BLUETECHNIX
Embedding Ideas

EPC6xx ToF Package

Quick Start Guide

Version 2

Bluetechnix

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EPC6xx ToF Package – Quick Start Guide

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Subject to change without notice. Errors excepted.

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The information herein is given to describe certain components and shall not be considered as a guarantee of characteristics.

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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 Unboxing

1.1 In the box

- EPC610 ToF Module ('Tiny ToF')
- EPC6xx Development Board
- USB Mini Cable
- Quick Start Guide
- Documentation and Software (on CD)
- Power Supply

1.2 Connecting your EPC6xx Development Board

1.2.1 Connector Overview

a. UART interface
b. USB/UART interface
c. SPI interface
d. JTAG connector
e. I²C interface
f. Configuration switch 1
g. Trigger button
h. Dual color LED
i. Configuration switch 2
j. Reset button
k. DC10 power connector
l. Terminal power connector
m. RS232/485
n. Outputs
o. Inputs
p. Module connector
q. Modulation signal port
r. ModLight interface

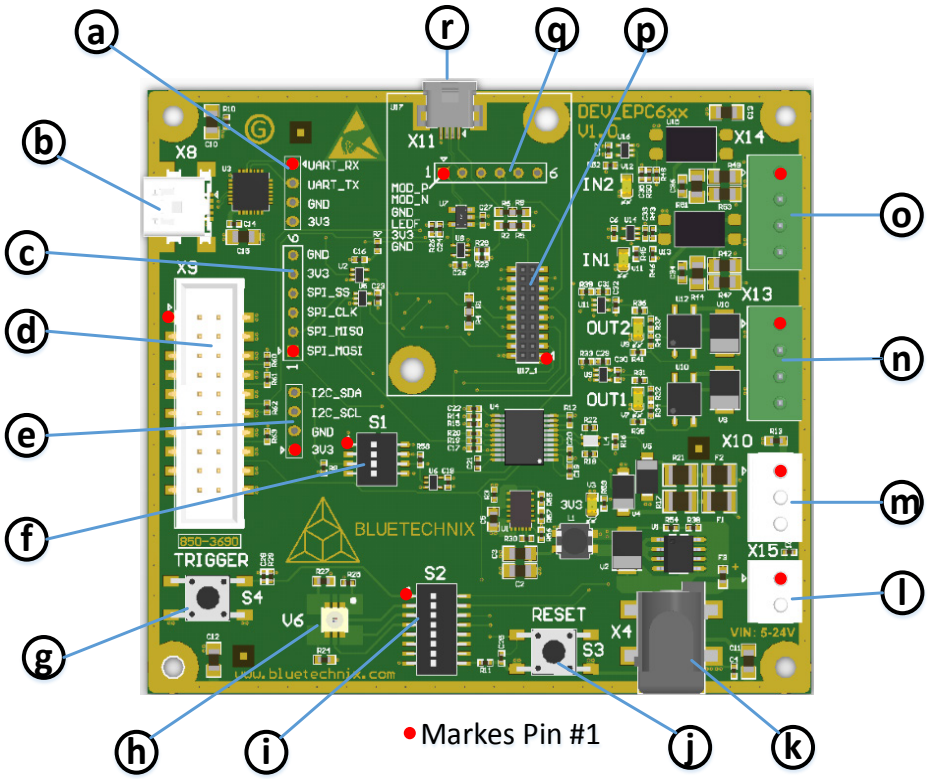

Figure 1-1 EPC6xx Development Board connectors and interfaces

Note
Please follow the next steps in the right order to get your EPC6xx ToF Module up and running correctly.

1.2.2 DIP Switch default position (USB Connection)

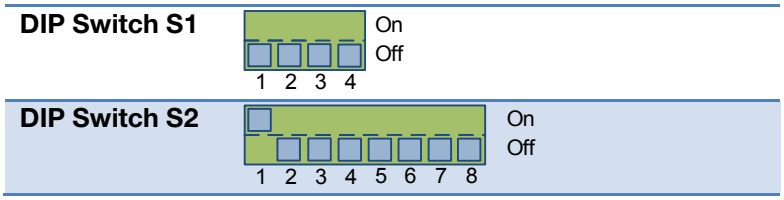

Figure 2 DIP Switch default position

1.2.3 Connecting the EPC6xx ToF Module

Connect the EPC6xx ToF Module via the module connector (p) to the EPC6xx Development Board.

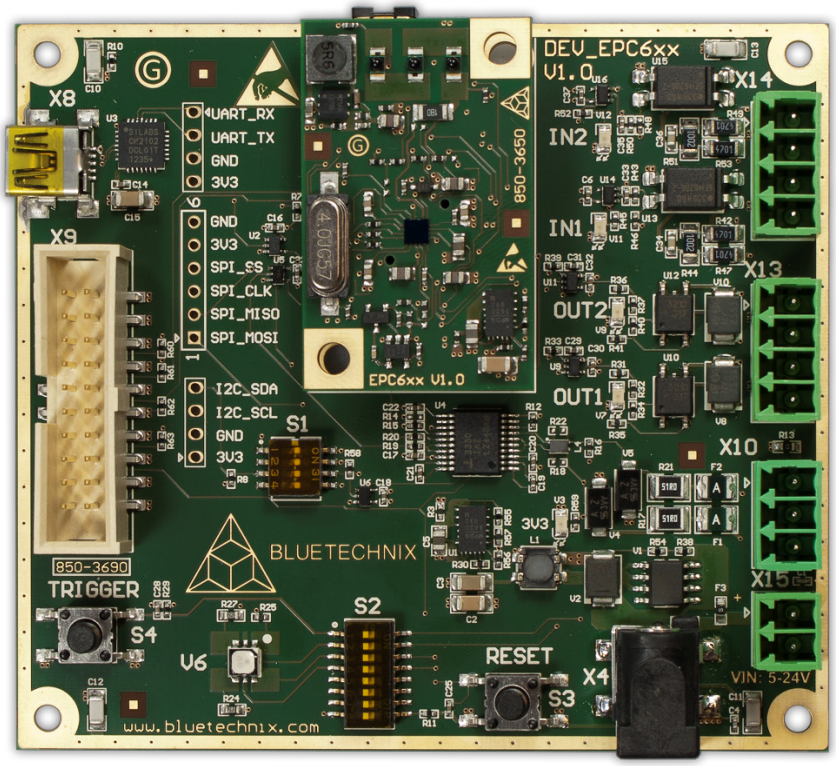

Figure 1-3 EPC6xx Development Board with connected EPC6xx ToF Module

1.2.4 Connecting the USB cable

Plug in the USB cable **(b)** and connect your EPC6xx ToF Evaluation Kit to your PC. On Windows 7 the USB driver will be installed automatically, on Windows XP follow the installation guide of our support website (https://support.bluetechnix.at/wiki/USB-UART_driver_installation_guide).

1.2.5 Connecting the power supply

To ensure, that your EPC6xx ToF Kit works correctly, connect the EPC6xx Development Board to a **5V-24V DC** power supply using one of the power connectors **(k, l)** and wait for approximately 2 seconds until the EPC6xx module boots up.

Pin assignment on the power connectors (k, l):

DC10 connector (k): Connector Type: 2.1mm ID / 5.5mm OD

Voltage: 5-24V (1,5W)

Polarity: 

Terminal connector (l): Pin #1: +5V-24V, Pin#2: GND

! **Note**
The power supply connectors are protected against wrong polarity but the EPC6xx Development Board will not work in case you don't use the correct polarity! If the 'EPC6xx' doesn't work please check the power supply polarity first!

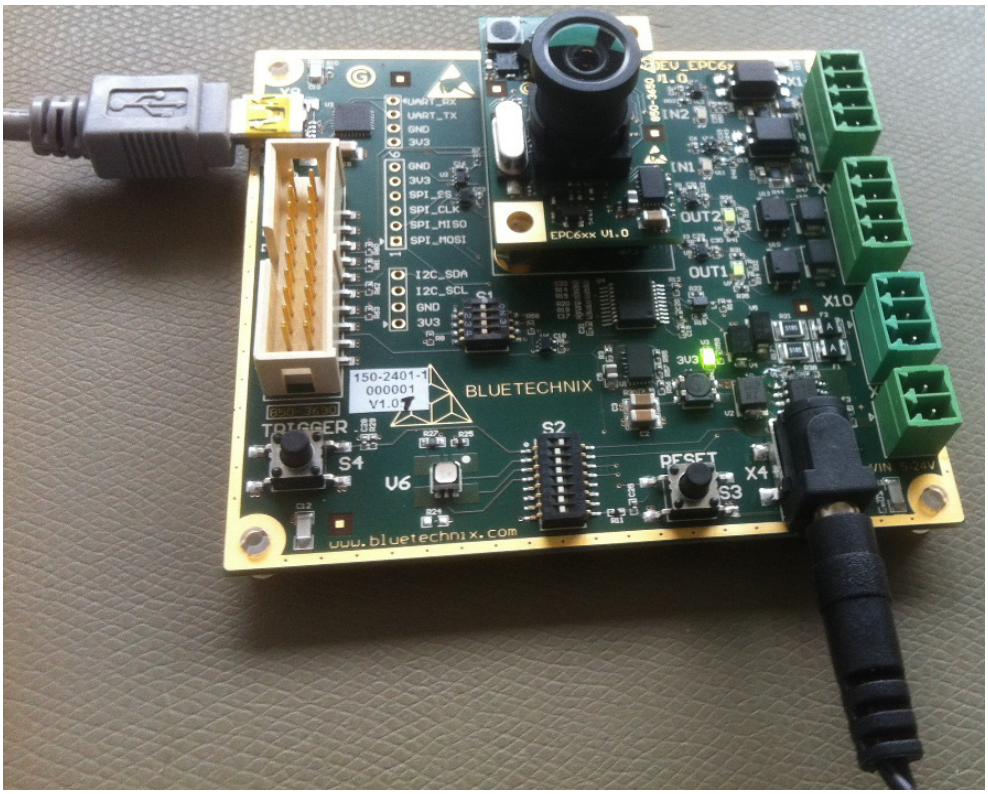

Figure 1-4: EPC6xx Dev. Board with connected EPC6xx ToF module, power supply and USB cable

2 Downloading the Evaluation Software

Please log in to our support website at https://support.bluetechnix.com/ and download the Visualizer software '**Bluetechnix ToF Suite V3.0.0**'.

2.1 Support website

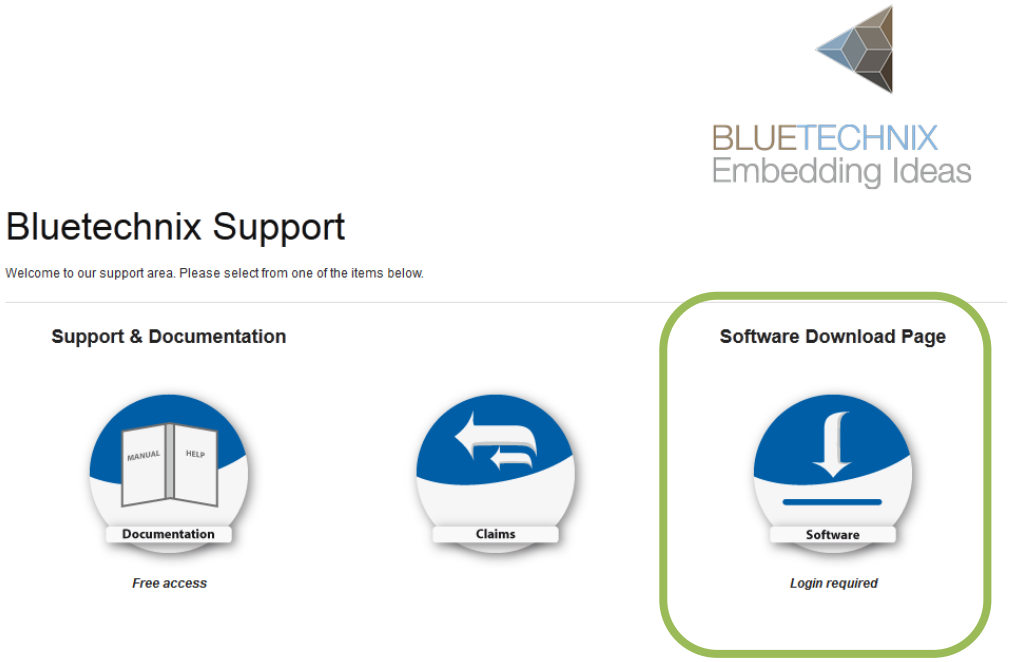

Figure 2-1: Download Evaluation Package

2.2 Login Screen

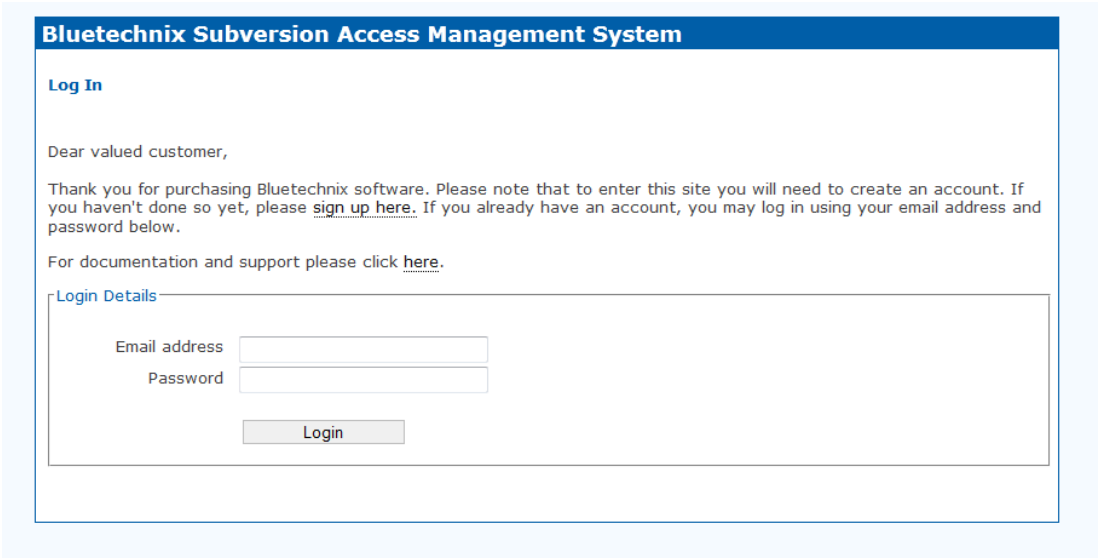

Figure 2-2: Login screen

2.3 Register as new customer

If you don't have a valid customer login you can create a new account at
https://support.bluetechnix.com/software/CreateUser.aspx

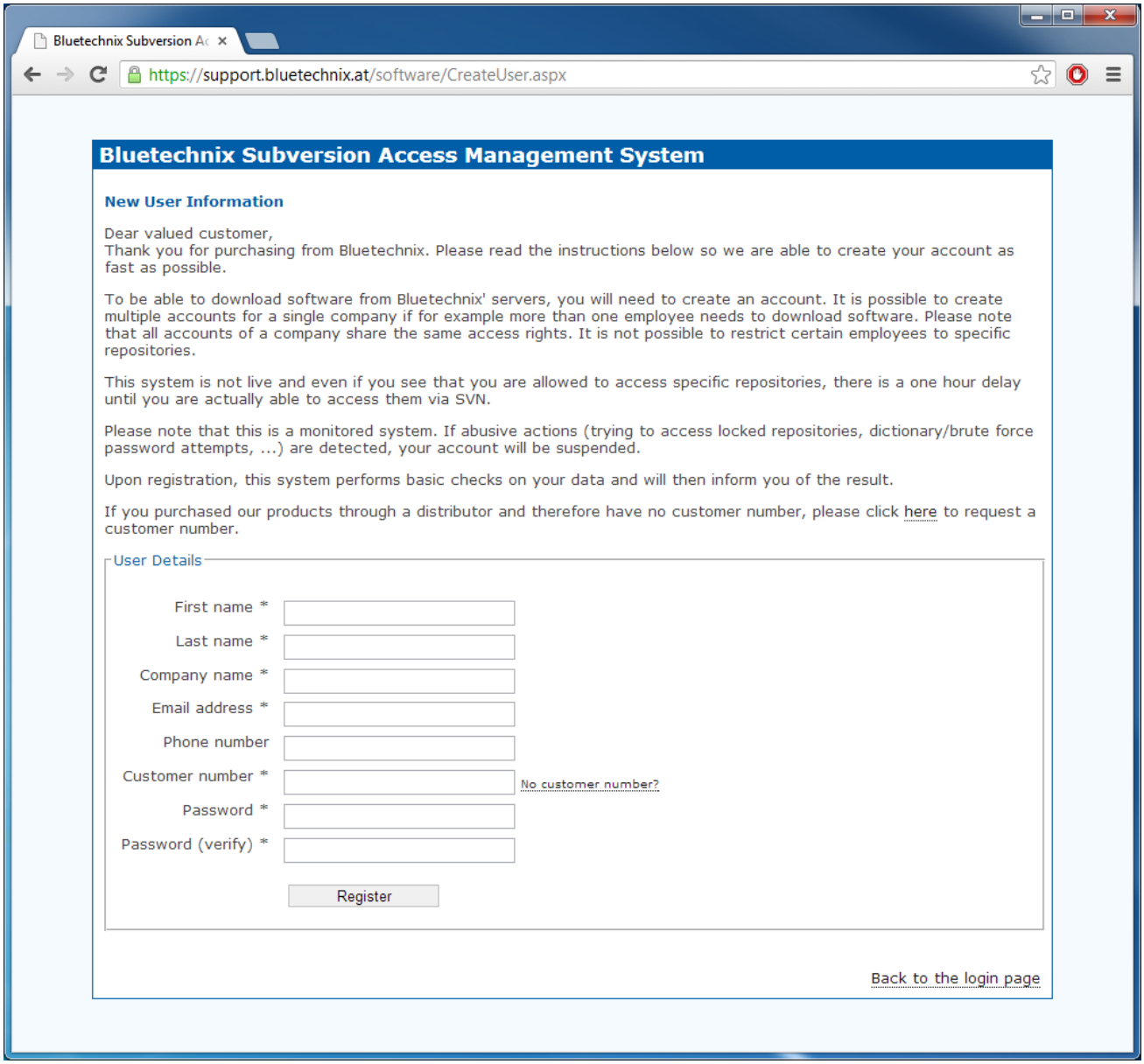

Figure 2-3: Registration form

3 Start using your EPC6xx ToF Evaluation Kit with 'BIt ToF Suite'

3.1 Check designated COM Port

Open the Windows Device Manager by pressing the *Windows-Button* + *Pause-Button* and choose *Device Manager* shown in following figure.

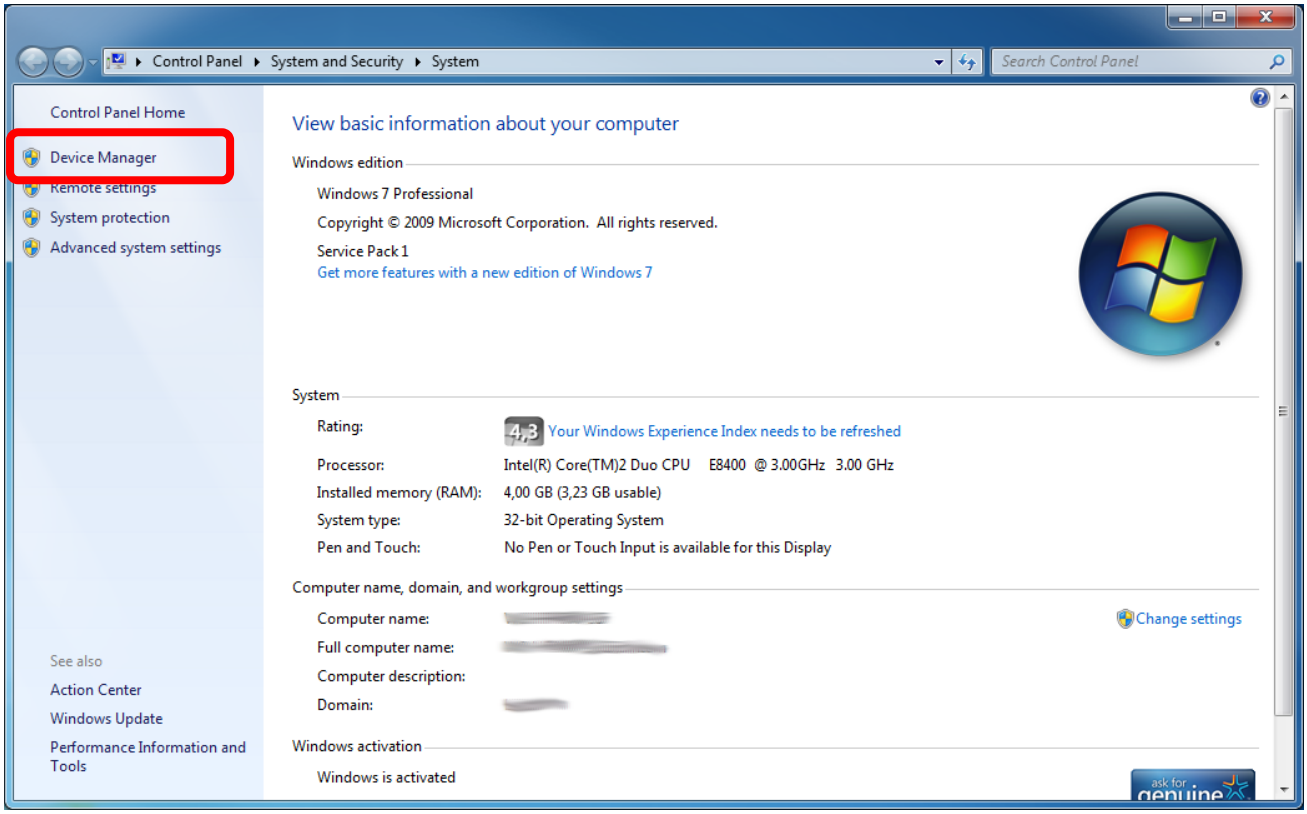

Figure 3-1: Windows System

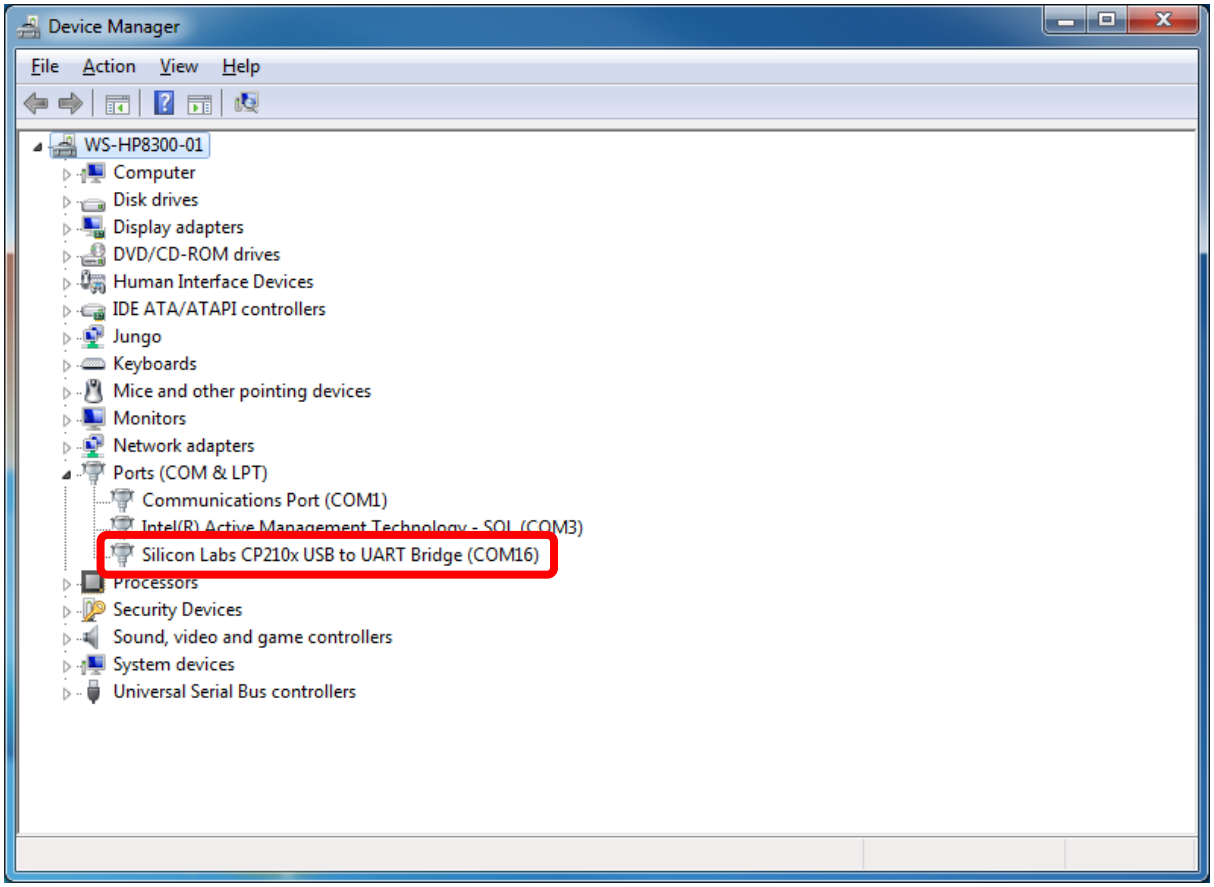

Figure 3-2 Windows Device Manager

In this example, the designated COM Port for the EPC6xx Development board is COM16.

3.2 Starting Visualizer software

Browse to the directory where you previously saved the Visualizer software zip file. Unzip the software. Two windows pop up. In the first window, establish the connection first:

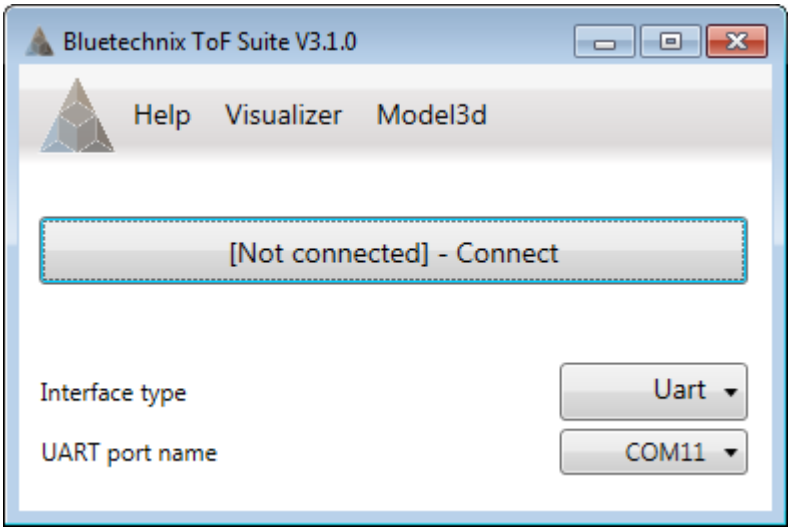

Figure 3-3 BLT ToF Suite connection window

- Be sure to use the designated COM port
- Press ‘Connect’

In the second window, Bluetechnix ToF Visualizer, the software displays the depth image and the amplitude image of the EPC6xx ToF Evaluation Kit.

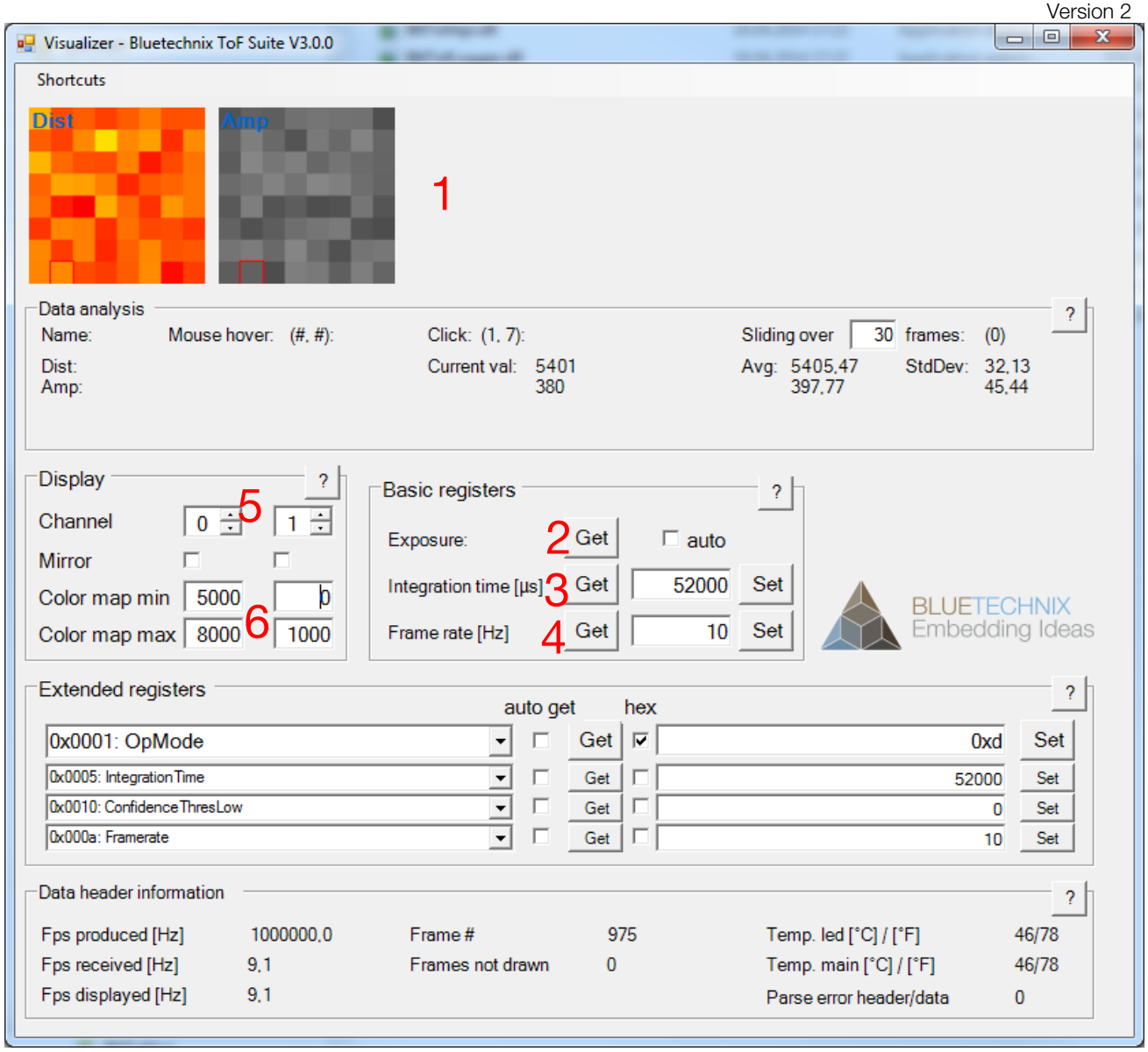

Figure 3-4: BLT ToF Suite Visualizer window

1: Sensor data is visualized in 2D. You can change the channel displayed (see 5). Distance data is visualized in a red-green-blue scale. Amplitude data is visualized in a monochrome scale. You can adjust the scale (see 6).

2: By clicking 'Get' you can read out 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.

3: 'Get' reads and 'Set' writes the integration time from/to the sensor device. 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)

4: 'Get' reads and 'Set' writes the target frame rate from/to the sensor device. Depending on the integration time, filter configuration or other influences the actual frame rate may not reach the desired value.

5: You can choose which channels are being displayed in the above picture boxes. The sensor sends a data stream consisting of up to four channels. The default configuration is ‘DistAmp’ 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 writing register ‘ImageDataFormat’ (please consult the Sentis-ToF-M100 Software User Manual)

6: 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.

With the Bluetechnix ToF Model3d you can visualize your ToF data in a 3d window

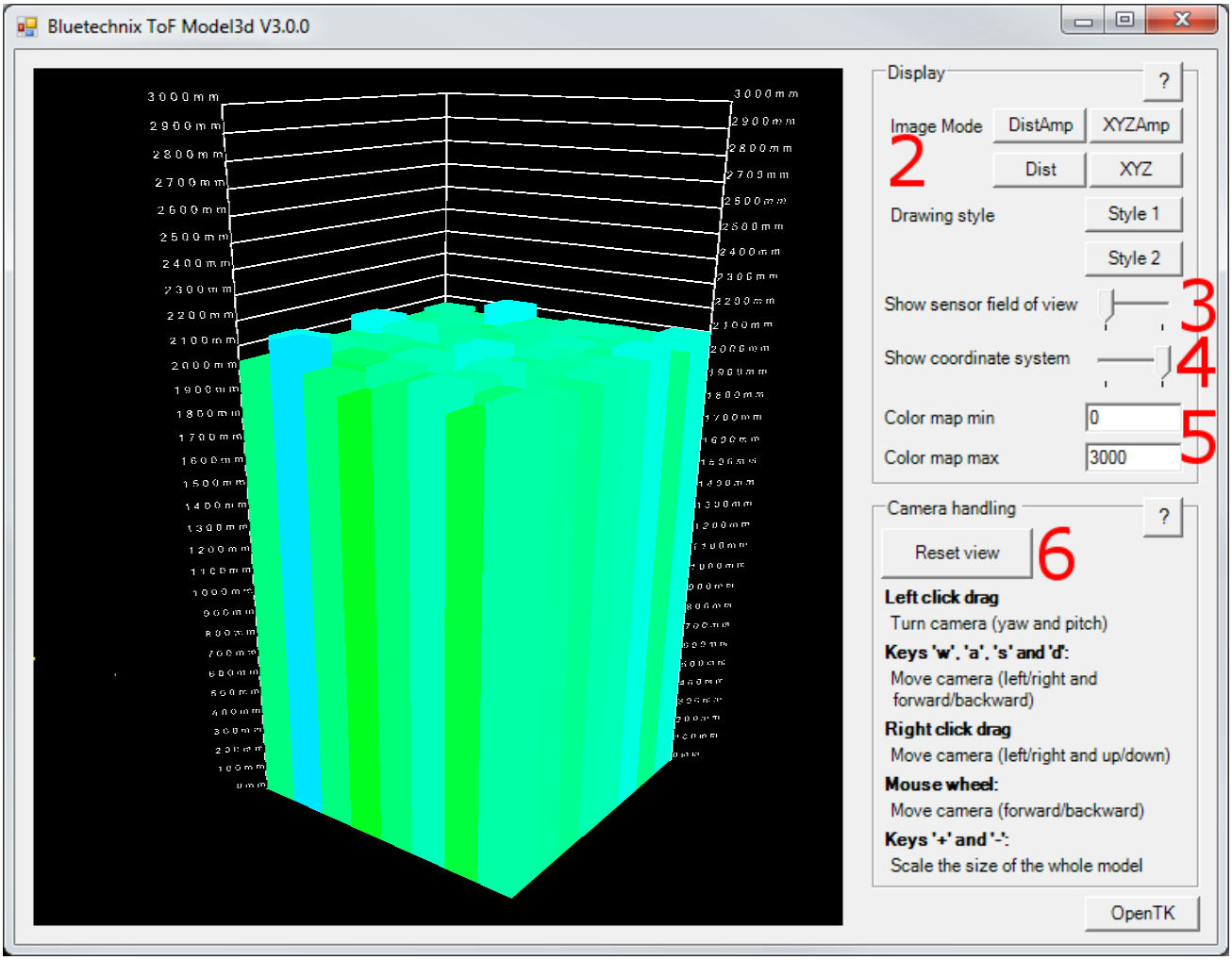

Figure 3-5 BLT ToF Suite Model3d window

1: The data from the sensor is displayed as a point cloud. Please note that all interactions manipulate your point of view (denoted by ‘camera’) and do not in any way turn or move the point cloud. Use ‘w’, ‘a’, ‘s’ and ‘d’ in order to move the camera (yourself) sideways and forward and backward like in a first-person video game. Click somewhere (doesn’t matter where) in the frame 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).

2: These four buttons are shortcuts for the 'ImageDataFormat' register on the sensor. These four image modes can be set by a single click. 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.

3: 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.

4: Activating this switch shows three white lines representing the coordinate system, which is described in the Sentis-ToF-M100 Software User Manual.

5: 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.

6: If you lose track of your point cloud, feel free to safely push this button. It will take you home.

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

4 System Requirements & Support

An EPC6xx ToF enabled application is required in order to use this EPC6xx device.

Connect to a system with:

- Operating System: Microsoft Windows 7 / 8 (64Bit)
- Dual-core 2 GHz or faster CPU
- USB port
- 2GByte RAM

4.1 Bluetechnix ToF Suite

BLT ToF Suite is a .NET application and needs the **.NET framework 4.5** which is available from Microsoft for all current Windows versions.

4.2 Support

For answers to common questions, troubleshooting steps and further documentation visit our Bluetechnix support website or using the direct link: **https://support.bluetechnix.at/wiki/TinyToF**

5 Product History

5.1 Version Information

5.1.1 EPC6xx ToF Evaluation Kit

Version	Release date	Firmware Version
X-Grade	May 2014	V1.0.0

Table 5.1: Overview EPC6xx ToF Evaluation Kit product changes

Additional information can be found at http://support.bluetechnix.com

5.2 Anomalies

Version	Date	Description
0.0.0		No anomalies reported yet.

Table 5.2: Product anomalies

Additional information can be found at http://support.bluetechnix.com

5.3 Document Revision History

Version	Date	Document Revision
1	20140422	First draft
2	20140722	DI'P switch default position added

Table 5.3: Revision history

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