TachyUsb

A Customised App for Archaeological Field Work

User's manual

App Version 0.97, Dec. 2014

http://www.tachyusb.de

help@tachyusb.de
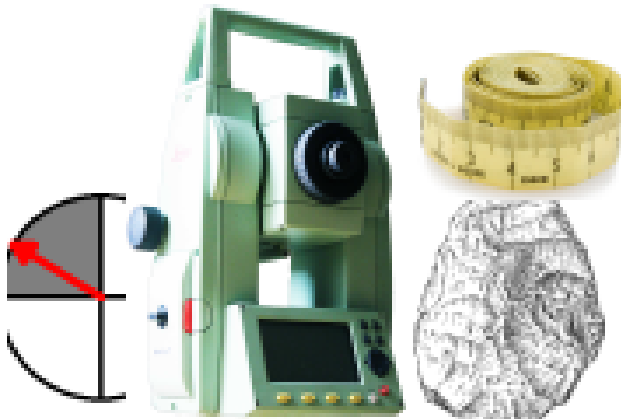
+ click here for access to Google play store +

Proofed with Leica total stations:

TCR110C,
TC302/ 303/ 305/ 307,
TCR302/ 303/ 305/ 307,
TC403/ 405/ 407/ 410,
TCR403/ 405/ 407/ 410,
TCR403/ 405/ 407 Power,
TC702/ 703/ 705,
TCR702/ 703/ 705,
TC(R)702/ 703/ 705 Auto

Manual Version: February 11th, 2015
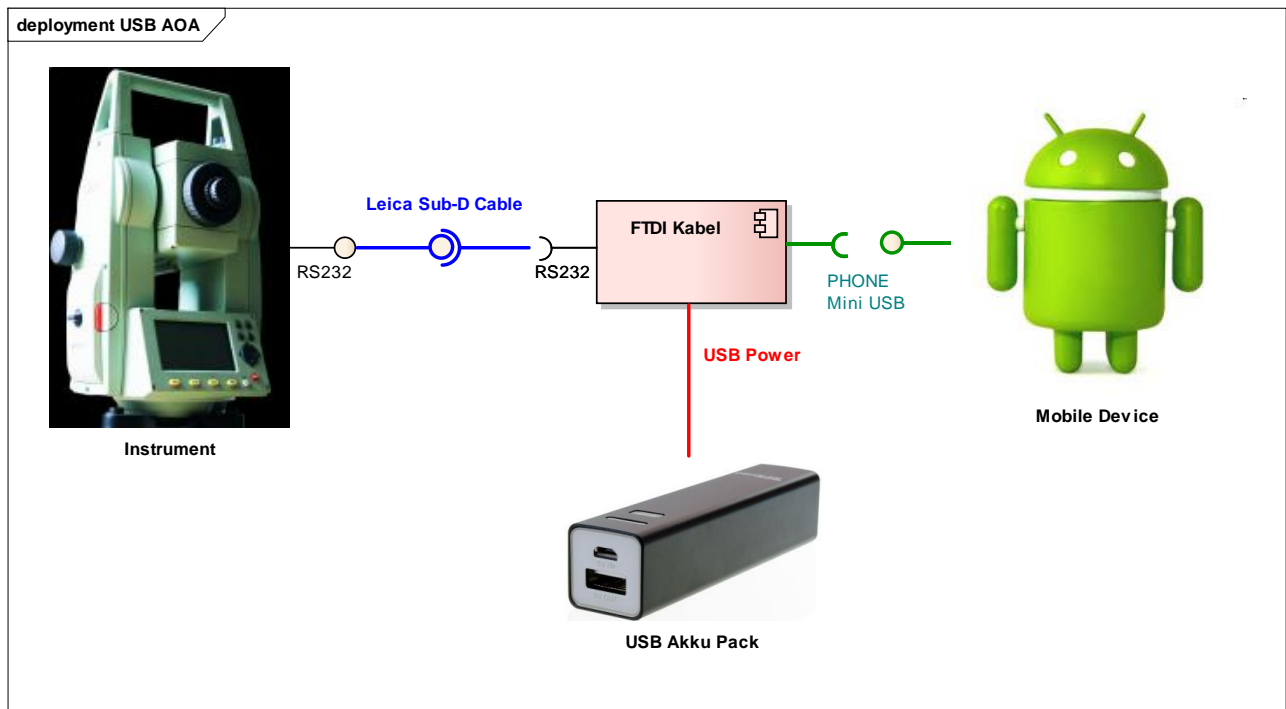
All rights: Thoralf Baum, Leif Steguweit

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1 Hardware connection

Note: All versions < 1.0 of the TachyUsb App work with the Android Open Accessory (AOA) interface **only** (named FTDI-Cable in the sketch below).

This connection needs a **USB AOA RS232** cable.

Currently, there's only one product available, the **Digitus DA-70160 USB2.0 - RS232 cable** utilising a FTDI FT312 chip. This cable needs an external power supply given by the battery pack.

- Connect the **Leica RS232 Cable** (with 9 pin Sub-D jack) with the tachymeter
- Connect the Micro-USB-Jack of the **AOA cable** with your Android device
- Connect the 9 pin Sub-D of the **AOA cable** with the Leica cable

Notes:

1. The Android device takes power from the power pack as well. The **USB battery pack should always be charged** before starting. Please mind a replacement pack…

2. The battery of the Android device should be well charged too.

3. When the micro USB jack is connected to the Android device or the USB power is connected to the cable, the Android device will ask you to start an according application. Select **TachyUsb** then and confirm "**always use this app**".

4. If the serial connection fails, please just unplug the USB power jack (red) from the battery pack and re-plug it.

2 Before You Start

2.1 Installation

TachyUsb is available via Google play store.

https://play.google.com/store/apps/details?id=com.softwood.tachyusb

Follow the instruction rules on your device.

2.2 Start TachyUsb

The app can be started as usual in Android via the launcher.

Another way to start the app is just to connect the USB AOA cable to the Android device or to (re-)connect the red USB power jack of the cable.

After selection of TachyUsb as default for the USB AOA connection, the app launches automatically.

When the cable is linked to the Android device and the battery pack (red jack), TachyUsb immediately starts initializing the serial connection.

PLEASE NOTE: The serial communication is proofed **only for Leica total stations** yet (see front page).

2.3 Demo / Simulation Mode (without Leica total station only)

- Start screen appears when TachyUsb is launched from app launcher, waiting for USB connection or selection of menu => "Start Simulation"
- If TachyUsb is launched by connecting USB serial adapter, this screen automatically appears and switches to next screen.

PLEASE NOTE:

This display has been created for diagnostic support. To report a bug in device communication, copy all content from here to e-mail.

- In case of USB-Connection, the green text box will contain "AOA" instead of "SIM"
- Device connection established
- Input new Job-name (identification string) and short description OR select from history
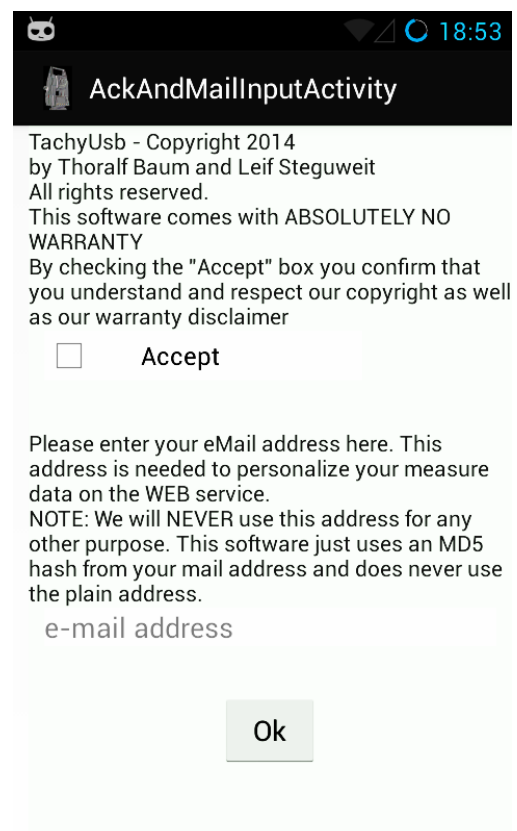
2.4 First Time Input

To use this software, you have to accept our copyright and warranty disclaimer.

Secondly, the app needs a valid e-mail address to personalize your uploaded data on the server.

When you start the app for the first time, you will be asked for both. Only of both inputs are done correctly, the app will start working.

Note: Your e-mail address is stored only within your local settings. The data upload and the server software use only a hash of the mail address (MD5), it is never seen in plain text.
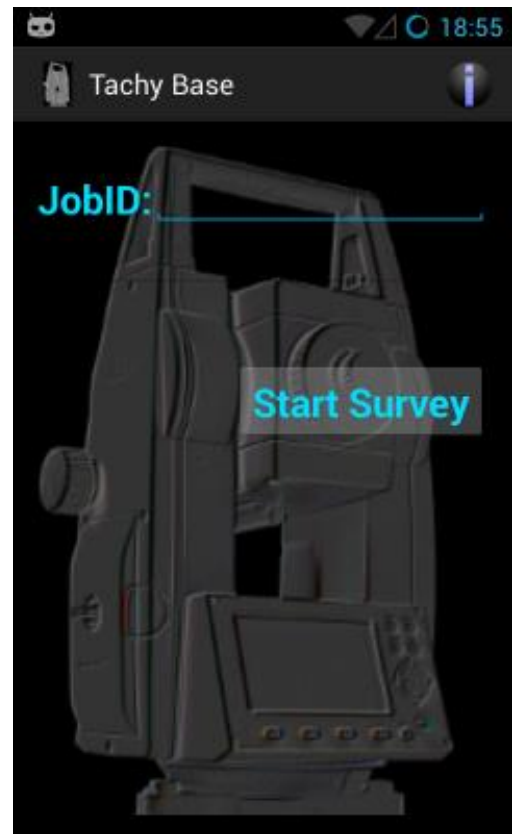
3 Getting Started with Leica total station

3.1 Create a Job ID

A job is used in the same way as in the total stations.

After filling in the Job name

→ Press "Start Survey"

Note: There's an edit field below the JobID field. Here you can enter a short description.
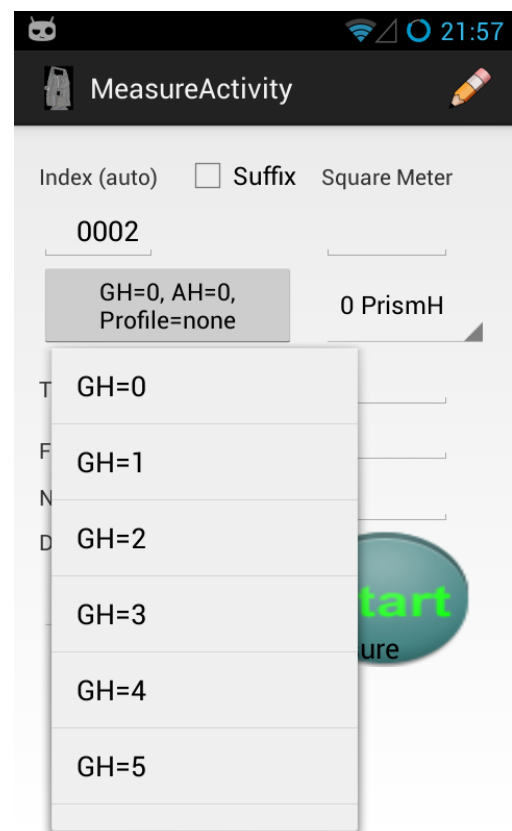
3.2 Select GH/ AH/ Profile

Use the consecutive dropdown menu:

→ Select a Geological Horizon (GH)

→ Select an Archaeological Horizon (AH)

→ Select the Profile
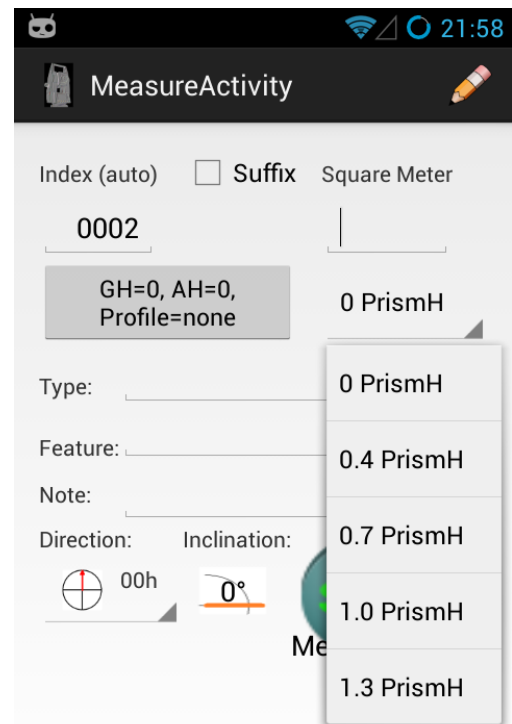
3.3 Working with Prisms

If you use the prism for indirect measuring, TachyUsb calculates the difference in height.

Standard heights of the prism are:

> +/- 0 m (direct shot, without prism)
>
> + 0.40 m
>
> + 0.70 m
>
> + 1.00 m
>
> + 1.30 m

Note: TachyUsb automatically subtracts the height you choose in the dropdown menu. This value should be entered in meters.
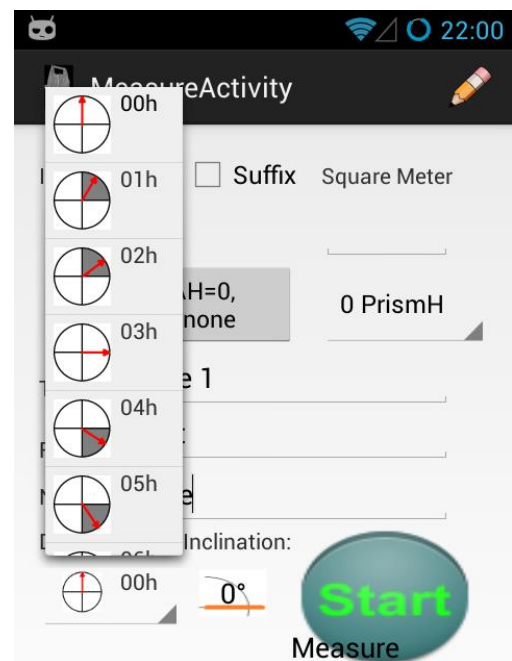
(Feet are not supported!)

3.4 Select Direction

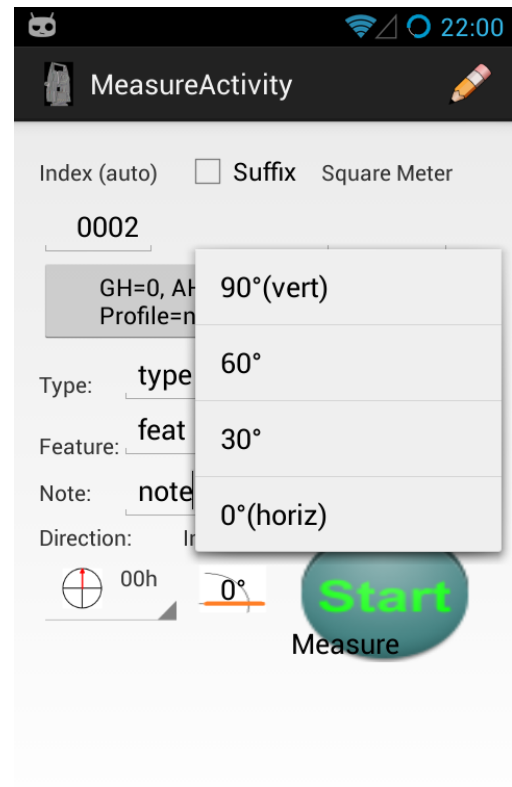Describe oblong objects with their main axis

(e.g. to detect their alignment in the sediment due to geological debris flow).

3.5 Select Inclination

Describe the inclination of objects with their main axis.

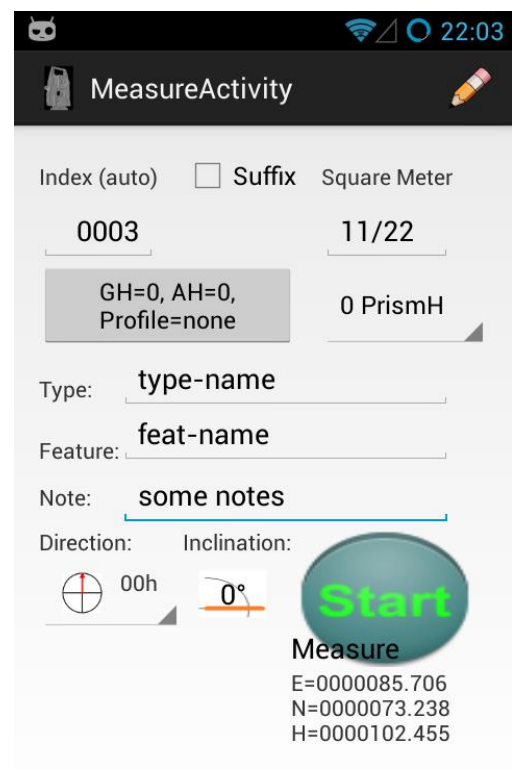(e.g. to detect their erection in the sediment due to geological debris flow).

3.6 Brief Description

Three fields provide for a brief description of the measuring point or the object.

Type: *e.g. find category*

Feature: *e.g. special tool type*

Note: *other observations*

4 Launch Measuring

Launch the **Start Button** for the current index and import E-N-H (East – North – Hight) data from your total station.

(Your android device triggers the total station.)

4.1 Edit Data

Edit previously measured points ("Prev")

or set „invalidate MP" to mark a point as invalid.
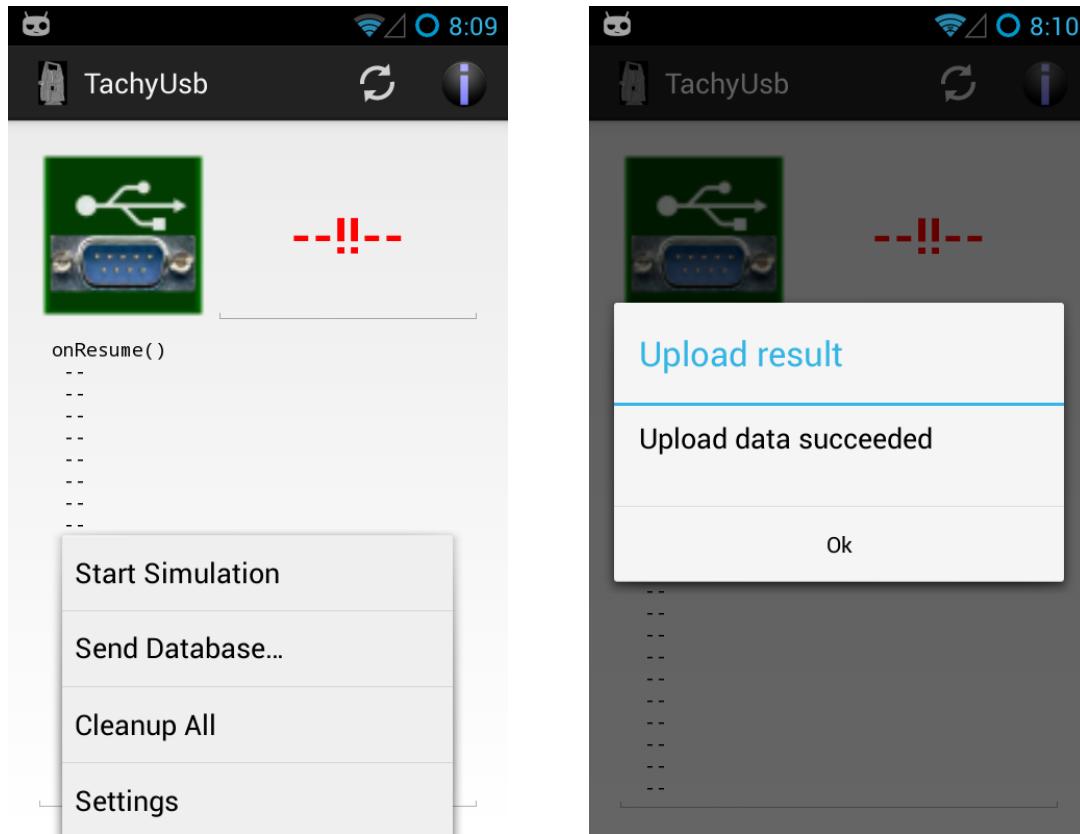
- edit fields
- "Save"
- "Leave Edit Mode"

5 Send Database to Server

Go back to main menu (Android´s rebound button)

→ Push "Setting button" in menu

→ "Send Database"

6 Exit

After the information about the **successful upload** push the Ok button.

You can exit the app by pushing the **home button**.

With the next TachyUsb session you can either continue

- the same job by filling in the same job name (see Job ID, step 3.1)
- or start a new job.

7 Web Frontend & Data Transfer

7.1 View the Data in WEB Browser (online)

→ Visit the website http://www.tachyusb.de/index_data.php

→ Fill in your **E-mail address** for **login** to your personal web space.

→ Click the link **View Data** to screen your jobs, **open a job** by second click to display the data sheet in HTML.

→ Data transfer is possible with **Copy & Paste**, for instance to a Microsoft Excel list.

(An *.xml export of data is in progress. The XML data can later be imported directly or via an XSLT file to your favourite edit software).
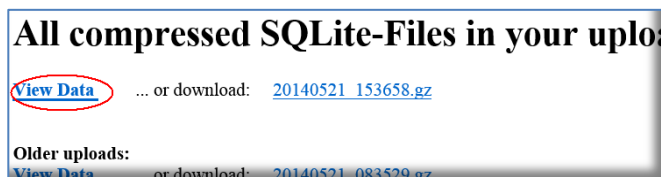
7.2 Download Of the Entire Database

PLEASE NOTE: The following description is for **advanced users only**.
It´s not required for processing your field job data.

You can download the database to your PC by clicking the *.gz-file in the right column of the file list. The file name has the format **YYYYMMDD_HHmmSS.gz** (**Y**ear, **M**onth, **D**ay, **H**our, **M**inute, **S**econd).
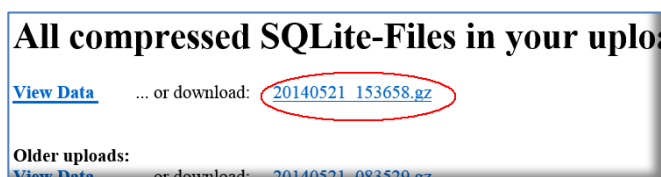
After downloading you may unpack the file with your favourite ZIP tool (7-Zip, WinZip, WinRAR, GNU-Zip etc.). Unpacking the content of the .gz file generates a plain SQLite database file with the same file name as the .gz file (without .gz suffix). It can be opened for instance with the free **SQLite Database Browser** (http://sqlitebrowser.org).

Note that the data table (tachy_data) does not only contain the pure measure data but also control and state data. The data comes in raw format straight from the total station via the serial interface.