CTL503 User Manual (using EPIC 21 software) - work in progress

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Notices

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Part number

CTL503 (EPIC 21) User Manual - work in progress

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Location

The latest version of this document can be found on our website: www.electron.plus

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Hereafter referred to as **Electron Plus**.

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**

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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.

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.

Getting Started

System requirements

We recommend at least Windows 7 operating system (however, we know of Windows XP and 32 bit machines working well with EPIC). EPIC is available in both 32 bit and 64 bit from the **Electron Plus** website.

1x USB 2.0 type A (common) for connection to the instrument, at 0.0A

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.

EPIC 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.

Getting help

Help is available by email (preferably) or via telephone.

email: support@electron.plus

from UK: 01473 327100
international telephone: +44 1473 327 100

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.

Getting help

Help is available by email (preferably) or via telephone.

email: support@electron.plus

Introduction

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 ensure you use the power supply adaptor supplied. It is important that this device is powered with 11.75 to 12.5V, damage may occur if you exceed 12.5V.

Do not over-tighten the RED/BLUE/BLACK terminal post connections. You won't end up with better curves and you will risk damaging the instrument.

If you wish to make a permanent safety connection to EARTH read Earthing for function and safety section.

Like most 'old-style' curve tracers, the CTL503 is capable of generating voltages in excess of 100V, users are expected to be fully aware of the risks posed by these higher voltages and the precautions and procedures required to maintain the safety of personal operating the instrument and those nearby.

! If the red light is lit on the CTL503, assume there could be high voltages present and act accordingly !

New in Software

EPIC covers most **Electron Plus** instruments and not all instruments are updated between versions.

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

Installation sequence

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

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

When EPIC 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 EPIC32.EXE or EPIC64.EXE and that previous shortcuts might not work or will link to previous EPIC.EXE

Installing the Software

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

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

EPIC64 - for 64 bit Windows installations & PC's (we recommend this).
EPIC32 - for 32 bit legacy Windows machines.

You can download the latest copy of EPIC for free from www.electron.plus/software, EPIC 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_EPIC21010_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_EPIC21010_64.exe)

3. Follow the on screen instructions to complete the installation.

Before starting EPIC, 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 help@electron.plus and we will promptly try to assist you.

Installing the USB driver

The product covered in this document communicates with the host PC via USB using an WCH CH340 bridge IC.

A copy of the official WCH device driver is available from the SOFTWARE section of our website (www.electron.plus/software), device drivers can also be downloaded directly from WCH's website (www.wch-ic.com/downloads/category/30.html). The driver we use with Windows machines is: CH341SER and is available as .EXE or a .ZIP

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!

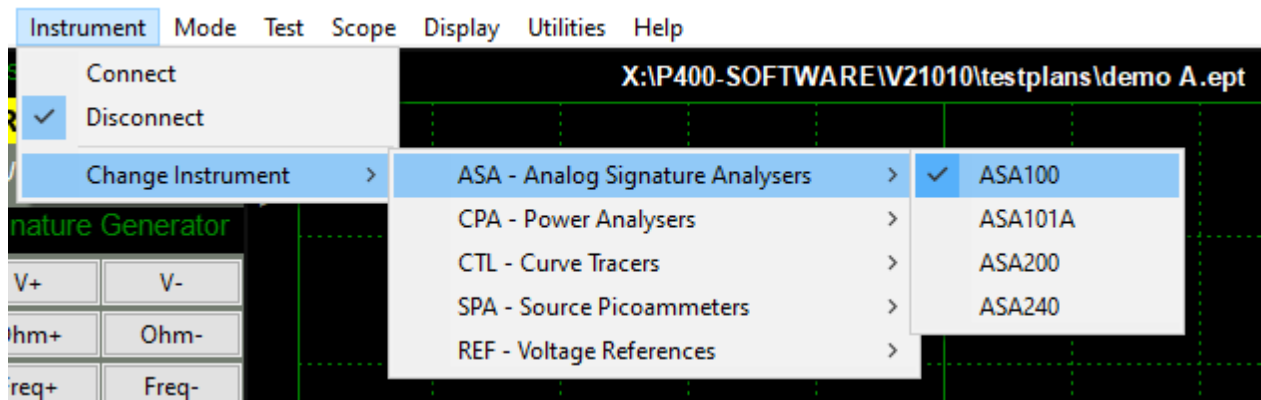| Note |
| --- |
| **Some earlier production ASA100 units may have a TORX T10 headed stainless steel earthing screw fitted instead of the 2mm HEX drive type. If you would like a 2mm HEX drive screw (our part# SCREW014), please contact the factory and we will supply one free-of-charge.** |

Operation

Selecting Instrument

When EPIC 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 EPIC for this to take effect.
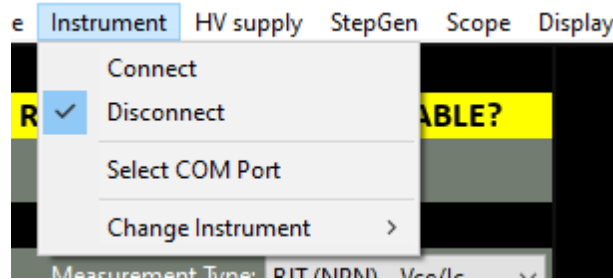

> **Technical Note**
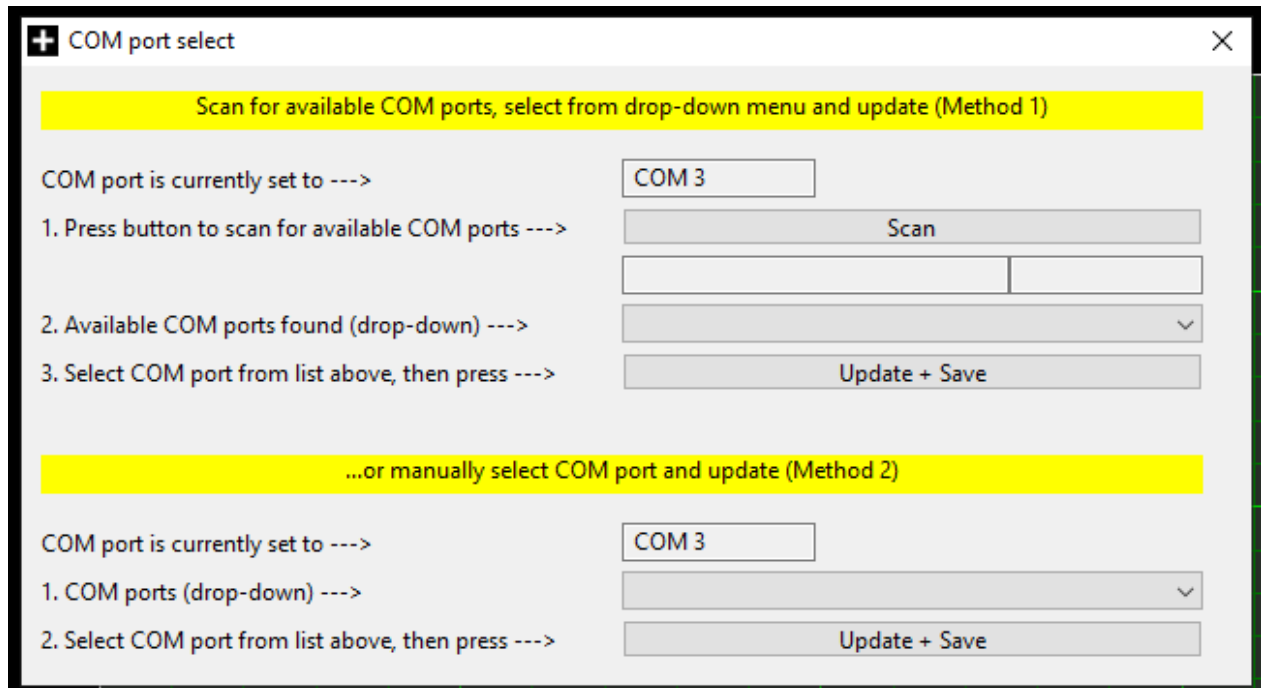> **Variable used in settings.txt: ActiveInstrument=ASA100**

Selecting Serial COM Port

To connect to the instrument you will need to select a COM port:

INSTRUMENT > SELECT COM PORT

then this pop-up window will appear:

Follow the on-screen prompts in sequence (for either 'Method 1' or 'Method 2') to find and select the appropriate COM port and save your selection. When you have finished, either close the pop-up window or click the main window (the pop-up will close automatically).
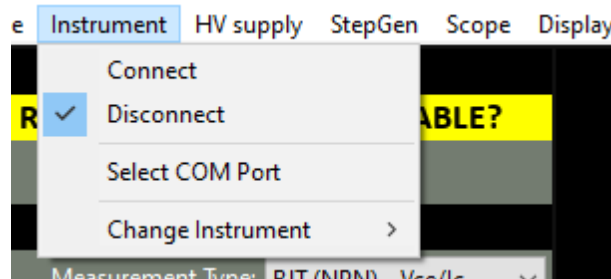
Technical Note
Each Electron Plus instrument type that uses a COM serial port has it's own entry in "settings.txt", e.g. CTL_ComPort=3
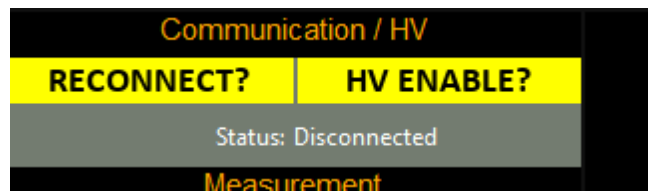
Connecting Instrument

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

An error message will be displayed if EPIC cannot open a serial port to the instrument - this can be caused by the following:
1. Not having the serial port driver installed or
2. Wrong (or no) serial port COM number being selected or
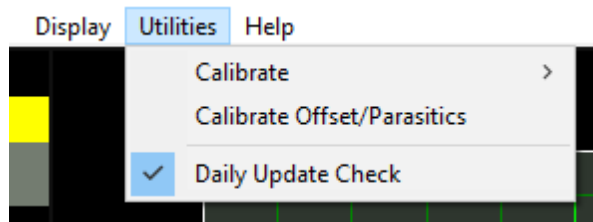3. No instrument attached or powered on.

Ensure the correct driver is installed, the correct COM port is selected (Selecting Serial COM Port section).

Check for updates

Once per day EPIC 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.
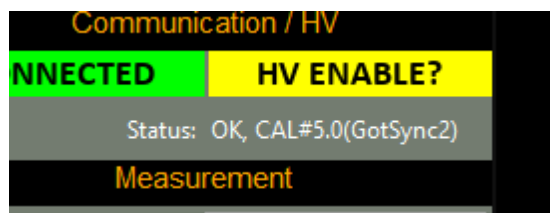

Technical Note
In "settings.txt": CheckWebsiteForUpdate=1 or 0 determines if this function is enabled/disabled. DateOfLastUpdateCheck=04/11/2021 is self-explanatory.
If function is enabled and date <> today a small file called "version.txt" is downloaded from "http://www.electron.plus/wp-content/". This contains the current revision of EPIC also the current revision for each product where a change/update has been made.

Calibration loading

When the CTL503 is first connected during an EPIC session it will automatically download all the necessary calibration coefficients. This happens in the 'background' and the user need not think about it.

The status of the background download from the CTL503 is displayed in the Status window (seen below).

If a particular CTL503 has not been used with a particular installation of EPIC, then the calibration download must complete before accurate results can be obtained.

Technical Note
EPIC will wait for two copies of the calibration file to download before comparing them with each other and the existing copy of "CTL_cal.txt" in the EPIC folder, if both downloaded copies are identical and there is a discrepancy with "CTL_cal.txt" EPIC will

overwrite "CTL_cal.txt" with the new data and then check it again.

Control Ribbon

Auto Capture

Auto Test

Menu Bar

Auto Test

Menu Bar

File

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New topic

Technical