
	v Set
	* Set
Display 🛄 -	Set
Autoset Set Selected	

- activate Measurement Profiles tab
- enter a new profile name or select an existing profile from the list

🎆 Smart Twee	zers Bluetooth Utility				
Measurements	Measurement Profiles	Settings	Set Device Over BT	About	
Name:					Profile:
ComplexAlerts					Apply Selected
Alert820uF					Save/Update
CapacitorAnd	Inductor				Delete
					Profile Export File:
					Open
					Save As
Apply Prese	ets				

- click the Save/Update button

Measurements	Measurement Profiles	Settings	Set Device Over BT	About	
Vame:		octango	Set Senee Over Sr	hoodt	Profile:
ComplexAlerts					Apply Selected
Alert820uF					Save/Update
CapacitorAndl	nductor				Delete
ComplexAlerts					Profile Export File:
					Open
					Save As

Note: if the existing profile is selected it will be overwritten by the configured values

APPLYING MEASUREMENT PROFILES

To apply a stored measurement profile, select it from the list and click on the **Apply Selected** button.

Measurements	Measurement Profiles	Settings	Set Device Over BT	About	
Name:					Profile:
ComplexAlerts					Apply Selected
Alert820uF					Save/Update
CapacitorAndle	nductor				Delete
ComplexAlerts					Profile Export File: Open

If the Apply Presets is checked then stored device settings will be sent to the connected Smart Tweezers device setting it in the preset mode.

Here is a sample result:

Tolerance Alerts and Value Filters	Clear All
Resistance	
Primary Value Alert /- %	
Ignore All Values	
Capacitance	
✓ Primary Value Alert 12 µF → +/- 5 → %	
$\hfill Secondary Value Alert $$R$ \hfill 900$$m\Omega \hfill +/- $$5 \hfill 5$$$	%
Ignore All Values	
Inductance	
✓ Primary Value Alert 20 mH ~ +/- 10 ~ %	
✓ Secondary Value Alert R \sim 100 mΩ \sim +/- 10 \sim	%
Ignore All Values	

DELETING MEASUREMENT PROFILES

To delete a profile, select it in the list and click the Delete button.

EXPORTING AND IMPORTING MEASUREMENT PROFILES

Measurement profiles can be exported as files and imported from files.

To export a profile, select it in the list and click the **Save As...** button.

The application will prompt for a file name.

To import a profile click on the **Open...** button and select a saved profile file.

APPLICATION SETTINGS

The Settings tab contains a number of the application options:

🎆 Smart Tweezers Bluetooth Utility						
Measurements	Measurement Pro	ofiles	Settings	Set Device Over BT	About	
	Output folder	C:\(Jsers\ima	lamoud\Docum		
	File Prefix					
AI	lert Audio Cue	✓				
Set I	Device Over BT	✓				
Show 1	frace Exchange					

- Output Folder sets a local folder for recorded measurements files
- File Prefix allows to add a custom prefix to recorded measurements files
- Alert Audio Cue enables or disables audio cues for failed tolerance alerts
- Set Device Over BT enables or disables the Smart Tweezers presets interface
- **Show Trace Exchange** enables or disables the **Trace Exchange** application tab where data exchanged between the application and the Smart Tweezers device can be inspected.