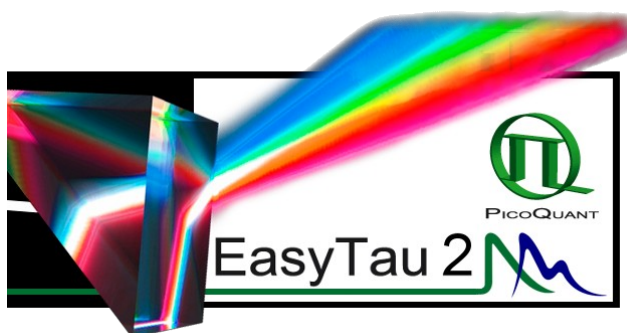


# EasyTau 2

PicoQuant spectrometer and  
data analysis software



Software Quick Start Guide

Document version 1.0.0



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# 1. Introduction

The EasyTau 2 system software provides an easy-to-use and intuitive way to control all aspects of the FluoTime 300 and FluoTime 250 hardware. Additionally, EasyTau integrates a broad range of data analysis features and efficient data management.

All measurement data files and related analysis results are stored in a clearly arranged workspace, which resembles the familiar tree structure of a hard drive directory. Data dependencies are thus visible at first glance. Steady-State and time-resolved measurements can be performed alternatively from the same software interface.

Specifically designed application wizards guide the user through the necessary optimization steps for performing typical measurement tasks such as fluorescence lifetime measurements, anisotropy measurements, collection of emission spectra or Time-Resolved Emission Spectra (TRES). For those familiar with the technique, a customized measurement mode for full instrument control is also available.

More sophisticated application tasks, like, for example, alternating between time-resolved decays and steady-state spectra at different temperatures over night, can be easily performed through scripted data acquisition using the integrated scripting language of the EasyTau software.

Steady-state and time-resolved data can be analyzed through the same software interface. The EasyTau software features basic arithmetic and integration functions, as well as global decay analysis with an easy-to-use graphical user interface and presentation-ready numerical and graphical output. It implements an iterative reconvolution fitting routine with nonlinear error minimization. Various exponential decay models (up to fourth order) or rate constant distribution models can be fitted to the observed decay in order to determine the fluorescence lifetime(s) or to study fluorescence anisotropy, along with rigorous error analysis methods

During start-up, EasyTau checks for the presence of the FluoTime hardware. If no hardware is found, the software starts in the so-called Analysis Mode where all hardware options are disabled. An extensive and context sensitive online help is available after pressing F1 or using the “What’s this?” function. The online help is your first stop for any software related questions.

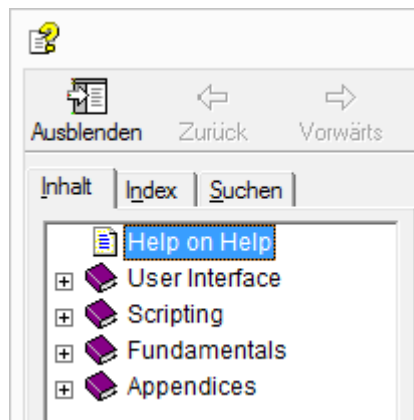


Fig. 1: EasyTau on-line help window.

## 2. Installation and Getting Started

### 2.1. Installation

The EasyTau system software needs to be set-up via an installer and is supplied on a CD along with your FluoTime spectrometer.

**Note:** Your EasyTau 2 software licenses are managed via USB hardware dongles (*HASP Sentinel*). Such a hardware key is required to start and run the software in both *Operation* and *Analysis* modes. The key must remain plugged in while using the software.

Installing the software is straightforward and performed by a step-by-step installation wizard. To install the software:

1. Insert the CD into the host computer.
2. Launch the program: `EasyTau_setup.exe`
3. Follow the on-screen instructions:
  - Accept the License agreement and click *Next* when requested.
  - Define the destination folder for the installation of the software.
  - Click *Next* to validate your choices and then the *Install* button to start the installation.
4. Click *Next* to start the installation of the HASP Sentinel drivers.
  - In rare cases, a *Windows Safety Warning* windows might pop up. Should this happen, confirm the installation when requested in order to continue with the installation.
5. Click *Next* when requested to complete the installation.
6. Click *Finish* to close the Installation wizard.






### 2.2. Starting the software

1. Connect the USB *HASP Sentinel* dongle to the PC before starting up the EasyTau 2 software.
2. Start the EasyTau software by double clicking on the appropriate launcher icon located on the desktop or from the Start menu (see section 3 Quick Start Guide).
3. Optional: make sure that your FluoTime 300 is properly connected and powered on before starting the software with the “EasyTau (Operation)” launcher.
4. Keep the USB dongle connected at all time during software operation.

## 3. Quick Start Guide

### 3.1. Links included in the software package

Once the software is installed, a folder named “PicoQuant – EasyTau” is created in the Windows Start menu, which contains a series of icons. Additionally, two launcher icons “EasyTau (Operation)” and “EasyTau (Analysis)” are added to the desktop. The various icons have the following functions:

Icon	Label	Function
	EasyTau (Analysis)	Starts the EasyTau 2 software in <i>Analysis</i> mode. Use this mode to analyze your data on a PC where no FluoTime 300 is connected
	EasyTau (Operation)	Runs the EasyTau 2 in <i>Operation</i> mode, which allows setting up and carrying out experiments, grants full control over the hardware of the FluoTime 300 and analyzing your data.  <b>Note:</b> If the EasyTau 2 software can't establish a connection to the FluoTime 300, a warning dialog will be displayed. The dialog will offer you to run the software in <i>Analysis</i> mode instead.
	EasyTau Help	Opens up the online help for the EasyTau 2. This is your comprehensive, one-stop resource for learning how to use the software package!
	EasyTau on the Web	Provides a link to the FluoTime Series product pages on the PicoQuant website.  These pages offer a wealth of information, including all product and accessory specifications, application examples, white papers, bibliography with product-related publications.
	EasyTau Viewer	Starts up a stand-alone data viewer to display the content of *.etc files.  Note that running this program does not require a USB dongle.

### 3.2. Getting started

Once EasyTau 2 has been successfully launched, you will be greeted by the main window:

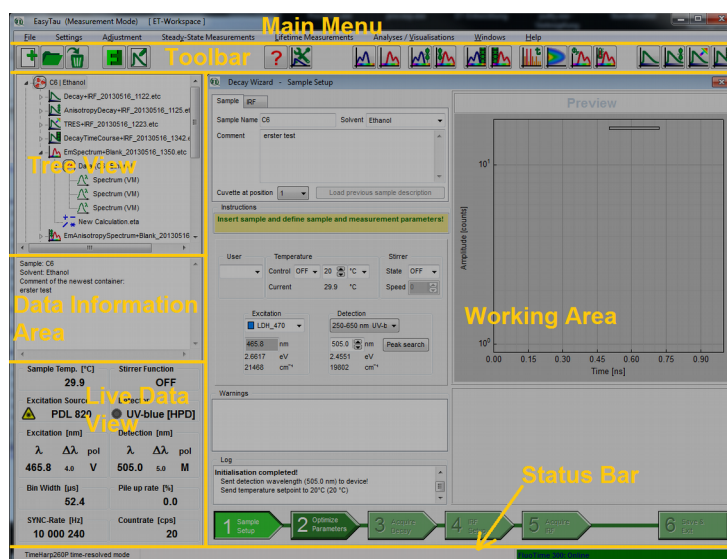


Fig. 2: Main window of EasyTau 2 (in *Operation* mode).

Note that the window layout will be slightly different in *Analysis* mode: the Live Data View field and most of the icons on the right hand side of the Toolbar will be missing.

Start by opening an existing or creating a new workspace:

- In the Main Menu click on **File**
- Then select either **Open Workspace** or **New Workspace** and follow the on-screen instructions

Once your workspace is ready, the online help can be opened via the **Help** menu entry or keyboard short cut (**ctrl + F1**) to learn more about the interface, functions, and wizards of the EasyTau 2. The help file is also context sensitive: pressing **F1** will bring up the help topic corresponding to the currently active control or window.

**Note:** if you see the “Help on Help” page upon pressing **F1**, then there is no help topic associated with this subject.



Another very useful tool to learn more about the interface is the “What’s This?” button. Selecting it activates a context sensitive help mode. Once activated, you can click on any part of the interface to bring up a pop up window with a short explanation of what this interface element does.

## 4. Support

### 4.1. PicoQuant Community Forum

This forum is intended as a platform for users of PicoQuant's systems, components and software packages. It is not strictly limited to software related questions. As PicoQuant products cover a wide range of applications from single molecule experiments to life sciences and material science, discussions of the scientific background are of course welcome. The forum can be found at <http://forum.picoquant.com>

### 4.2. Support Dialog

Extended information about the device, including hardware version, serial number, software and firmware version, etc. can be brought up by clicking on the menu entry "*About Easy Tau...*" from the *Help* menu in the main EasyTau window.

For every support request, it is recommend to save the entire support information to clipboard by clicking on the button labeled *Copy Support Infos*, save the information as a plain text file, and send it per e-mail to <mailto:support@picoquant.com>.

It is also possible to search for possible software updates by selecting the menu entry labeled "*Check for Updates*" from the *Help* menu in the main EasyTau window. If an update is available, a download link to the latest version will be provided.



## **5. Legal Terms**

### **5.1. Copyright**

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## 6. Further Reading

### 6.1. PicoQuant Bibliography

PicoQuant maintains a database of publications mentioning PicoQuant devices. It can be found at our website [www.picoquant.com/scientific/references](http://www.picoquant.com/scientific/references). We also publish, along with our customers, short documents about techniques, methods and applications that are possible with our hardware or software at <http://www.picoquant.com/scientific/technical-and-application-notes>

### 6.2. Recommended Literature / Websites

#### General principles

- 1) Lakowicz J. R.: [Principles of Fluorescence Spectroscopy](#). Third Edition. Springer 2006; ISBN-10: 0-387-31278-1, e-ISBN-13: 978-0-387-46312-4
- 2) Lakowicz J. R. (ed.): [Topics in Fluorescence Spectroscopy](#). Volume 1 and Volume 2. Kluwer Academic Publishers, 2002; e-ISBN 0-306-47057-8 and e-ISBN 0-306-47058-6

#### Time-correlated single photon counting

- 3) O'Connor D. V., Phillips D.: [Time-Correlated Single Photon Counting](#). Academic Press, London, 1984; ISBN 0-12-524140-2
- 4) Demas J. N.: [Excited State Lifetime Measurements](#). Academic Press, New York, 1983
- 5) Becker W.: [Advanced Time-Correlated Single Photon Counting Techniques](#). Springer, Berlin, Heidelberg, New York, 2005; ISBN 10-540-26047-1

#### Data analysis

- 6) Birch D. J. S., Imhof R. E.: [Kinetic Interpretation of Fluorescence Decays](#). Analytical Instrumentation, Vol.14, p.293-329 (1985)
- 7) Kapusta P., Erdmann R., Ortmann U., Wahl M.: [Time-resolved Fluorescence Anisotropy Measurements Made Simple](#). [Journal of Fluorescence](#), Vol.13, p.179-183 (2003)
- 8) Grinvald A., Steinberg I. Z.: [On the Analysis of the Fluorescence Decay Kinetics by the Method of Least-Squares](#). [Analytical Biochemistry](#), Vol.59, p.583-598 (1974)
- 9) Gafni A., Modlin R. L., Brand L.: [Analysis of Fluorescence Decay Curves by Means of the Laplace Transformation](#). [Biophysical Journal](#), Vol.15, p.263-280 (1975)
- 10) O'Connor D. V., Ware W. R., Andre J. C.: [Deconvolution of Fluorescence Decay Curves. A Critical Comparison of Techniques](#). [Journal of Physical Chemistry](#), Vol.83, p.1333-1343 (1979)
- 11) Andre J. C., Vincent L. M., O'Connor D. V., Ware W. R.: [Applications of Fast Fourier Transform to Deconvolution in Single Photon Counting](#). [Journal of Physical Chemistry](#), Vol.83, p.2285-2294 (1979)
- 12) Enderlein J., Erdmann R.: [Fast Fitting of Multi-Exponential Decay Curves](#). [Optics Communications](#), Vol.134, p.371-378 (1997)
- 13) Bevington P. R., Robinson D. K.: [Data Reduction and Error Analysis for the Physical Sciences](#). McGraw-Hill, 1992; ISBN-10: 0079112439
- 14) Press W. H., Teukolsky S. A., Vetterling W. T., Flannery B. R.: [Numerical Recipes in C](#). Cambridge University Press, 1992; ISBN-10: 052135465X
- 15) Gardecki J. A., Maroncelli M.: [Set of Secondary Emission Standards for Calibration of the Spectral Responsivity in Emission Spectroscopy](#). [Applied Spectroscopy](#), Vol.52, p.1179-1189 (1998)
- 16) Boens N. et al.: [Fluorescence Lifetime Standards for Time and Frequency Domain Fluorescence Spectroscopy](#). [Analytical Chemistry](#), Vol.79, p.2137-2149 (2007)
- 17) Lakowicz J. R., Gryczynski I., Laczko G., Gloyna D.: [Picosecond Fluorescence Lifetime Standards for Frequency- and Time-domain Fluorescence](#). [Journal of Fluorescence](#), Vol.01, p.087-093 (1991)

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