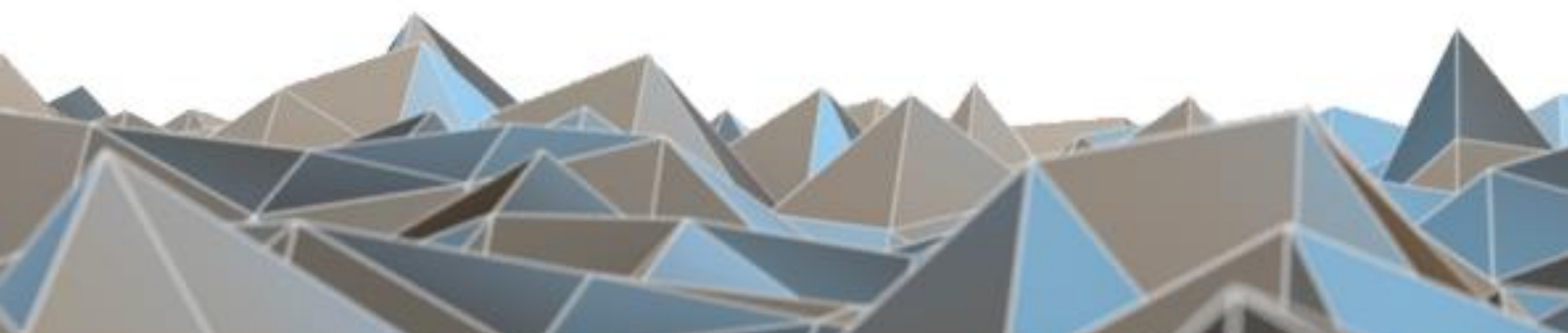
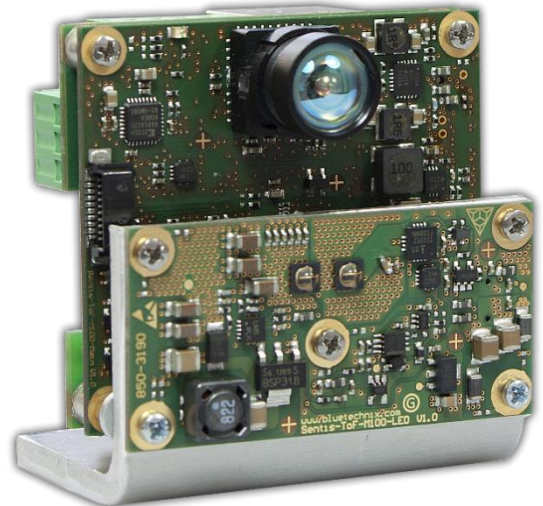


BLUETECHNIX
Embedding Ideas

Bluetechnix ToF Visualizer

Quick Start Guide

Version 3



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Bluetechnix ToF Visualizer – Quick Start Guide

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Information

For further information on technology, delivery terms and conditions and prices please contact Bluetechnix (<http://www.bluetechnix.com>).

Warning

Due to technical requirements components may contain dangerous substances.

1 General Information

This guide applies to the Sentis-ToF-M100 or the EPC610-ToF-Module platform from Bluetechnix GmbH, referred to as 'sensor' throughout this document. Follow this guide chapter by chapter to set up and understand your product.

2 Introduction

2.1 Setup for Ethernet devices

- On your Windows PC, change your network adapter settings:
 - IP address: 192.168.0.1
 - Subnet mask: 255.255.255.0
- Use the Ethernet cable to connect the sensor device with your PC
- Power the sensor device as described in the manual

2.2 Setup for EPC610-ToF-Module

- Install the driver for 'Silicon Labs CP210x USB to UART Bridge'
- Use the USB cable to connect the sensor device with your PC
- Check if the new COM port is recognized by your system
- Power the sensor device as described in the manual

2.3 Files included

The software package includes the following files:

- This Quick Start Guide
- BltTofSuite.exe
- BltTofSuite.exe.config
- BltTofApi.dll
- BltTofDownloader.dll
- BltTofModel3d.dll
- BltTofVisualizer.dll
- BtaEth.dll
- OpenTK.dll
- OpenTK.GLControl.dll
- pthreadVC2.dll

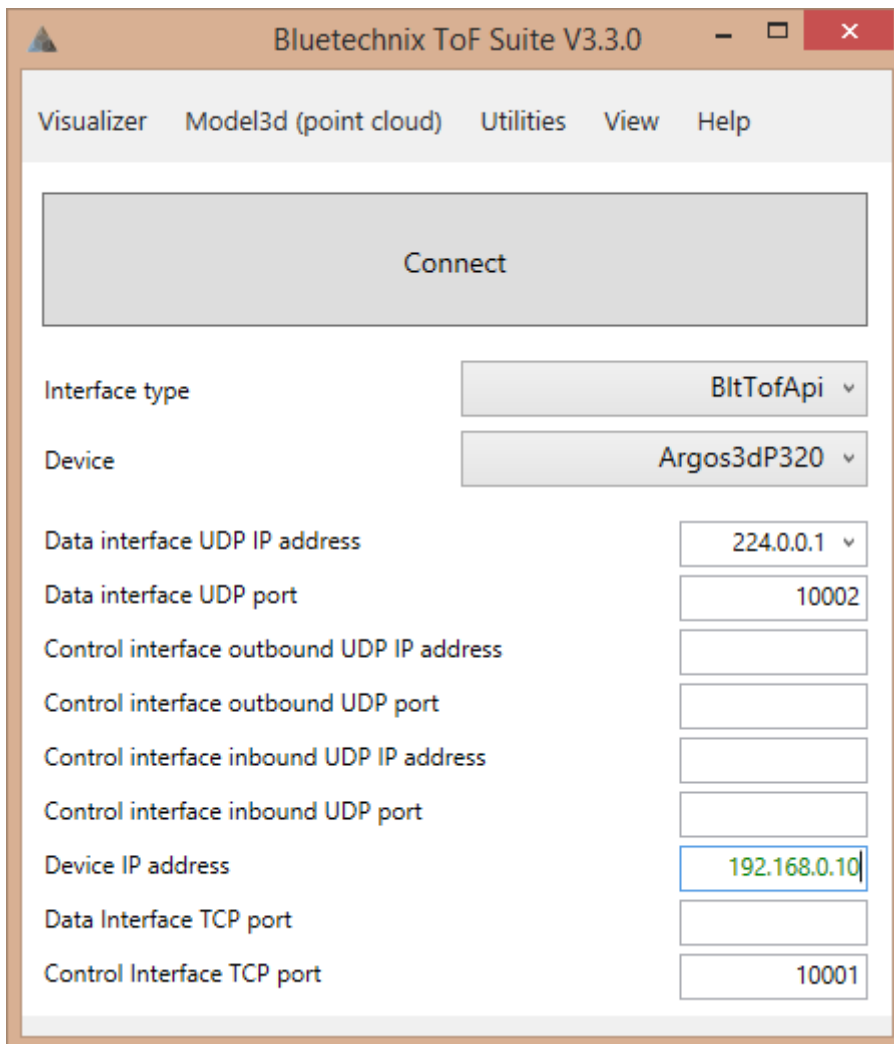
3 Using the Software

Start the application executing the exe file.

3.1 Bluetechnix ToF Suite

This application uses the Bluetechnix ToF API (BtaXXX.dll) in order to open a connection to the sensor and pass the functionality to other tools such as BltToFVisualizer.dll, BltToFModel3d.dll and BltToFDownloader.dll.

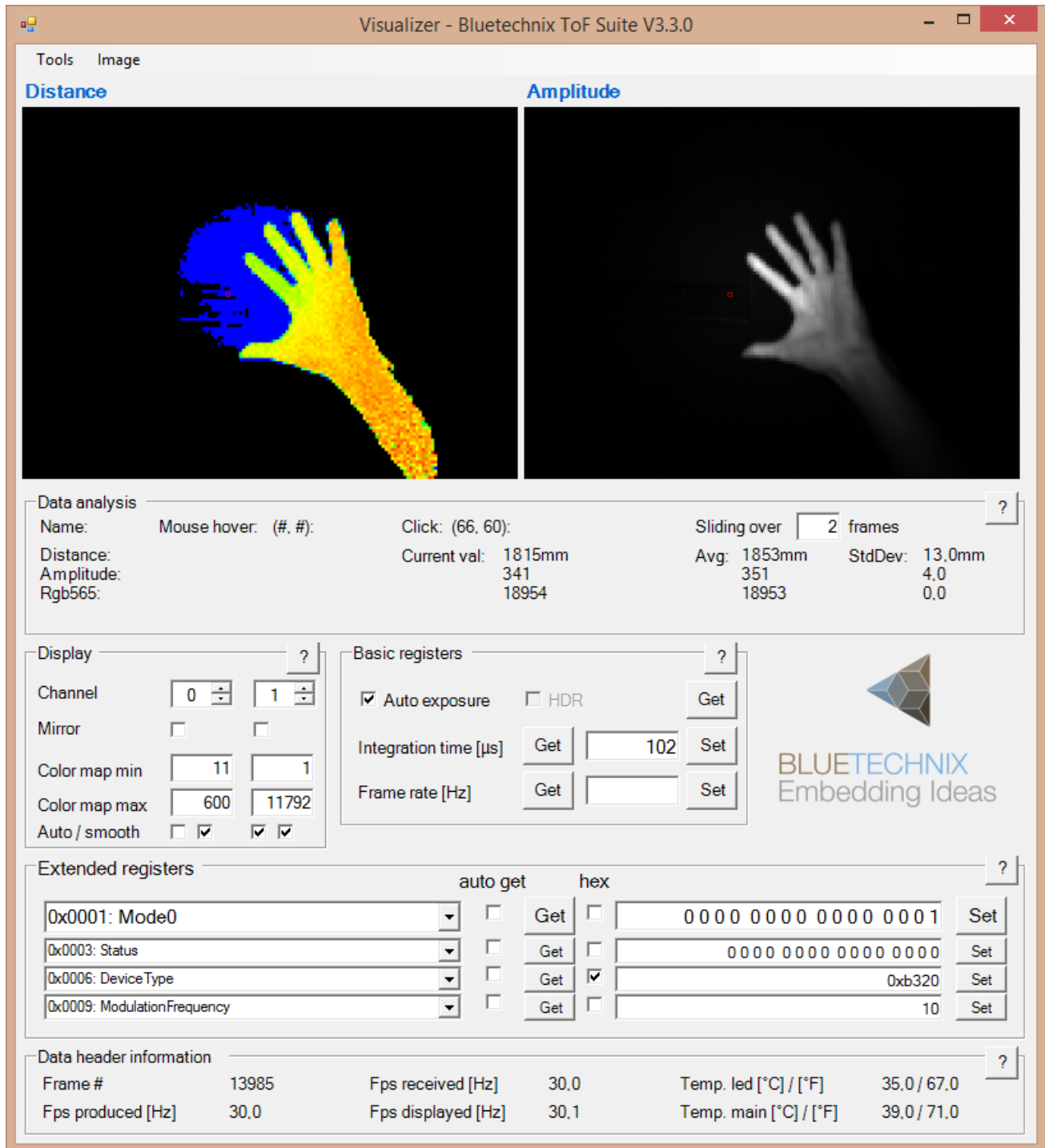
3.1.1 Bluetechnix ToF API Eth Lib



The data stream is read over UDP, the control interface is accessed over TCP

- Enter IP addresses and ports as configured on the sensor
- Press 'Connect'
- The 'Device IP address' is green if pingable and red if not

3.2 Bluetechnix ToF Visualizer



Visualizer - Bluetechnix ToF Suite V3.3.0

Tools Image

Distance **Amplitude**

Data analysis

Name: Mouse hover: (#, #): Click: (66, 60): Sliding over: 2 frames

Distance: Current val: 1815mm Avg: 1853mm StdDev: 13.0mm

Amplitude: 341

Rgb565: 18954

351

18953

4.0

0.0

Display

Channel: 0 1

Mirror: ☐ ☐

Color map min: 11 1

Color map max: 600 11792

Auto / smooth: ☐ ☒ ☒ ☒

Basic registers

☒ Auto exposure ☐ HDR

Integration time [μs]: Get 102 Set

Frame rate [Hz]: Get Set

Extended registers

	auto get	hex	
0x0001: Mode0	<input type="checkbox"/>	Get	0000 0000 0000 0001 Set
0x0003: Status	<input type="checkbox"/>	Get	0000 0000 0000 0000 Set
0x0006: DeviceType	<input type="checkbox"/>	Get	0xb320 Set
0x0009: ModulationFrequency	<input type="checkbox"/>	Get	10 Set

Data header information

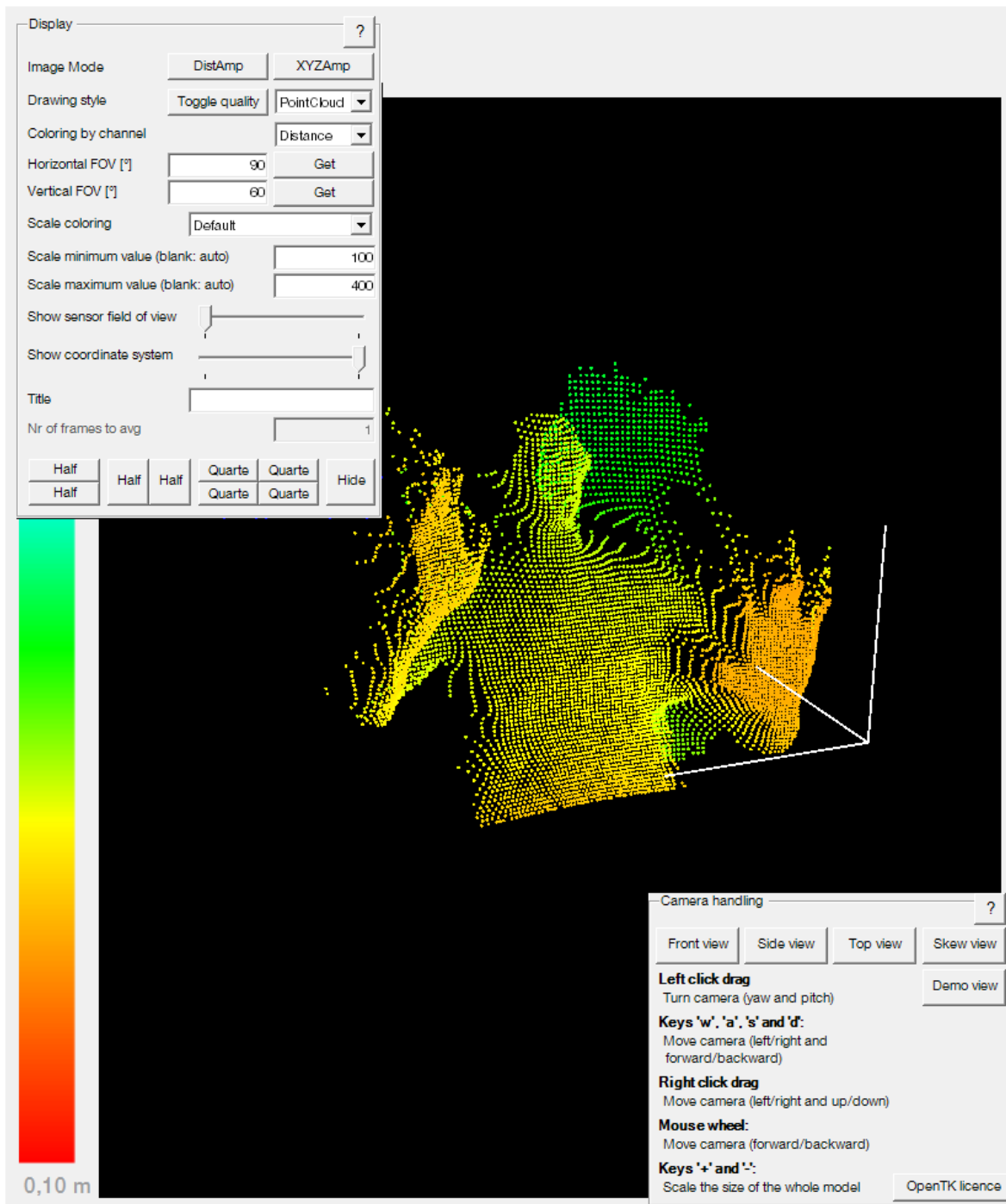
Frame #	13985	Fps received [Hz]	30.0	Temp. led [°C] / [°F]	35.0 / 67.0
Fps produced [Hz]	30.0	Fps displayed [Hz]	30.1	Temp. main [°C] / [°F]	39.0 / 71.0

- Sensor data is visualized in 2D. You can change the channel displayed (see “Display”). Distance data is visualized in a red-green-blue scale. Amplitude data is visualized in a monochrome scale. You can adjust the scale (see “Display”).

- **Basic registers:** By clicking the first 'Get' you can read if the sensor is set to auto exposure (by default it is not). By checking/unchecking the box you can turn on/off auto exposure in the sensors corresponding register.
The integration time can be read and written by clicking 'Get' and 'Set'. By increasing the integration time, the depth range of the sensor can be increased. Dark objects can be seen more clearly. A higher integration time can also mean that objects get overexposed (they appear white in Distance and X channel)
The frame-rate can be read and written by clicking 'Get' and 'Set'. Depending on the integration time, filter configuration or other influences the actual frame rate may not reach the desired value.
- **Display:** You can choose which channels are being displayed in the above picture boxes. The sensor sends a data stream consisting of various channels. The default configuration is 'Distance & Amplitude', which means that a channel with radial distance data and a channel with amplitude data (brightness) is transmitted. The image mode can be changed by using the "Image" menu or by writing register 'ImageDataFormat' (please consult the Sentis-ToF-M100 Software User Manual) You can adjust the colour- or brightness scale for the above picture boxes. Distance and coordinates are painted in red-green-blue, where 'Colour map min' represents the value which is painted red and 'Colour map max' is the data to be painted in blue. Amplitude data is painted in grey values, where 'Colour map min' is painted in black and 'Colour map max' is painted in white.

For more detailed help, please click on one of the many question mark buttons or contact Bluetechnix support.

3.3 Bluetechnix ToF Model3d



- The data from the sensor is displayed as a point cloud. Please note that all interactions manipulate your point of view (denoted by 'camera') instead of turning or moving the point cloud. Use 'w', 'a', 's' and 'd' in order to move the camera (yourself) sideways, forwards and backwards like in a first-person video game. Click somewhere (doesn't matter where) in the frame, hold the mouse button and move the mouse in order to look around you (i.e. change the camera's pitch and yaw). Right-click somewhere and move the mouse up and down in order to elevate and lower the camera (yourself).

- **Image mode:** These buttons are shortcuts for setting frame modes. They best show how different data can be displayed. Note: The image mode also affects the other window 'Bluetechnix ToF Visualizer' -> different channels are being displayed there as well.
- **Show sensor field of view:** The sensor's field of view is indicated by a pyramid, showing the opening angles of the sensor. The opening angles are read from the sensor's corresponding registers.
- **Show coordinate system:** Activating this switch shows three white lines representing the coordinate system.
- You can adjust the colour- or brightness scale for the cloud's points. Distance and coordinates are painted in red-green-blue, where 'Colour map min' represents the value which is painted red and 'Colour map max' is the data to be painted in blue. Amplitude data is painted in grey values, where 'Colour map min' is painted in black and 'Colour map max' is painted in white.
- If you lose track of your point cloud, feel free to safely press "Front view". It will take you home.

For more detailed help, please click on one of the many question mark buttons or contact Bluetechnix support.

3.4 Bluetechnix ToF Downloader

For flash update instructions, please visit <http://support.bluetechnix.com>

4 Recommended Documents

"BltTofApi Quick Start Guide" available here:

https://support.bluetechnix.at/wiki/BltTofApi_Quick_Start_Guide (Description of the Interface to the camera by which the BltTofSuite accesses all the functions)

5 Appendix

5.1 Support

5.1.1 General Support

General support for products can be found at Bluetechnix' support site

Support Link

 <https://support.bluetechnix.at/wiki>

5.2 Software Packages

Software packages and software downloads are for registered customers only

Software Package

 <https://support.bluetechnix.at/software>

6 Document Revision History

Version	Date	Document Revision
1	2014 02 26	First preliminary of the document
2	2014 05 19	Added UART connection mode & minoradaptions
3	2014 11 19	Updated to match v3.3.0

Table 6-1: Revision history