



# ASA100 User Manual

(software version: 24.001)

[www.electron.plus](http://www.electron.plus)

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## Notices

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### Copyright

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### Part number

ASA100\_User\_Manual.PDF

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### Issue

24.001, February 2024

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### Location

The latest version of this document can be found on our website: [www.electron.plus](http://www.electron.plus)

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### Published by

BFRAD Limited (t/a Electron Plus)  
Unit 8 Manor Farm Business Centre  
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Suffolk  
IP9 2TD  
UK

Hereafter referred to as **Electron Plus**

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### Notes

- We frequently update our manuals and add new features and improvements as they available, please ensure that you check our website for an updated version of this document, especially if updating your **Electron Plus** software.
- We make every effort to ensure the accuracy of this manual's contents. If you find any errors, have suggestions for expanding on a feature, or feel that we can improve it's contents then please contact us at [support@electron.plus](mailto:support@electron.plus)

- Copying or reproducing this document or any part of this document without written permission of **Electron Plus** is strictly prohibited.

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## Trademark acknowledgement

Electron Plus fully recognises and acknowledges any trademark(s) of the respective trademark holder.

**Windows™** is a trademark of Microsoft Corporation.

**Transzorb™** is a trademark of Vishay General Semiconductor, LLC.

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## Purpose of manual

The purpose of this manual is to enable you to safely setup, configure and operate your **Electron Plus** instrument, associated software and/or accessories.

Please pay particular attention to any section with a warning symbol.

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## Safety warnings

Warnings, cautions and notes are colour coded through-out this manual. These are divided into several categories and are described below:

**WARNING - Pay special attention to anything written here - this is for your safety and continued protection and is critical information!**

**CAUTION - Damage may occur to your equipment or any DUT (device under test).**

**NOTE - General text, with useful information or tips.**

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## Getting Started

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### System requirements

We recommend at least Windows 7 operating system. **ASA** is available in both 32 bit and 64 bit from the **Electron Plus** website.

Minimum requirement for connection to ASA device:

1x USB 2.0 type A (common) for connection to the instrument, at 0.5A.

Screen resolution of at least 1440(W) x 900(H), it will work with others, but you risk some of the CONTROL RIBBON items not being visible.

**ASA** uses the PC sound card for various alerts, although it will operate correctly without sound.

#### Technical Note

**We test EPIC builds mainly on Windows 10/64 bit machines with 1920x1080 monitors.**

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## Getting help

Help is available by email: [support@electron.plus](mailto:support@electron.plus)

If you are experiencing an issue with EPIC, please email a copy of the following files (see below) found in the EPIC installation folder along with a description of the problem.

**log.txt**

**bugreport.txt**

This will help us understand your problem and provide a quicker fix.

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## Introduction

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### Welcome

Congratulations and thank you for purchasing an **Electron Plus** product.

Please take a few minutes to read the [‘Before you start’](#) section of this manual, especially as misusing this product can result in damage to it, your device-under-test or potentially place you in-danger.

---



## Before you start

Please use the supplied USB lead - it have been tested to work with your ASA100. Thin USB cables tend to exhibit higher resistance which may cause in-correct operation of your device.

Ensure that all DUT\* capacitors and energy storage devices are fully discharged before using the ASA100.

The **SIGNAL** connection is protected by a large 'Transzorb' style device, but damage WILL occur if the ASA100 is placed across a fully charged DCLINK capacitor.

The **COMMON** connection is connected directly to the chassis of the instrument and therefore the USB 0V and shell.

Before connecting your device, please ensure you have installed the USB driver.

If you wish to make a permanent safety connection to **EARTH** read [Earthing for function and safety](#) section.

DUT\* - device under test

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## New in software

**ASA** covers most **Electron Plus** instruments and not all instruments are updated between versions:

### **V24.001**

Bug fixes  
Various small tweaks

### **V22.001**

Change of name to ASA from EPIC  
Bug fixes

### **V21.012**

Bug fixes  
ASA - addition of manual mode

### **V21.011**

Bug fixes  
CTL503 - Vgs vs Id (at fixed Vds) mode added  
CTL503 - updates to status display  
CTL503 - removal of DEVTEST button/function.

### **V21.010**

Bug fixes  
Addition of version compiled for 32 bit systems  
CTL503 added to EPIC  
ASA200/240 - addition of SIGNAL/COMMON to EDIT page

### **V21.009**

Bug fixes  
SPA100 added to EPIC  
REF50X added to EPIC

### **V21.008**

Bug fixes

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## Installation sequence

Please install the **ASA** software and the associated USB driver software BEFORE connecting your device to a computer.

You do not need to remove a previous copy of **ASA**, the new copy will overwrite the necessary existing file(s). The "settings.txt" file will only be created if it is not present.

When **ASA** is first started, it will build a number of files (unless they are already there from a previous installation) in the installation directory.

**If upgrading from EPIC V21.009 or earlier please be aware that the new program EXE is called either ASA32.EXE or ASA64.EXE and that previous shortcuts might not work or will link to previous copy.**

---

## Installing the Software

**Electron Plus** products require a USB connection to a PC running **ASA** (our proprietary software) in order to function.

**ASA** now comes in two compiled versions (since version 21.010):

ASA64 - for 64 bit Windows installations & PC's (we recommend this).

ASA32 - for 32 bit legacy Windows machines.

You can download the latest copy of **ASA** for free from [www.electron.plus/pages/software](http://www.electron.plus/pages/software), **ASA** is being constantly revised with new features, updates and bug fixes.

1. Select which variant you wish to use go ahead and download it (typically by double-clicking on the ZIP file named something like: Install\_ASA24001\_64.ZIP)
2. Open the downloaded file (typically Windows will recognise the ZIP format and open the file and display the contents like a folder), double click the EXE file - typically called Install\_ASA24001\_64.exe)
3. Follow the on screen instructions to complete the installation.

Before starting **ASA**, we recommend installing any USB drivers, see next section for details.

This manual MAY NOT represent the most up-to-date features and screen-shots, if something is unclear, please contact [support@electron.plus](mailto:support@electron.plus) and we will promptly try to assist you.

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## Installing the USB driver

The product covered in this document communicates with the host PC via USB using an FTDI FT230X bridge IC.

A copy of the official FTDI device driver is available from the SOFTWARE section of our website ([www.electron.plus/pages/software](http://www.electron.plus/pages/software)), device drivers can also be downloaded directly from FTDI's website ([www.ftdichip.com/drivers](http://www.ftdichip.com/drivers)).

Download the FTDI driver (CDM21228\_Setup), open the ZIP file and run CDM21228\_Setup.EXE, this will install the D2XX drivers necessary.

It is possible that you already have this FTDI device driver installed, however we still recommend following this procedure.

---

## Earthing for function and safety

For functional and/or safety reasons you may wish to EARTH the casing of your **Electron Plus** instrument. This is not necessary under most normal operating conditions.

In this case, we recommend loosening (and re-tightening) the M3 stainless steel chassis screw (2mm HEX drive) and fitting an earthing wire using either ring terminal or spade terminal.

If in doubt please contact **Electron Plus** for further details.

### Caution

**USB 0V, rear panel, front panel, casing and any external power supply 0V are all the same potential and connected via low impedances (PCB, metalwork, etc.) - Avoid creating 'ground loops' with your setup!**

### Note

**Some earlier production ASA100 units may have a TORX T10 headed stainless steel earthing screw fitted instead of the 2mm HEX drive type. If you would like a 2mm HEX drive screw (our part# SCREW014), please contact the factory and we will supply one free-of-charge.**

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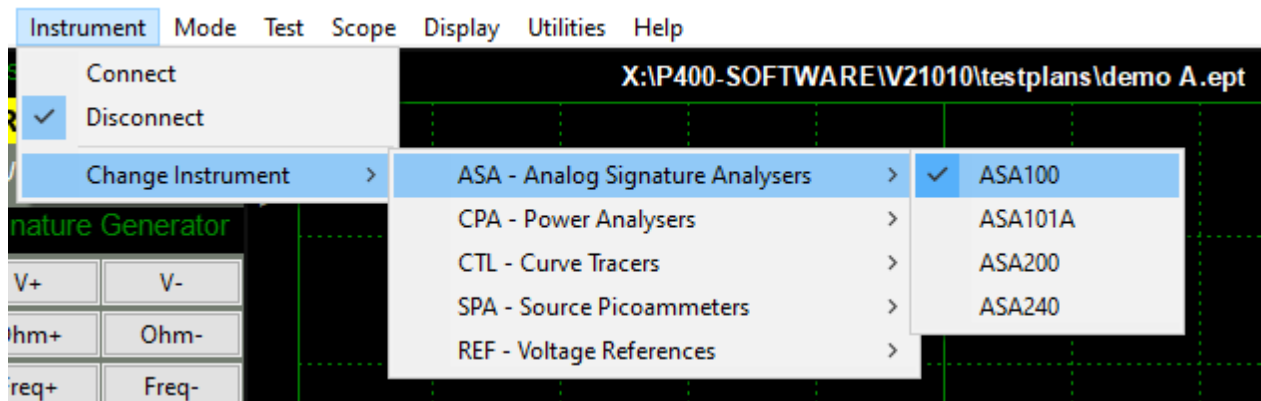
## Operation

### Selecting Instrument

When **ASA** is first installed it will initially start in ASA100 mode.

To change this:

**INSTRUMENT > CHANGE INSTRUMENT** and select the actual instrument you wish to use, you will then have to close and reopen ASA for this to take effect.



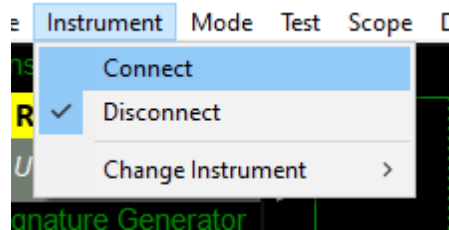
### Technical Note

Variable used in settings.txt: **ActiveInstrument=ASA100**

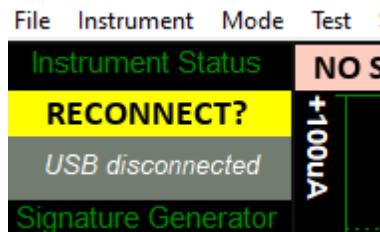
## Connecting Instrument

To connect to the instrument you can use the options in the MENU or the button on the Control Ribbon.

**INSTRUMENT > CONNECT** to connect, or **DISCONNECT** to disconnect.



or



Before the instrument connects it will check the identification in the FTDI USB bridge IC, an error message will be shown if the instrument selected is not the same as the instrument connected.

### Technical Note

**Upon successful connection, ASA will download the calibration coefficients file from the USB bridge IC. These are then stored in the EPIC folder as "ASA\_cal.txt"**

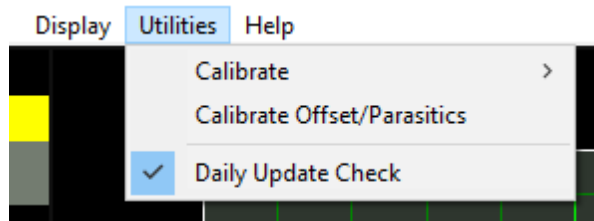


## Check for updates

Once per day **ASA** will check if there is a newer version available. This feature maybe disabled or re-enabled here:

### UTILITIES > DAILY UPDATE CHECK

Tick will enable EPIC to perform the daily update check, unticking will prevent EPIC from performing the daily update check.



#### Technical Note

In "settings.txt": CheckWebsiteForUpdate=1 or 0 determines if this function is enabled/disabled. DateOfLastUpdateCheck=04/11/2021 is self-explanatory.

If function is enabled and date <> today a small file called "version.txt" is downloaded from "<http://www.electron.plus/wp-content/>". This contains the current revision of EPIC also the current revision for each product where a change/update has been made.

## Control Ribbon

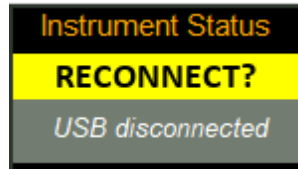
The Control Ribbon has most of the functions necessary for the operation of the instrument.

Instrument Status	
<b>CONNECTED</b>	
USB rail: 4.95V	
Signature Generator	
V+	V-
Ohm+	Ohm-
Freq+	Freq-
Voltage: 1Vpk ▾	
Resistance: 10K ohms ▾	
Frequency: 50Hz ▾	
<b>A</b>	<b>B</b>
A= Cycle Frequency ▾	
B= Cycle Voltage ▾	
Test Controls	
<	>
<<	>>
First	Last
<input checked="" type="checkbox"/> V/R/Hz	Reset test
0.00%	0.00%
<b>GOOD</b>	<b>BAD</b>
AUTO TEST	
Edit Controls	
<input type="checkbox"/> Edit/Capture signature	
Edit/Add Records	

The following sections are descriptions of [Instrument Status](#), [Signature Generator](#), [Test Controls](#) and [Edit Controls](#) and their functions.

## Instrument Status

Reconnect/Connected button shows the status of the connection between the instrument and EPIC:



Pressing this button will connect or disconnect the instrument to EPIC. Should the instrument be disconnected, the status of this button will automatically change.

Below the connection button is a text display that shows (typically) the voltage of the USB connection at the input to the instrument.

This is useful in diagnosing problems with the USB cable, or the computer port. This voltage will dip a small amount when the instrument is generating signals in the 100ohm setting.

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## Signature Generator

This section of the Control Ribbon selects the output voltage, resistance and frequency of the test waveform generated by the ASA.



Pressing the **V+** or **V-** button will increase or decrease the output voltage from the instrument, this is in steps, and ranges from 0.2Vpk to 10Vpk. These steps are 0.2Vpk, 0.4Vpk, 0.6Vpk, 0.8Vpk, 1Vpk, 2Vpk, 3Vpk, 4Vpk, 5Vpk and 10Vpk.

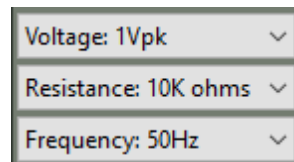


Pressing the **Ohm+** or **Ohm-** button will increase or decrease the output resistance from the instrument, this is in steps, and ranges from 100 ohms to 10K ohms (10,000 ohms). These steps are 100 ohms, 1K ohms and 10K ohms.



Pressing the **Freq+** or **Freq-** button will increase or decrease the output frequency the instrument, this is in steps, and ranges from 10Hz to 1KHz (1,000Hz). These steps are 10Hz, 20Hz, 50Hz, 100Hz, 200Hz, 500Hz and 1KHz.

Voltage, resistance and frequency settings may also be set directly from the drop down boxes shown below.

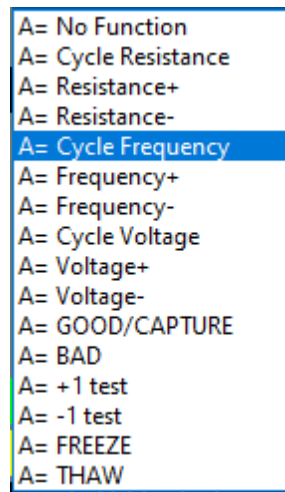


These also show the current setting of the voltage, resistance and frequency.

Buttons **A** and **B** (as shown below) can be used to quickly access a favourite or much used function.



Two drop down lists below enable the user to select the function associated with each button (list shown below, with button A assigned to cycle frequency):



The cycle function (i.e. Cycle Frequency) will go up relevant function and 'roll-over' to the minimum setting (e.g. 200Hz, 500Hz, 1KHz, 10Hz, 20Hz....), this function is useful if you are perhaps testing electrolytic capacitors and only want to assign a single button to the finding the best signature.

+1 / -1 test will increment or decrement the test number (equivalent to pressing the left/right arrow under Test Controls).

GOOD/CAPTURE and BAD are equivalents to the same named buttons under Test Controls.

FREEZE/THAW currently have no function in EPIC 20.012

#### Note

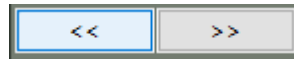
**1Vpk means that the output voltage of the instrument has a peak voltage of +/-1Vpk, this would be equivalent of 2Vpk-pk (peak to peak) or 0.707Vrms.**

## Test Controls

The Pin/record selected is incremented/decremented manually (using the buttons below) or advanced automatically (when in Auto Test, Auto Capture or Single Capture).



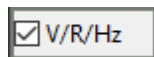
These buttons (above) will increment/decrement through the individual Pin/records - using the controls below will increment/decrement through entire components at a time.



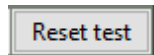
Skipping straight to the first\* record or the last press one of the buttons below.



When changing to a different record, the instruments output voltage/resistance/frequency settings are automatically set to those of the new record (if a golden signature has been captured, if no signature has been captured they remain as before). This feature is enabled by default (see below), uncheck the box to disable.



To clear all **DUT Signatures** (GOOD and BAD) and reset to the first record, press the button below. Before the reset, a pop-up window will be ask if you really want to do this.



The above function will not reset captured **Golden Signatures** (make sure you save the .EPT file at regular intervals).

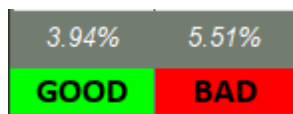
### Note

**Floating the mouse over one of the buttons above will bring up a small text description of the button function.**

### Note

**\*The first usable record is #2, as record #1 is reserved for other (historic) functions.**

During a test, the percentage of pins that test **GOOD** and **BAD** is calculated and displayed (see image below).



**GOOD** and **BAD** buttons (above) will mark each record as either GOOD or BAD - typically this is used when overriding automatically tested signature results.

The next button has several different functions depending on which mode is being used. Default state is manual testing (use GOOD/BAD buttons to register the results of a signature test), pressing the button (below) will start an automatic test (**AUTO TEST**) at the current Pin/record:



When the **AUTO TEST** is running, the button will show **TEST IN PROGRESS** (see below). Pressing the button will stop the automatic test. The test maybe resumed by pressing the button again.

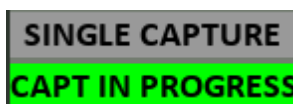


If the Edit/Capture signature tickbox (see [Edit Controls](#)) is ticked, then capture mode is selected and there will now be two buttons (see below) instead of the three before:



The **SINGLE CAPTURE** button will capture the Live Signature and it's associated voltage/resistance/frequency settings and store it as the Golden Signature for that Pin/record, once done, it will automatically advance to the next Pin/record (ready for another capture).

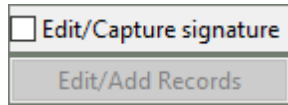
The **AUTO CAPTURE** button will start the automatic capturing of Golden Signatures (see [Auto Capture](#)). When AUTO CAPTURE is running, the buttons will look like:



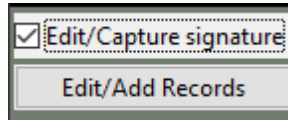
Pressing **CAPT IN PROGRESS** button will stop the automatic capture.

## Edit Controls

The default condition is Manual Test (Edit/Capture signature unticked).



To enter **Capture signature** mode, tick the box (see below).



Pressing the **Edit/Add Records** button (see above) will open a new window (see [Edit/Add Records & Images](#)).

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## Menu Bar



## **File**

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## New topic

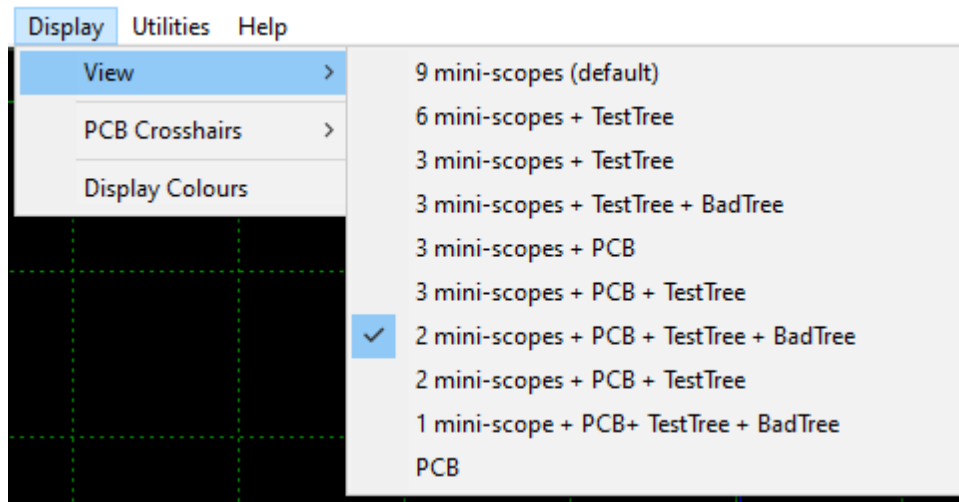
---

## Views

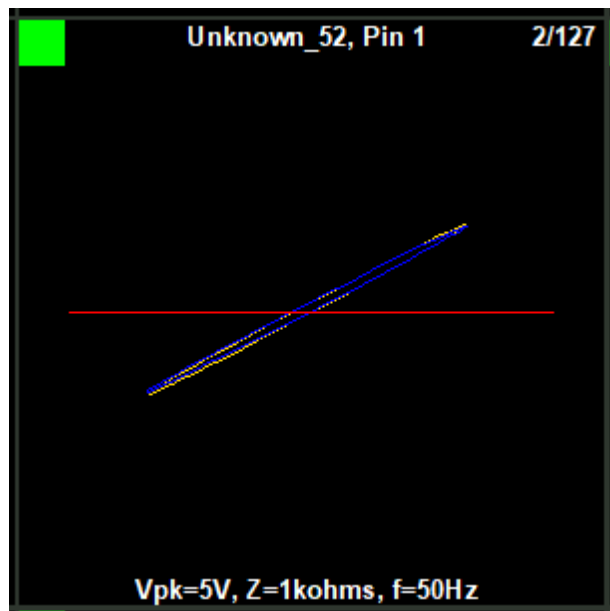
There are multiple 'view' configurations that can be selected. Users will often prefer one style (research has shown this to be: **2 mini-scopes + PCB + TestTree+ BadTree**), however we encourage testing alternate 'views' as they may be better suited to your testing.

To select a different view: **DISPLAY > VIEW**

The options are shown below - on the following pages are examples of the same Pin/record (41/127) viewed in different configurations.



The mini-scopes are useful to see a previous test or the next test.

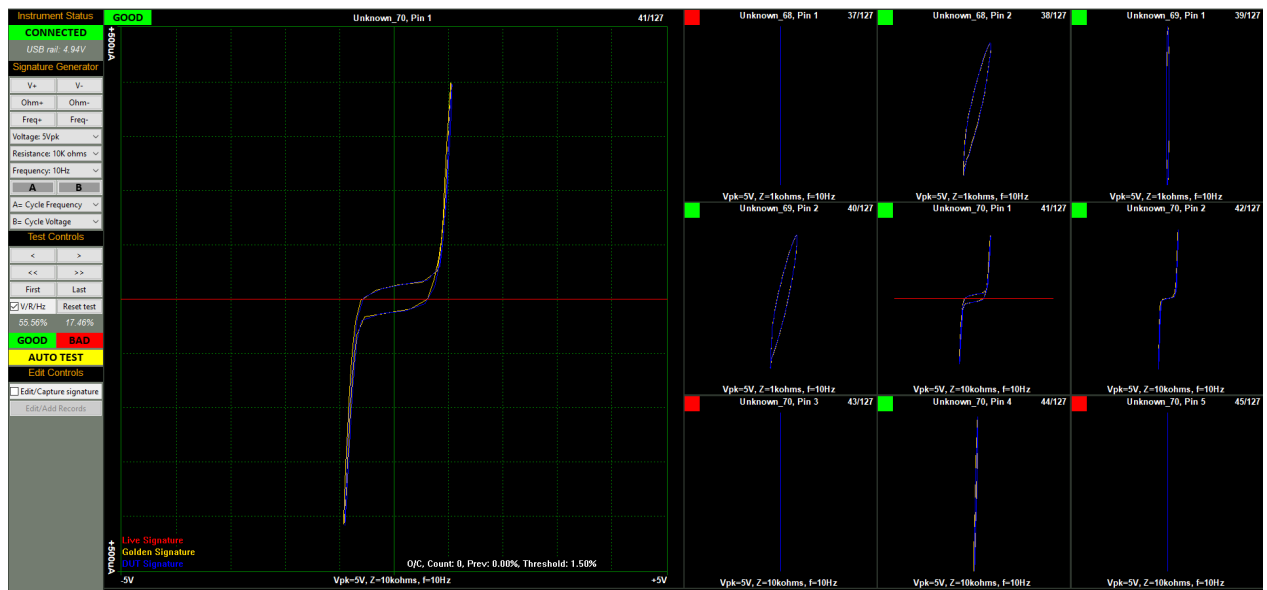


The coloured square in the top-left corner of a mini-scope is the test status of that Pin/record, and follows the convention:

GREEN - good signature, RED - bad signature, YELLOW - untested (no DUT signature captured), PINK - no Golden signature recorded yet.

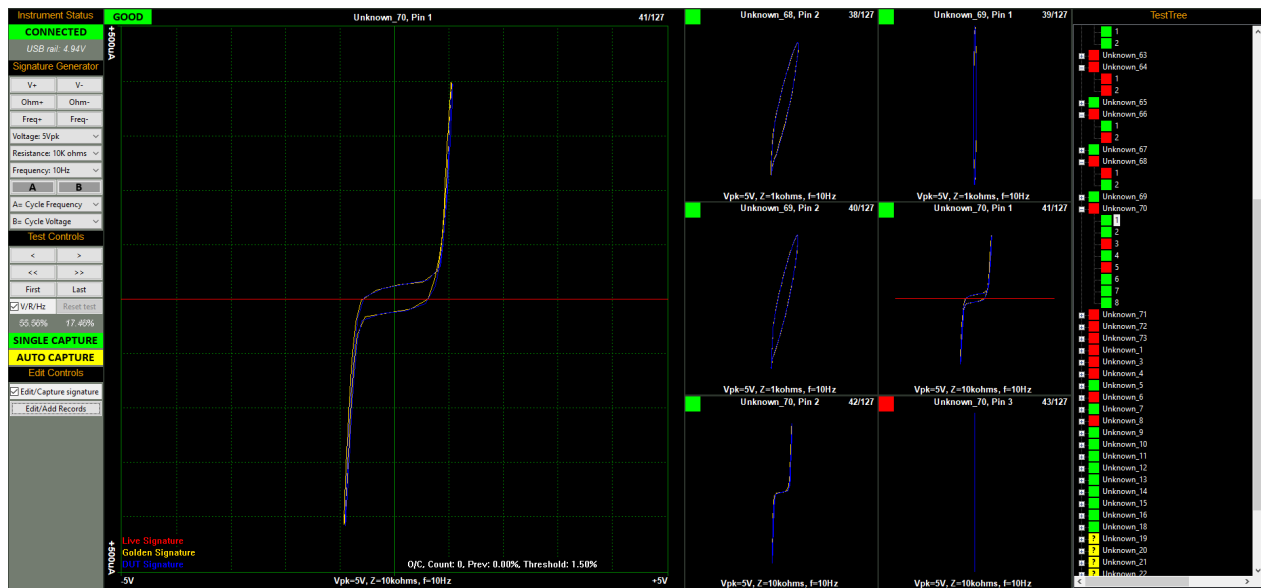


## 9 mini-scopes



The centre mini-scope of the 9 is the current Pin/record (same image as the main scope image).  
Clicking on any of the mini-scopes will select that Pin/record as the main scope image.

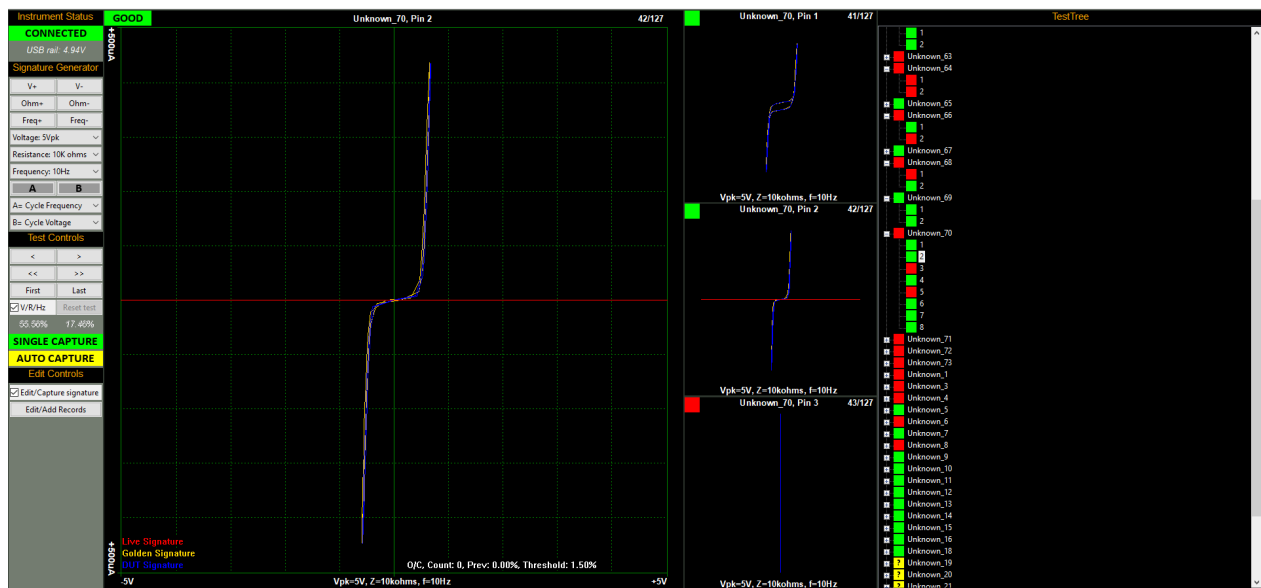
## 6 mini-scopes + TestTree



The centre-right mini-scope of the 6 is the current Pin/record (same image as the main scope).

Clicking on any of the mini-scopes or TestTree points will select that Pin/record as the main scope image.

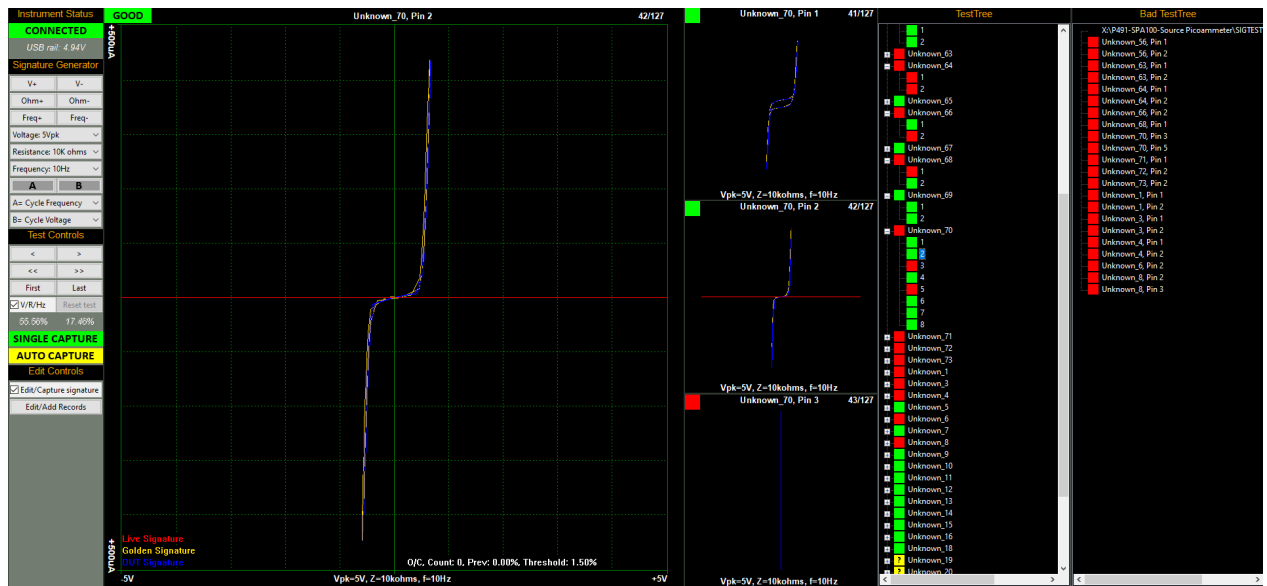
### 3 mini-scopes + TestTree



The centre mini-scope of the 3 is the current Pin/record (same image as the main scope).

Clicking on any of the mini-scopes or TestTree points will select that Pin/record as the main scope image.

### 3 mini-scopes + TestTree + BadTree

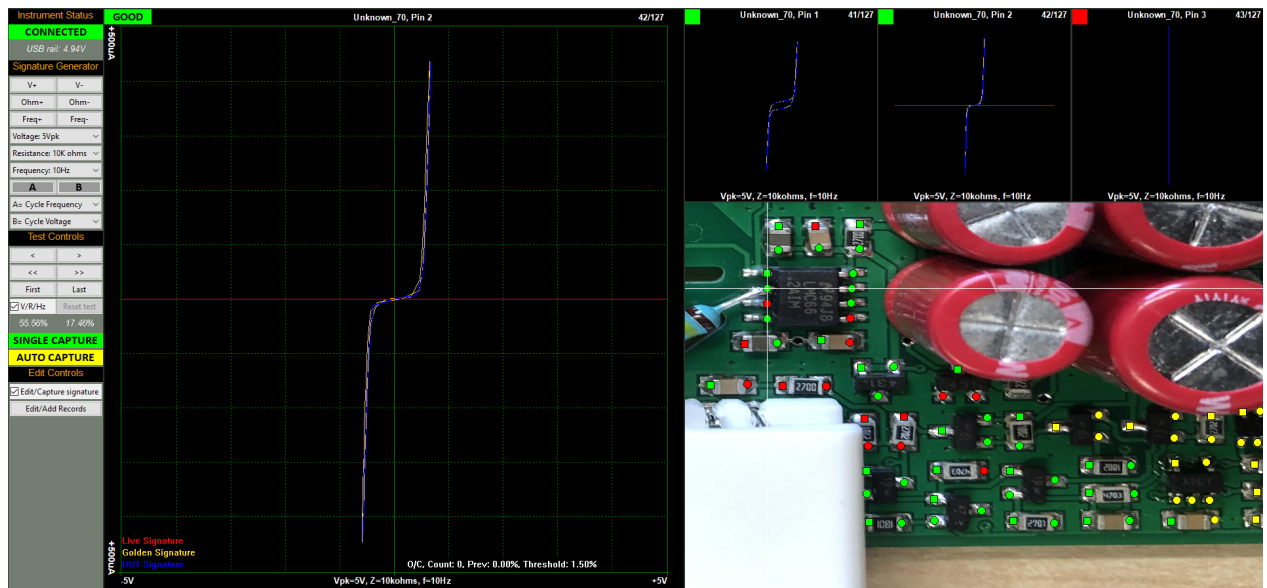


The centre mini-scope of the 3 is the current Pin/record (same image as the main scope).

Clicking on any of the mini-scopes, TestTree or BadTree points will select that Pin/record as the main scope image.

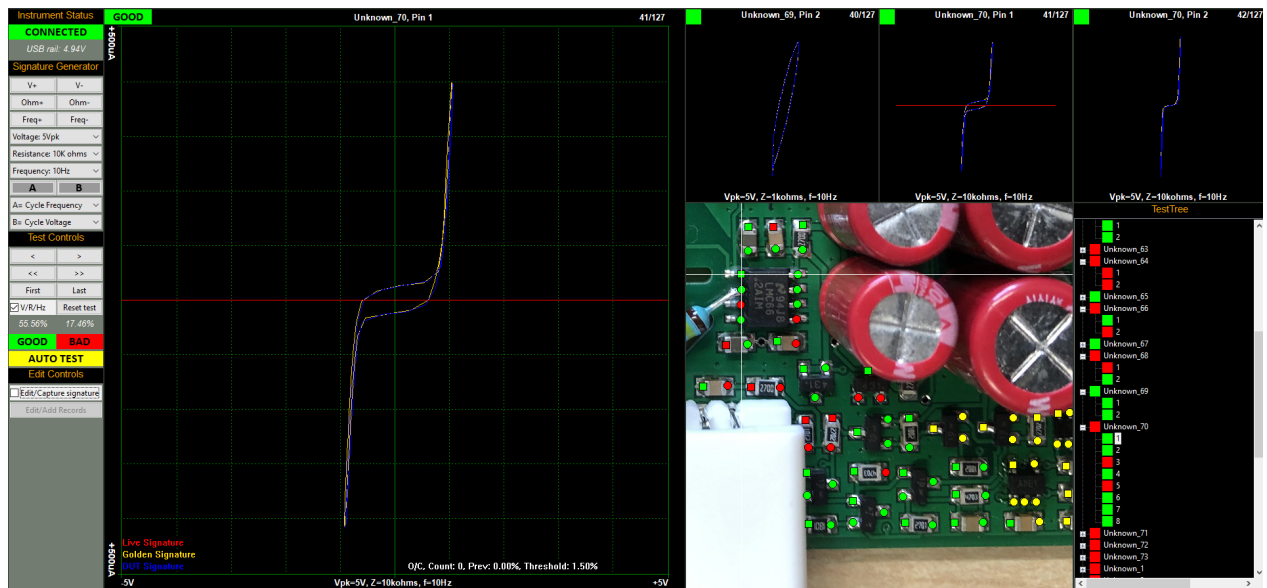


### 3 mini-scopes + PCB



The middle mini-scope of the 3 is the current Pin/record (same image as the main scope). Clicking on any of the mini-scopes or test points (on the PCB image) will select that Pin/record as the main scope image.

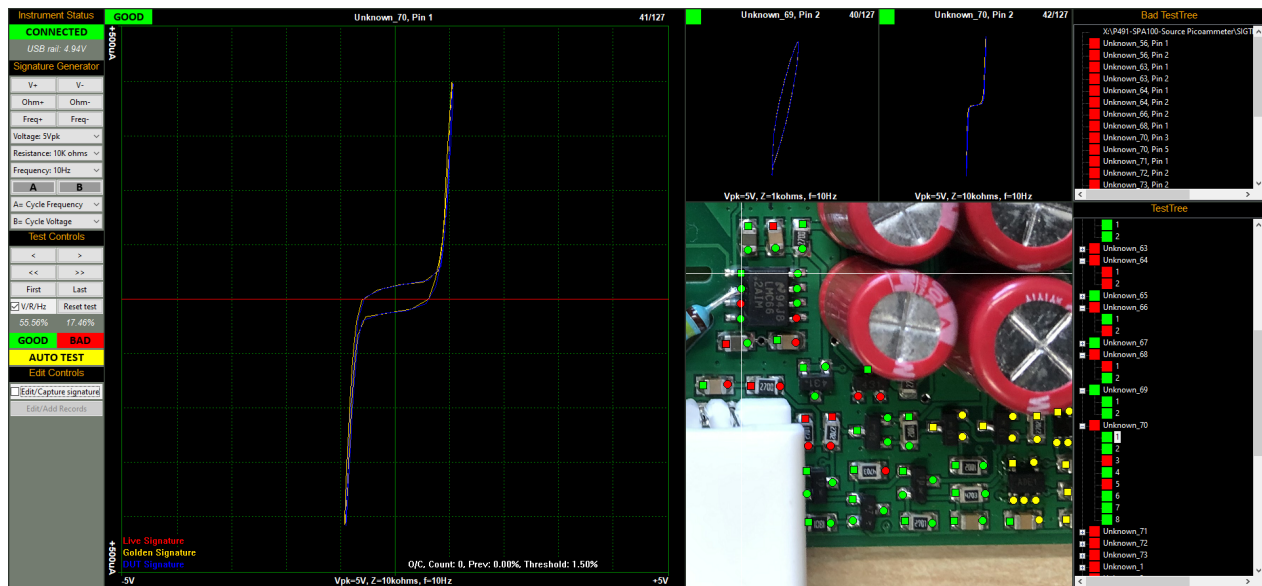
### 3 mini-scopes + PCB + TestTree



The middle mini-scope of the 3 is the current Pin/record (same image as the main scope). Clicking on any of the mini-scopes, TestTree points or test points (on the PCB image) will select that Pin/record as the main scope image.

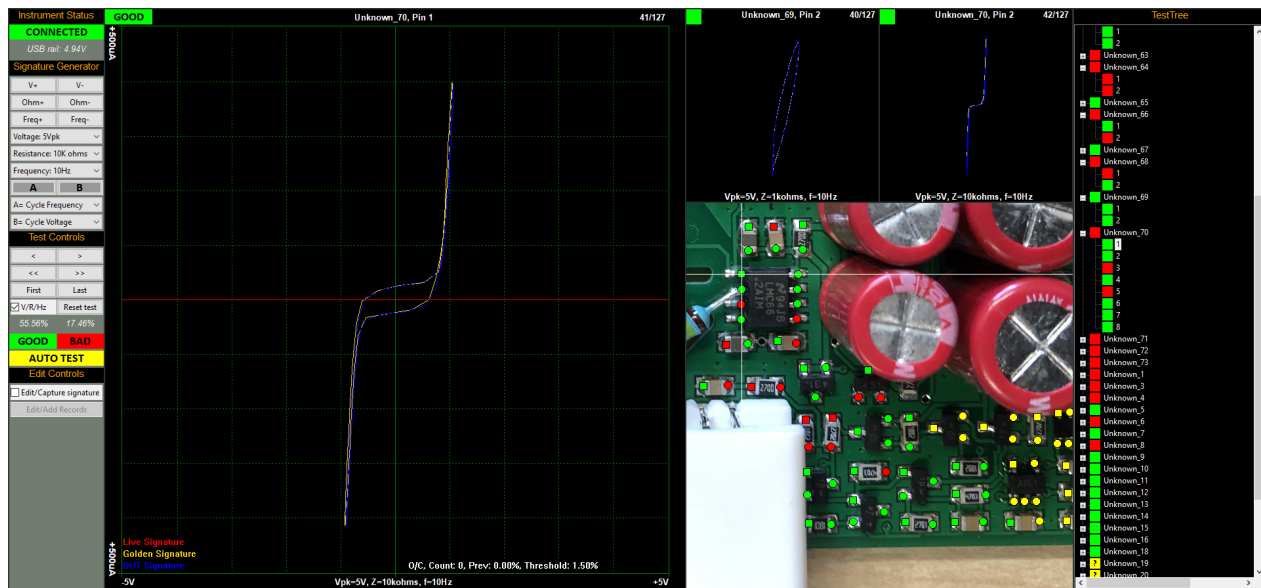
**Clicking on any area of the PCB image (but not on a test point) will toggle the image from the selected view to the overall PCB image and back - this function is useful if you need to see where you are on the larger board.**

## 2 mini-scopes + PCB + TestTree + BadTree



The left mini-scope displays the previous Pin/record and the right mini-scope displays the next Pin/record. Clicking on any of the mini-scopes, TestTree points, BadTree points or test points (on the PCB image) will select that Pin/record as the main scope image.

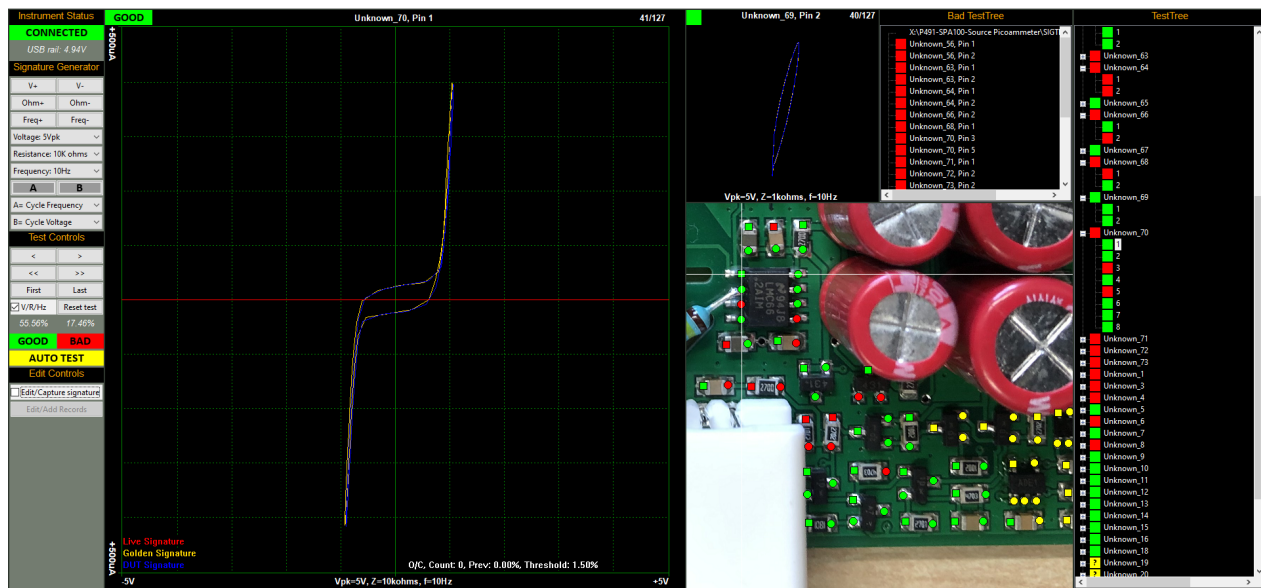
## 2 mini-scopes + PCB + TestTree



The left mini-scope displays the previous Pin/record and the right mini-scope displays the next Pin/record. Clicking on any of the mini-scopes, TestTree points or test points (on the PCB image) will select that Pin/record as the main scope image.

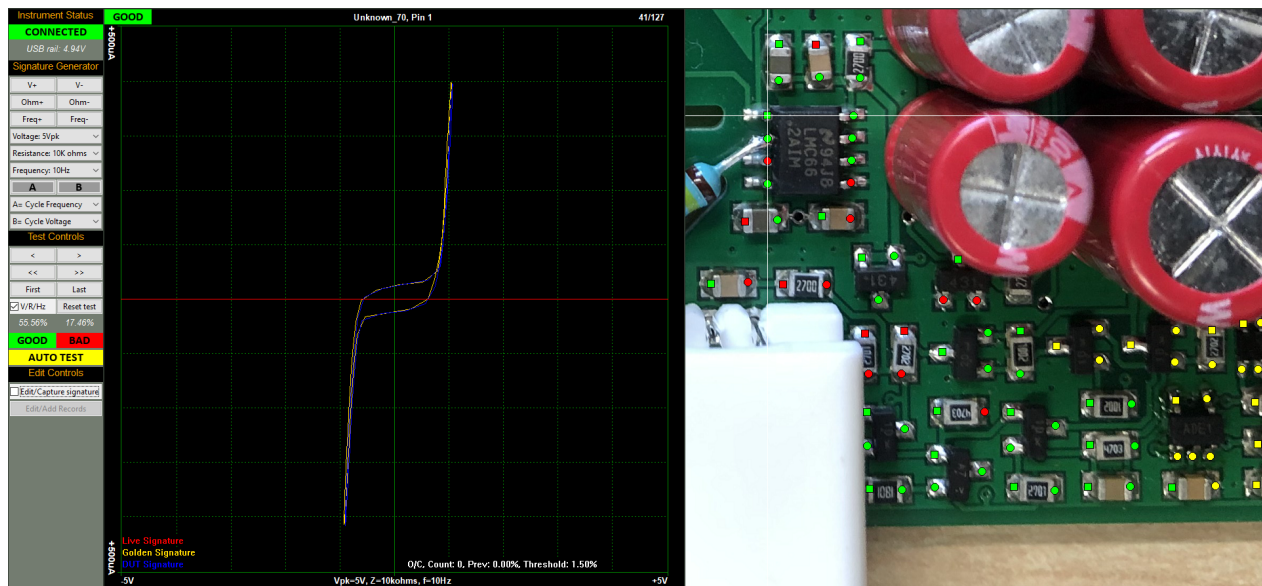
**Clicking on any area of the PCB image (but not on a test point) will toggle the image from the selected view to the overall PCB image and back - this function is useful if you need to see where you are on the larger board.**

## 1 mini-scope + TestTree + BadTree



The mini-scope displays the previous Pin/record. Clicking on the mini-scope, TestTree points, BadTree points or test points (on the PCB image) will select that Pin/record as the main scope image.

## PCB



Clicking on the test points (on the PCB image) will select that Pin/record as the main scope image.

**Clicking on any area of the PCB image (but not on a test point) will toggle the image from the selected view to the overall PCB image and back - this function is useful if you need to see where you are on the larger board.**

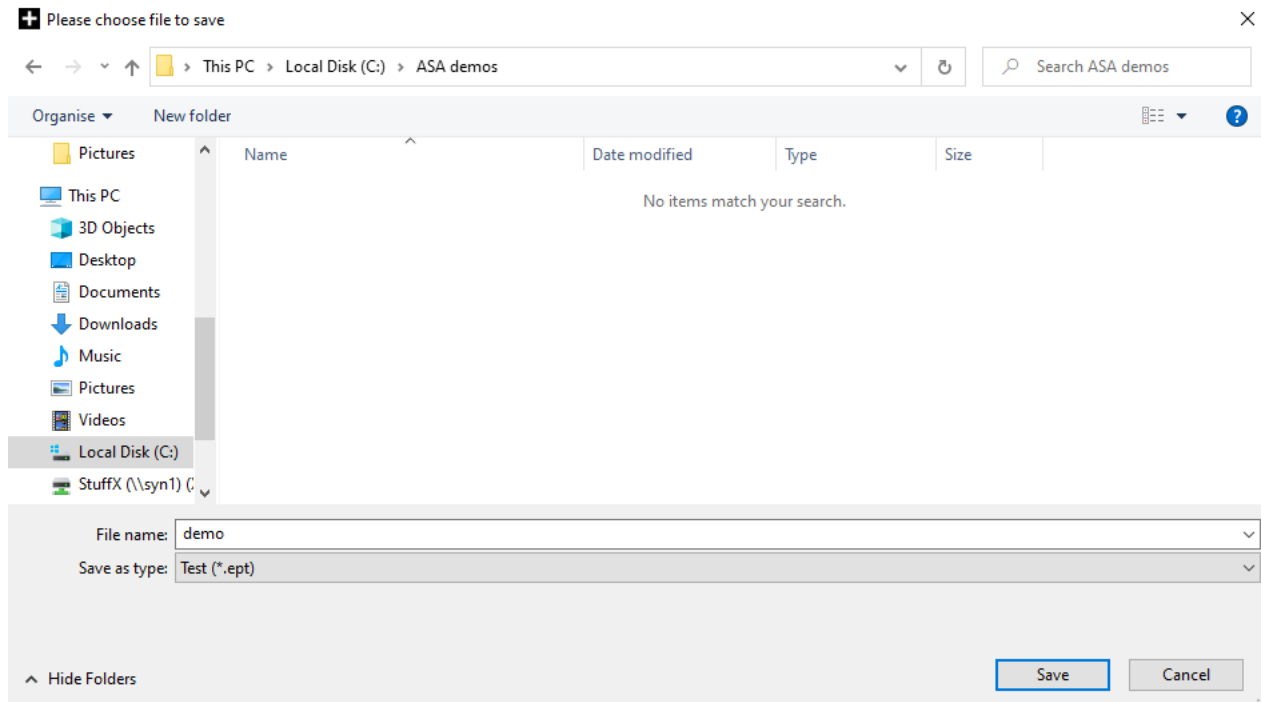
## Setting up a test

### Creating new test file

To setup a new test you must first create a new file:

#### FILE > NEW

Select a location and name for the test. The file extension is .ept, and will be automatically appended when the file is saved.



Once the file has been saved it will be automatically loaded/used by the software. The file name and path will be shown on the top of the main-scope image.

#### Note

**.ept files are essentially CSV (comma separated variables) formatted spreadsheets. Commas in text fields are automatically swapped with £ symbols.**

### Adding an image

One or more images can be added to the to the test file. Click

## New topic

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## Capturing Golden signatures



## Auto Capture

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### Performing a test

## Auto Test

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## Technical

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