

# **BTMPico Data Management Software User Manual**

Version: 1.3

for S/W version 1.16F or higher

2013-04-26

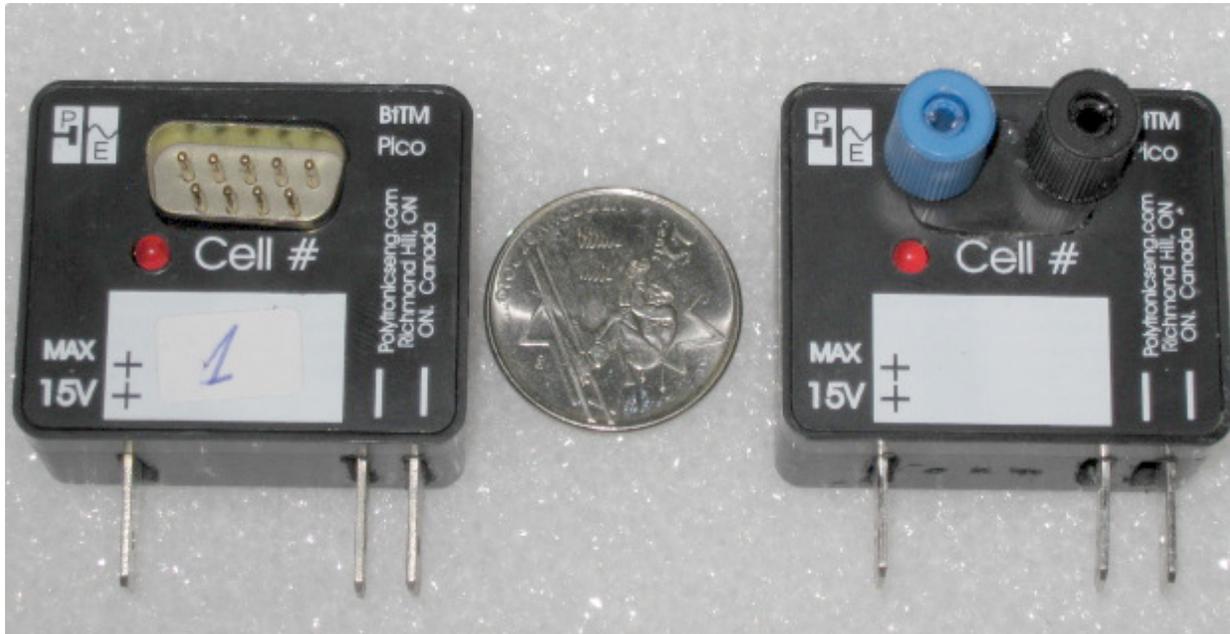
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# 1 Introduction

This document describes the processes involved in data collection from a single or multiple battery monitoring devices, henceforth called “**BTMPicos**” or simply “**Devices**”. There are two types of BTMPico devices:

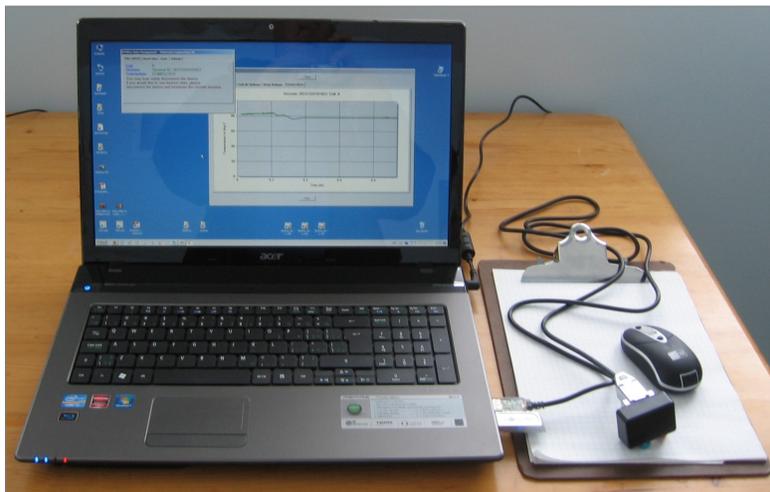
1. Standard one, designed to capture battery profiles over a discharge test
2. Fiber optics device intended for a semi-permanent battery cell monitoring. This device provides an excellent voltage isolation on the fiber optic link to the data collecting PC.



Both types of BTMPico are functionally identical. Therefore, all operations described in this manual apply to both of the types.

As single devices are connected to individual battery cells, data collection may involve a large number of them, sometimes more than a hundred units. Discharge test data is to be collected from all **BTMPicos** involved in a test one at a time, while battery monitoring can be done periodically while a device is connected to a battery cell in use. The process of uploading the test data from one **BTMPico** will from now on be called “**transaction**”, while all **transactions** related to a battery test will be called “**session**”. Data from all **BTMPicos** will be uploaded to a **PC** where it will be processed and organized into a number of data files suitable for further analysis.

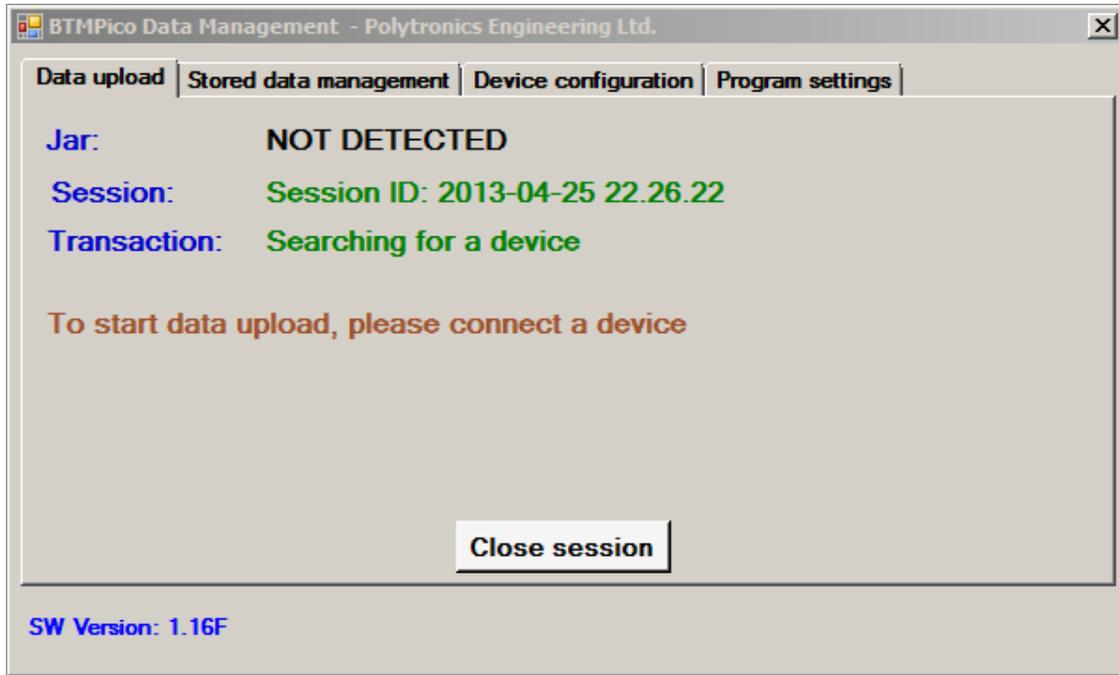
In each **transaction** a **PC** and a **BTMPico** will be connected with an RS232 serial cable equipped with a USB to serial adapter:



In case of a fiber optic device the RS232 cable is connected to an RS232/fiber optic converter. The RS232/fiber optic converter is then connected with a device using two fiber optic cables. Data Management Software must be install on a Windows PC to provide data collection capability.

## 2 Summary

When started, **BTMPico** Data Management Software will produce a single user interface form as shown below:



This form is divided into four tabs:

1. Data upload
2. Stored data management
3. Device configuration
4. Program settings

**Data upload tab**, opening by default on start-up, provides all the facilities to perform data upload from devices to the user's PC as well as some basic tools to view the currently uploaded data in a graph form.

**Stored data management** tab contains software controls to view historic data in both numeric and graph format as well as data export and cleanup facilities.

From the **Device configuration** tab the user can assign a new ID to a device, clear device's data memory, adjust some of the device's internal parameters as well as perform more comprehensive device configuration changes under the guidance of Polytronics Engineering Ltd. technical customer support.

**Program settings tab** includes controls to select and set up data folder, choose temperature units and set graphs to be shown automatically after each upload. In addition the program can be set to clear device's data memory after each upload. This particular setting will persist until the data management software is up and running.



### **3 Installation**

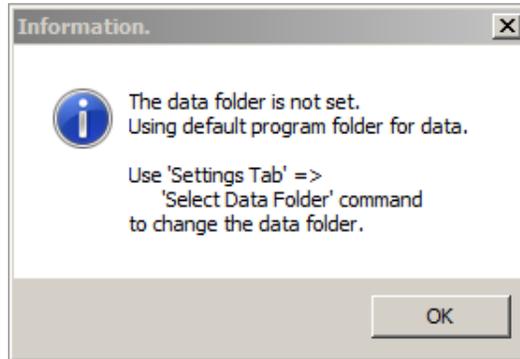
BTMPico Data Management program will function only if the PC it is being installed on is equipped with Dot Net Framework 3.5. The installation process will check for the presence of Dot NET Framework 3.5 and will not complete if the framework is not present. If not installed the Dot NET Framework 3.5 can be downloaded from Microsoft© free of charge.

To install BTMPico Data Management software, download it from <http://www.polytronicseng.com/support/>, execute BTMPicoDataManagement\_x.xxxInstall.exe program and follow on screen instructions. x.xxx represent software version i.e. 1.16F.

## 4 Program settings

After new installation, some setup must be performed to allow trouble free operation of BTMPico Data Management program. The most important one is Data folder. Data folder is the one where all the data and operational logs are being stored. Data folder is intended to be used by the program only. If the user requires manual handling of stored data, he/she should export it to a selected folder, where it can be analyzed freely in, for example, Microsoft Excel.

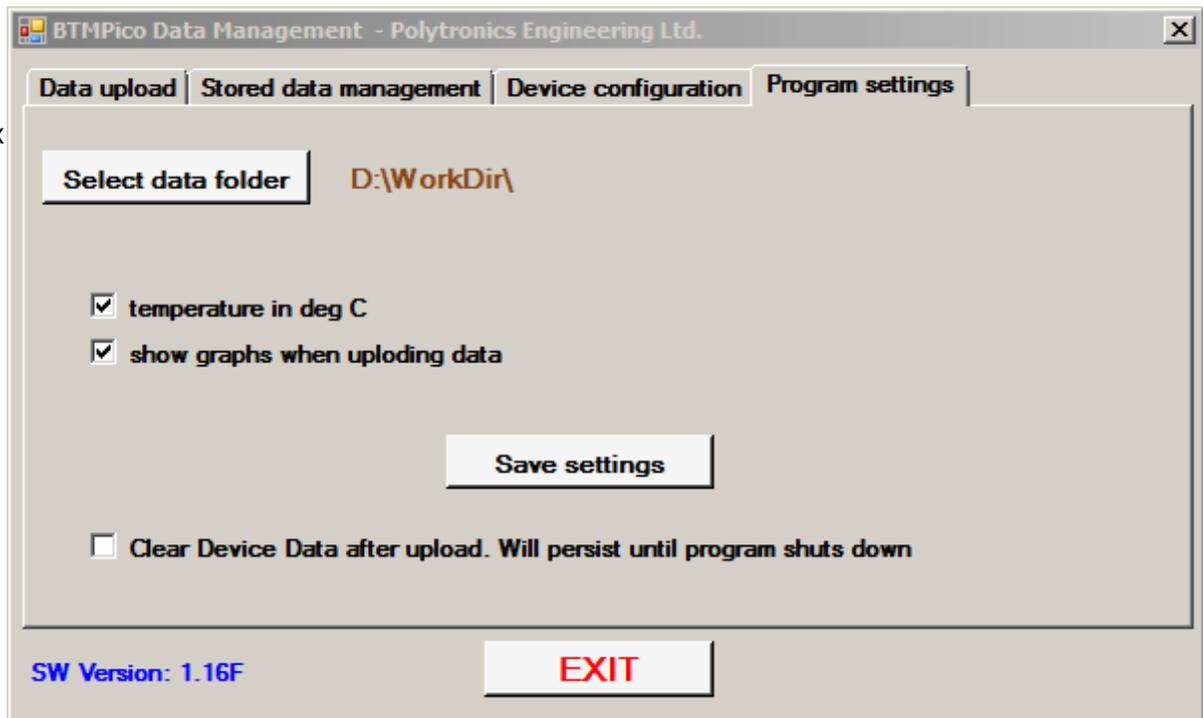
The first time the program starts, when Data folder is not yet set, the following message will appear:

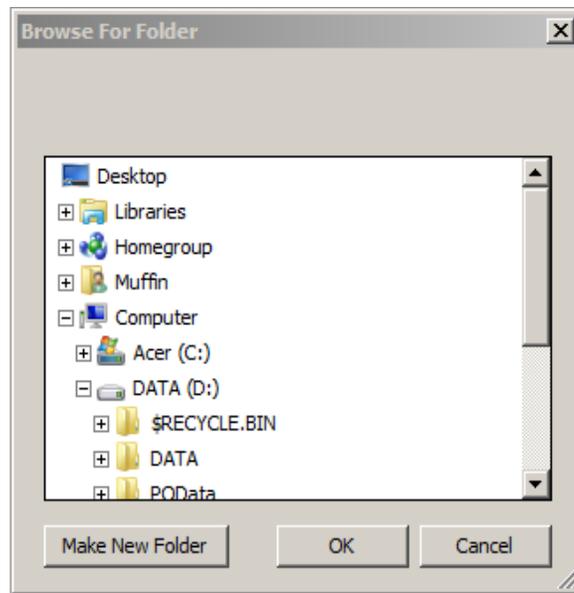


Even though, by default, the data folder is assigned to the data manager's program folder setting it according to the users choice is strongly encouraged to avoid unnecessarily cluttering the program folder with application related data.

To set and save data folder, go to Program settings tab and click Select data folder button.

The following dialog box will appear:





Select folder of your choice, or navigate down to a desired parent folder and click Make New Folder button to create a sub-folder. Click OK and the Browse For Folder dialog box will disappear. If required, set temperature in deg C or show graph when uploading data check boxes to desired states. Press Save setting button to permanently save your settings. The next time you start your program your settings will be remembered.

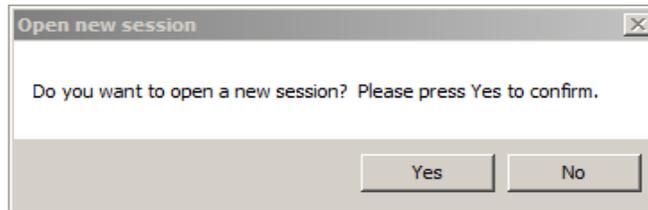
To have device data cleared after upload, tick the Clear Device Data after upload check-box. This particular setting does not require pressing Save settings button to take effect and will persist until the data management software is up and running.

## 5 Upload

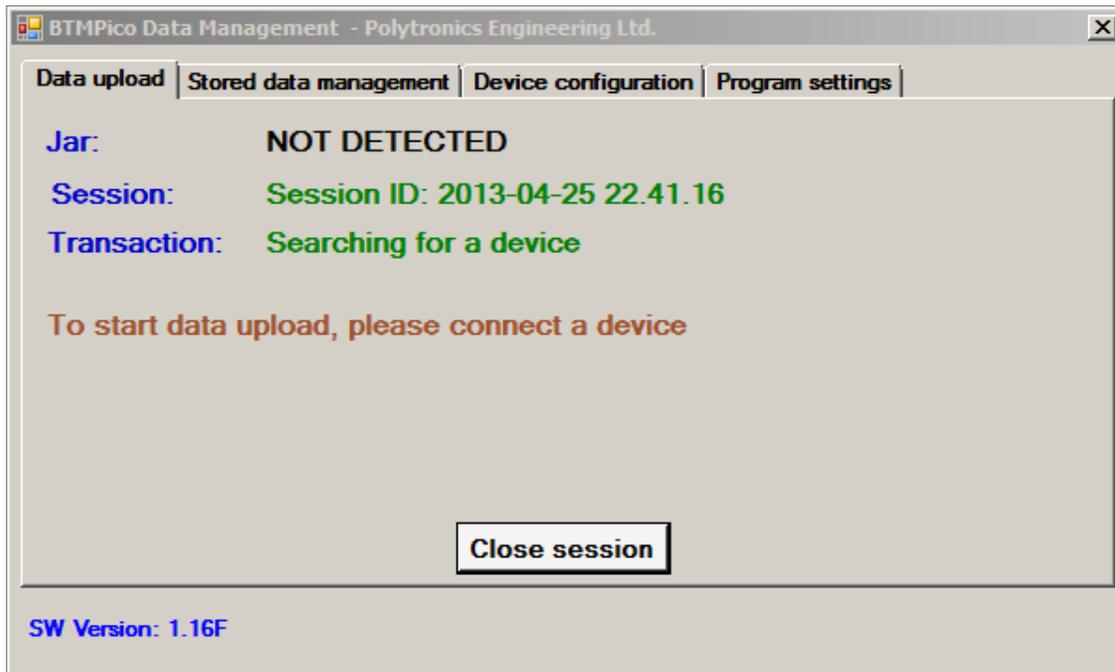
To upload data from devices to the user's PC, the program's user interface form must be in Data upload tab. Data can be uploaded while the program is in the session mode. Users have a choice to start a new session, or to open an existing session which has been closed after presumably partial data upload. While in the session mode, getting to tabs other than Data upload is disabled.

### 5.1 Opening new session

To open a new session, click Open new session button. A decision dialog box will be shown:



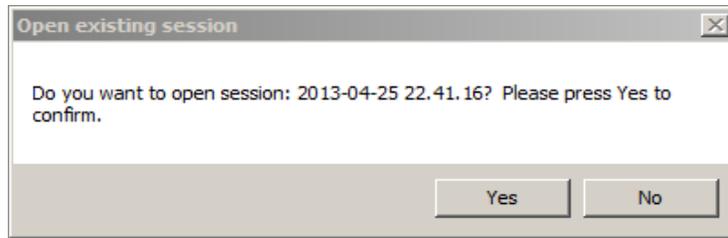
Click Yes. The user interface form will look like the one below:



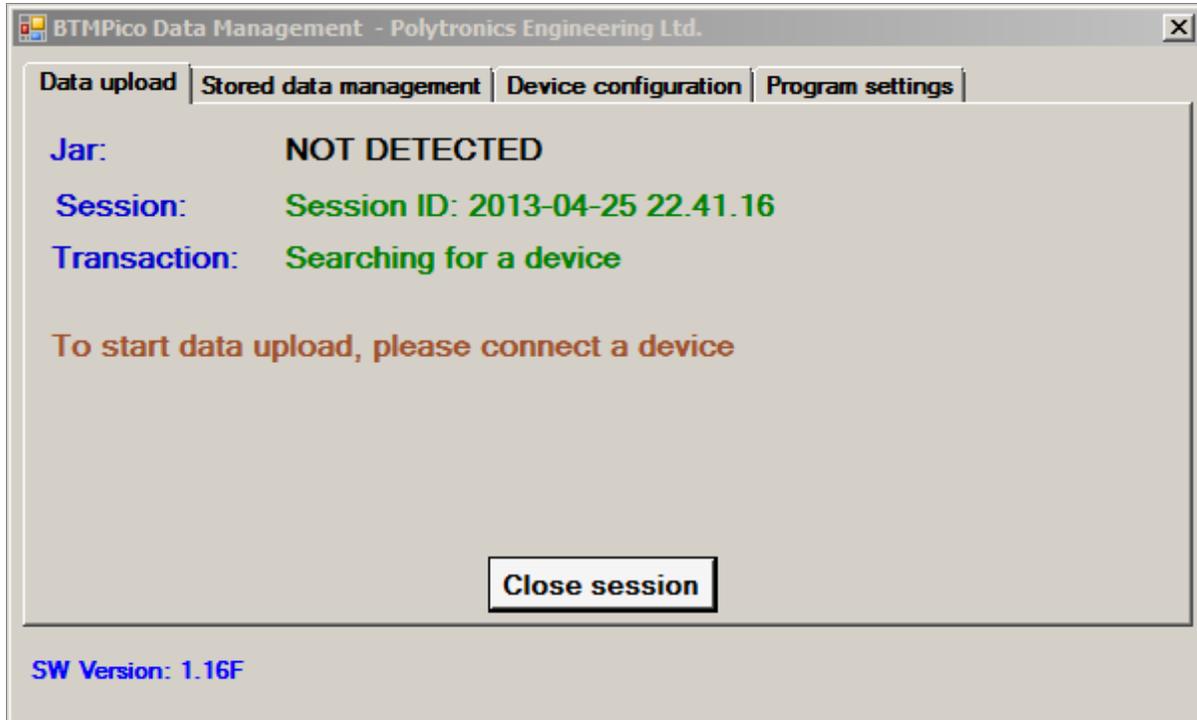
The newly assigned session ID should be shown on the form. It is composed of year, month, day, hour, minute and second at the moment the session was created. the program is ready to start the first data upload.

### 5.2 Opening an existing session

To open an existing, previously created, session, select an existing session ID from a selection text box box right above Open existing session button and then click Open existing session button. You will be asked for confirmation like shown below:

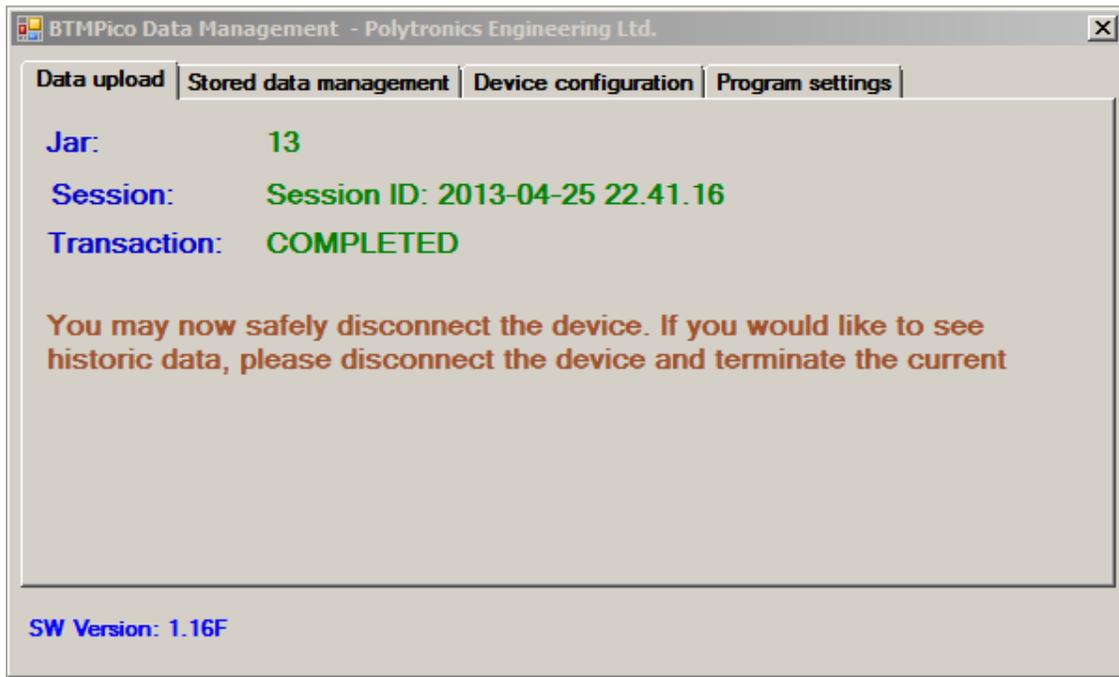


Click Yes. The program should get into a session mode and the user interface form will look like one below:

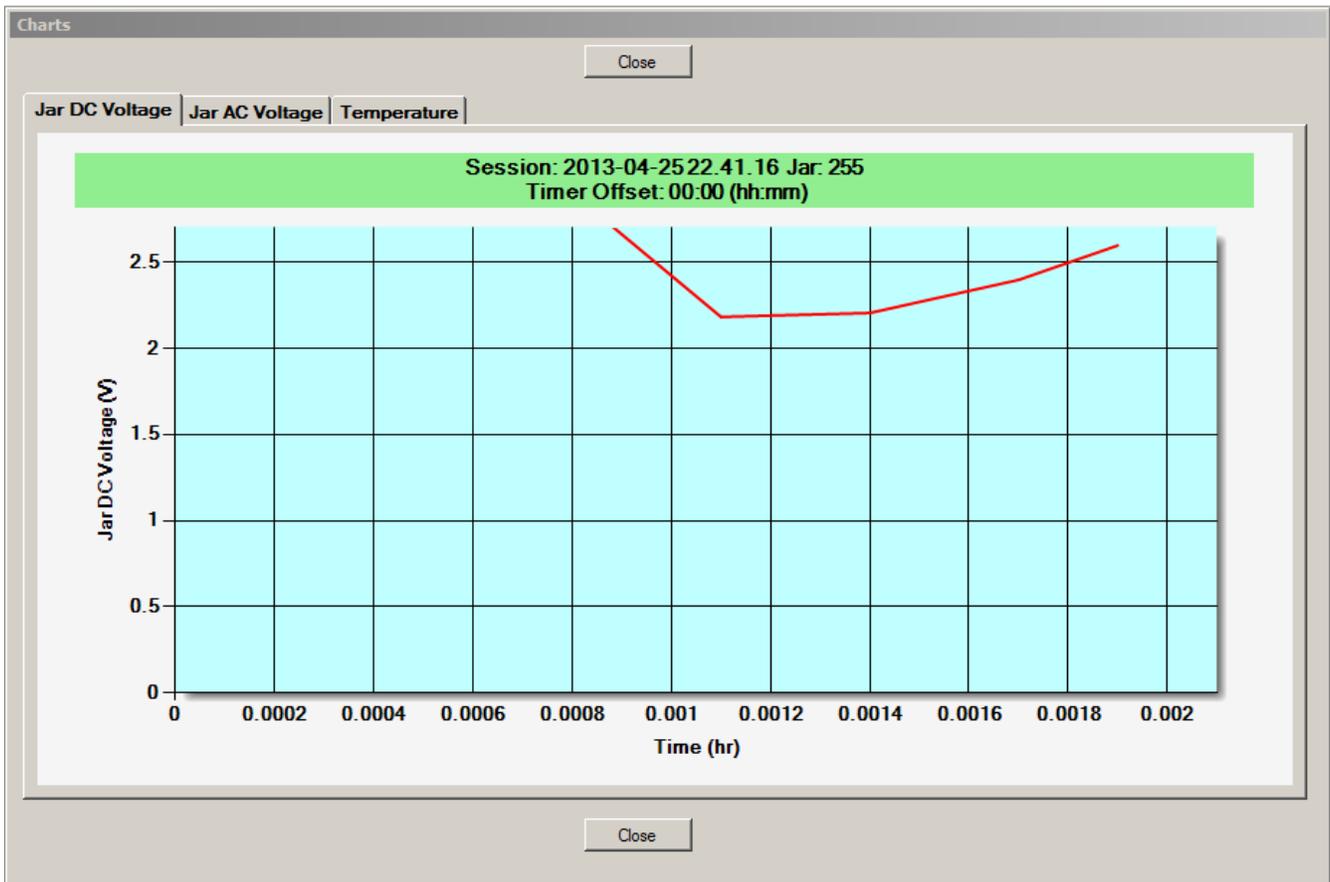


### 5.3 Data upload

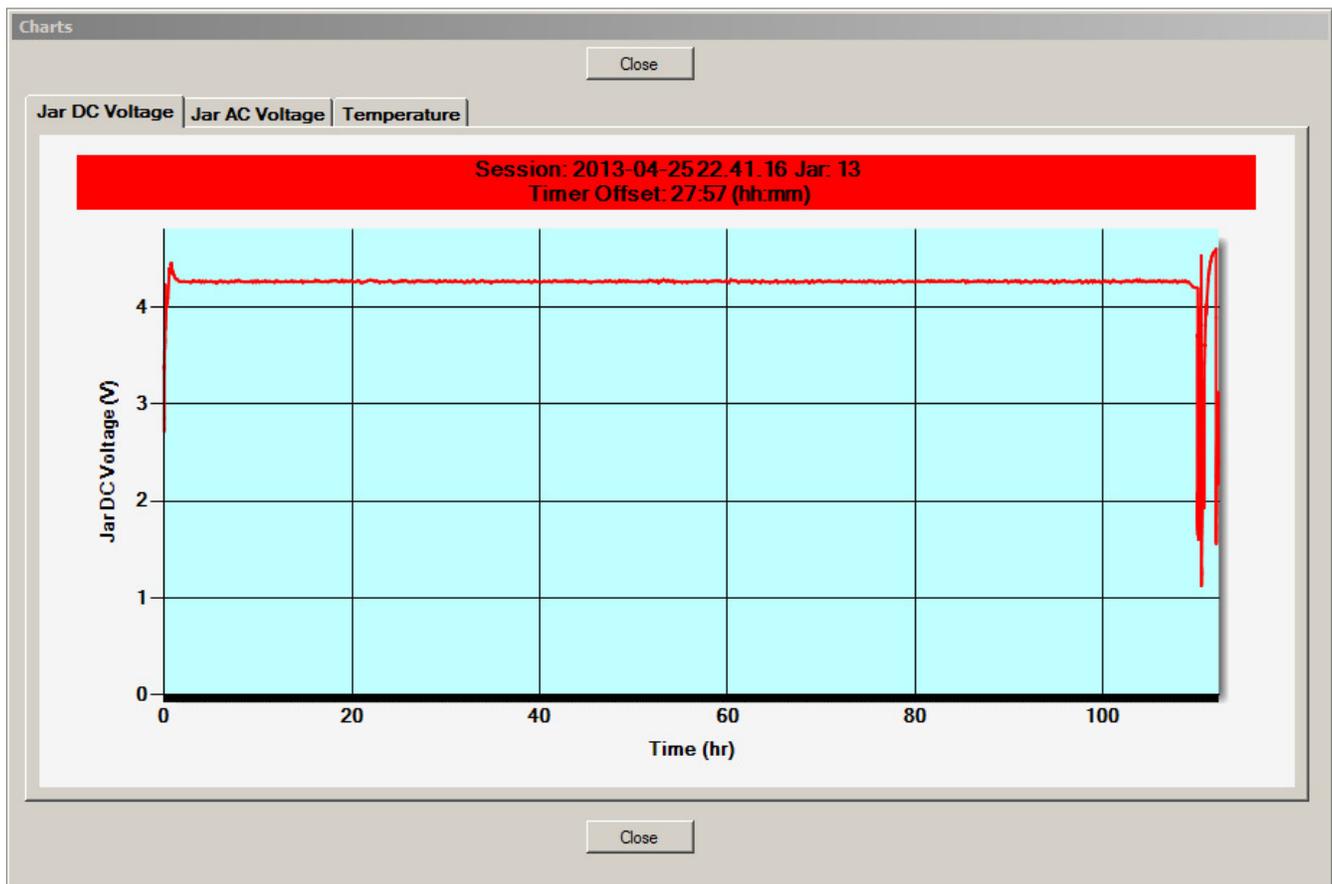
While in the session mode, users can connect a device to the serial cable. The connected device should be automatically detected and the user interface should look like below:



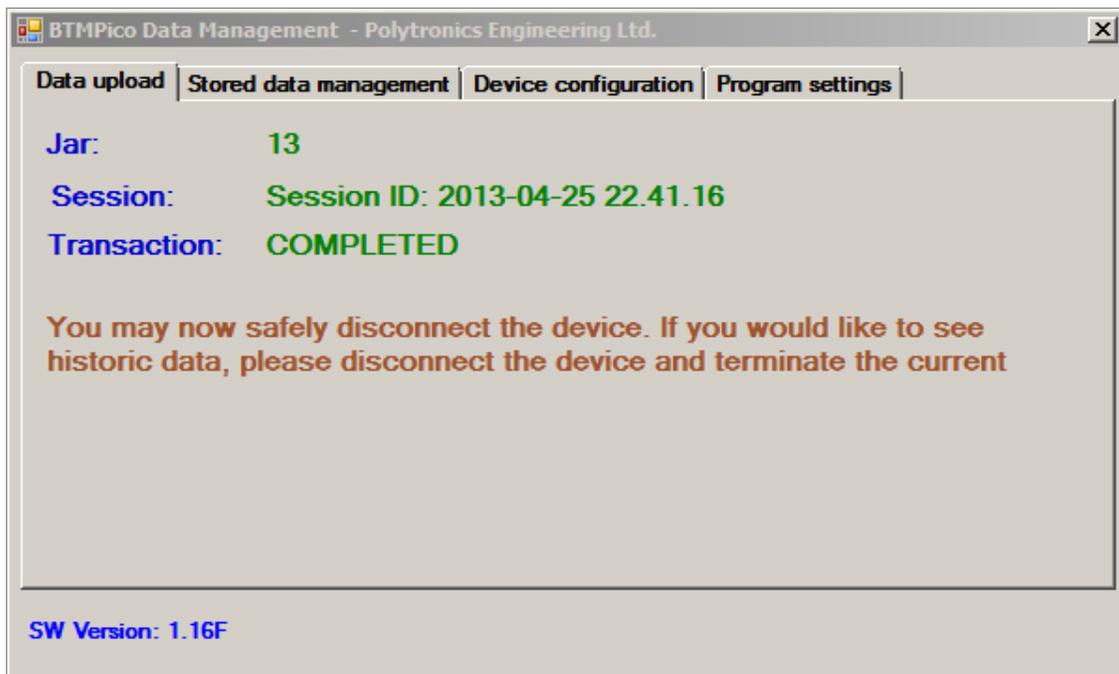
If the program is set to show graph after upload, the uploaded data will be presented on a graph:



In an unlikely event of recorded data exceeding the device's data memory size, part of the earliest measured data is permanently lost. Such an event is flagged by a non zero timer offset value shown in the graph title area. The title background colour indicates the severity of the problem, where green background indicates no data loss, yellow a marginal issue and red a significant loss of data.



At this stage, the program is ready for the next device upload:

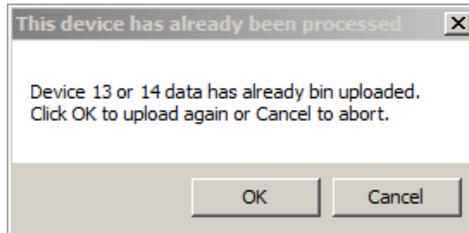


Disconnect the device. If the program is set to automatically erase data memory after upload, the

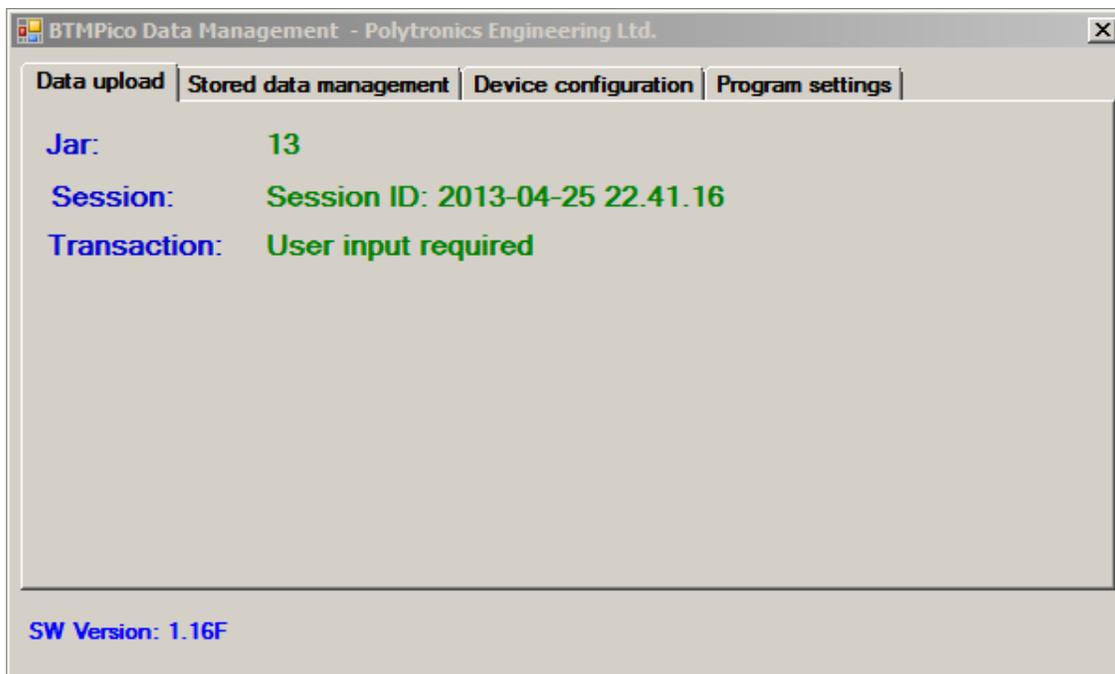
unplugged unit is ready for next data collection. The data that was stored in the device's data memory before upload is now permanently erased and it cannot be recovered from the device. It is however, safely stored in the program's data folder. The program returns to the wait for device mode and the next devices data can be uploaded the same way as described above.

Please note it can take up to 5 seconds for data management software to detect device being disconnected. Therefore ensure you connect next device when you see Jar status NOT DETECTED.

If for any reason the previously uploaded device is connected again, the following warning is shown:

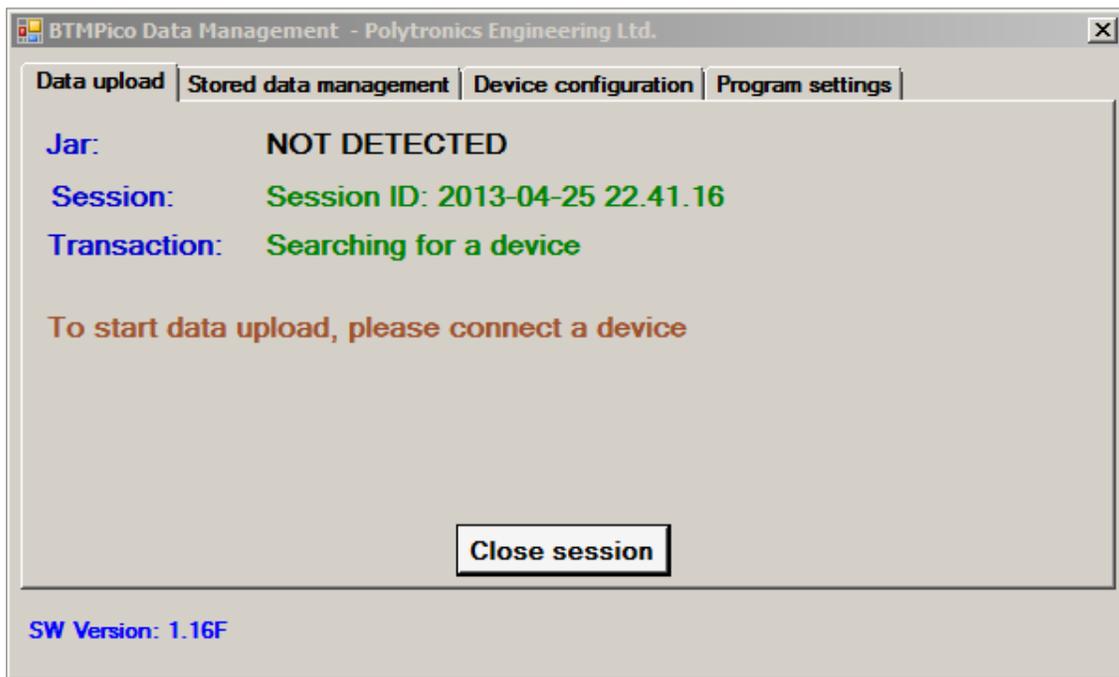


In case the warning dialog box is hidden below the other windows, the user interface indicates that user's input is required:



## 5.4 Closing session

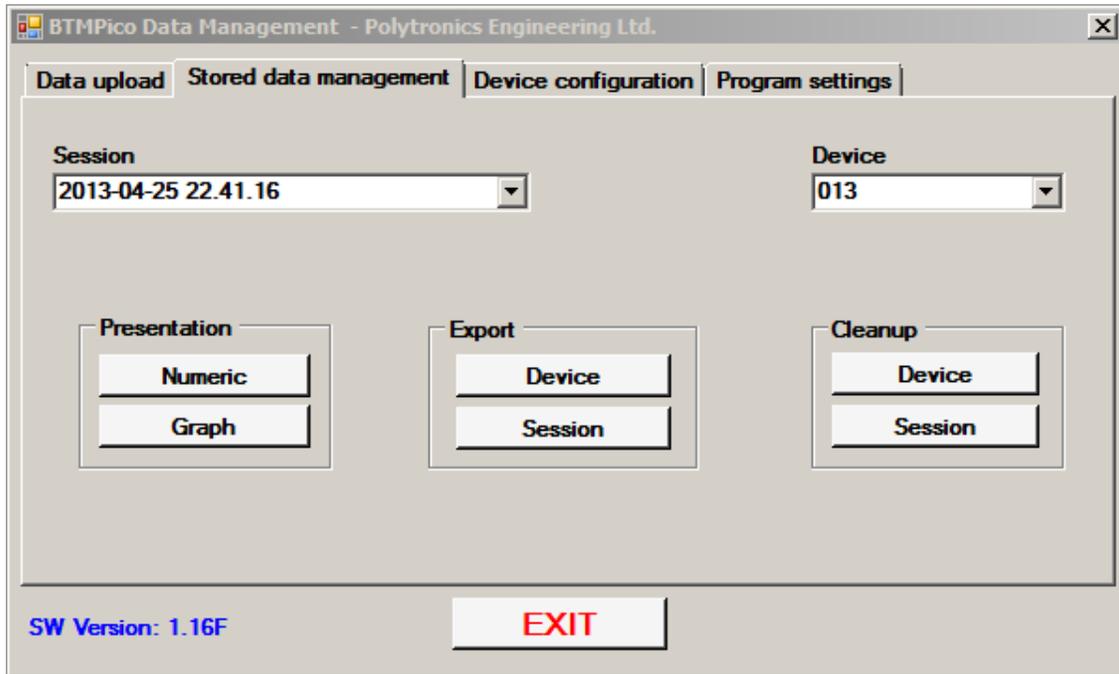
Current session can be closed if data upload is completed or it is intended to be continued at a later time. To do so, disconnect the device. Close session button should appear on the user interface after not more than 5 seconds:



Click Close session button. The user interface form should return to its initial state as shown in chapter 2 Summary on page 5

## 6 Historic data handling

While the program remains in an idle state, i.e., not in session, users can explore and manipulate the historic data collected during previous sessions. To do so, go to Stored data management tab:



To select data source, choose a session and device from drop down selection text boxes located on top of the form.

There are three clusters of two buttons each allowing to view, export and clean up data.

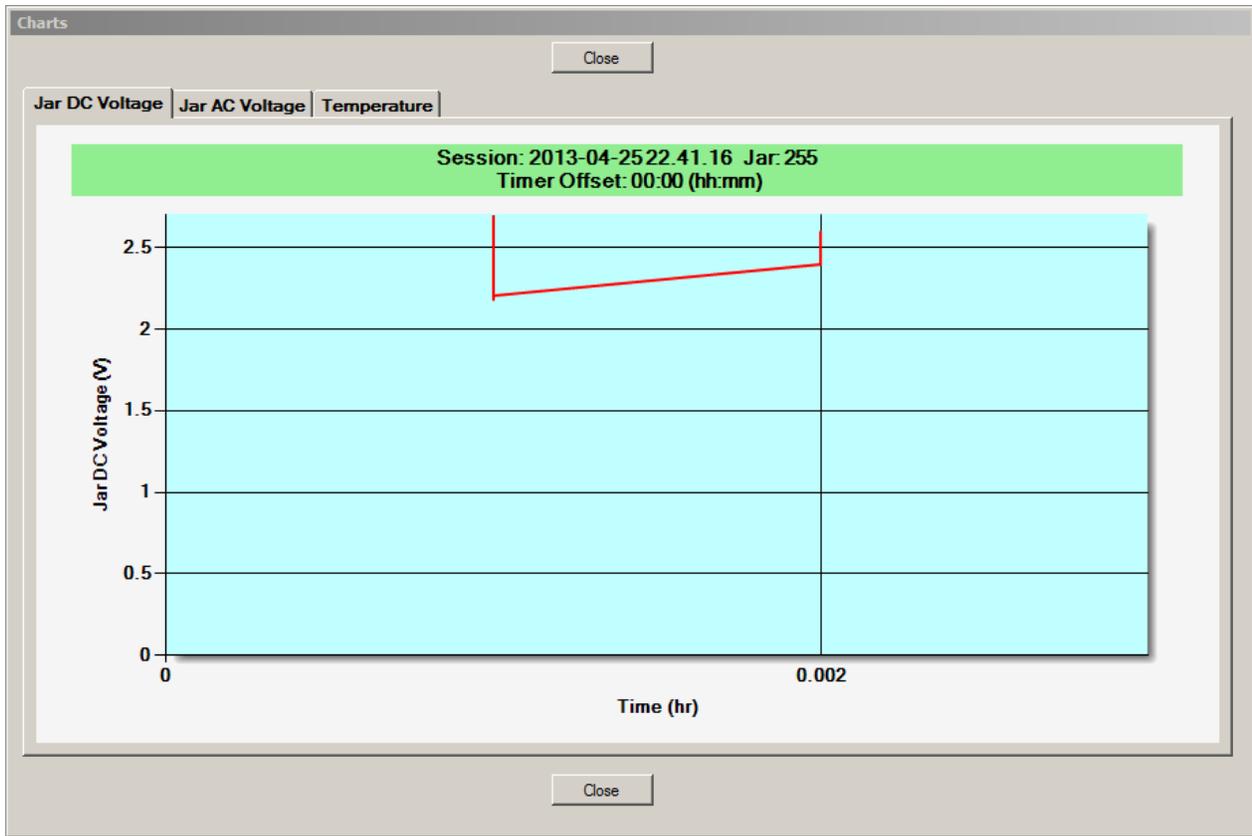
### 6.1 Data presentation

Data can be viewed in a numeric or graphical form. Clicking Numeric button will result in a window popping up presenting previously selected device data in a tabular form:

| Data                         |       |       |          |      |
|------------------------------|-------|-------|----------|------|
| Session: 2013-04-25 22.41.16 |       |       | Jar: 013 |      |
| Time sec                     | AC V  | DC V  | Strap mV | Temp |
| 0                            | 0.002 | 2.715 | 0        | 19   |
| 39                           | 0.002 | 2.746 | 0        | 19   |
| 42                           | 0.314 | 2.852 | 0        | 19   |
| 43                           | 0.009 | 3.387 | 0        | 19   |
| 49                           | 0.012 | 3.403 | 0        | 19   |
| 50                           | 0.04  | 3.362 | 0        | 19   |
| 61                           | 0.007 | 3.36  | 0        | 19   |
| 75                           | 0.05  | 3.377 | 0        | 19   |
| 81                           | 0.009 | 3.469 | 0        | 19   |
| 93                           | 0.009 | 3.491 | 0        | 19   |
| 110                          | 0.007 | 3.512 | 0        | 19   |
| 126                          | 0.004 | 3.552 | 0        | 19   |
| 145                          | 0.012 | 3.561 | 0        | 19   |
| 166                          | 0.007 | 3.592 | 0        | 19   |
| 188                          | 0.004 | 3.612 | 0        | 19   |
| 197                          | 0.012 | 3.556 | 0        | 19   |
| 236                          | 0.007 | 3.568 | 0        | 19   |
| 270                          | 0.007 | 3.602 | 0        | 19   |
| 304                          | 0.043 | 3.625 | 0        | 19   |

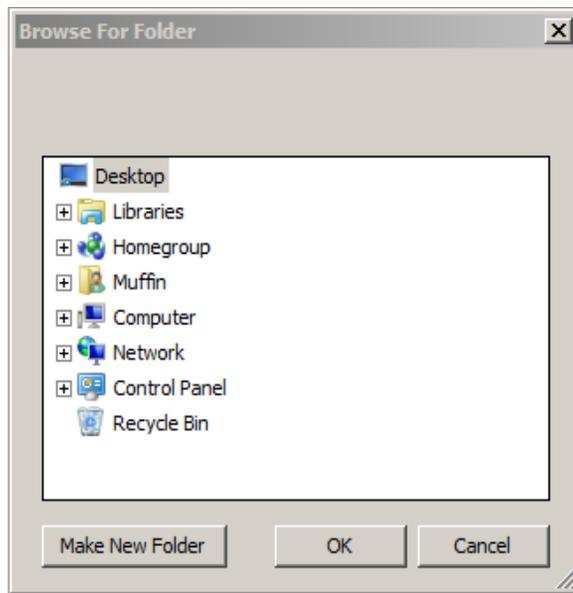
Close

Data can be viewed in a graph form by pressing Graph button:



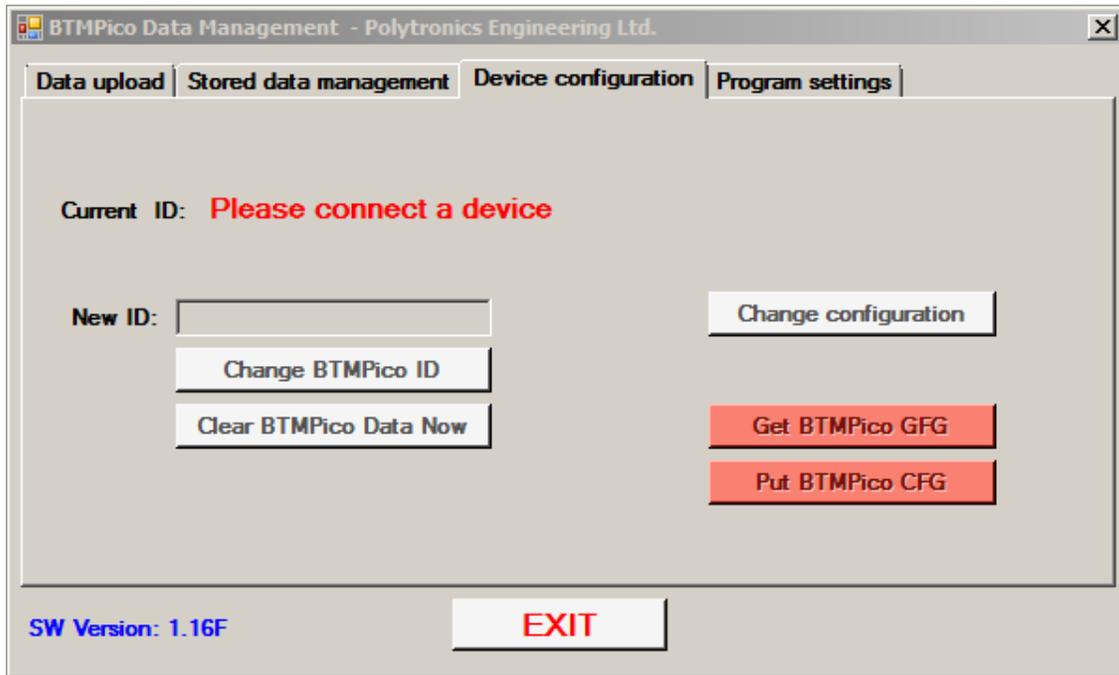
### 6.1.1 Exporting data

Data uploaded from devices is stored in user's PC in form of CSV files. Those files can be opened in majority of spreadsheet programs like Microsoft® Excel®. In order to be able to freely analyze data without a danger of losing it the required data needs to be exported to a location of user's choice. Users can export particular device data or entire session's by pressing Device or Session button respectively in the Export cluster. In either case a dialog form will be shown to allow user to choose where the exported data is to be stored:

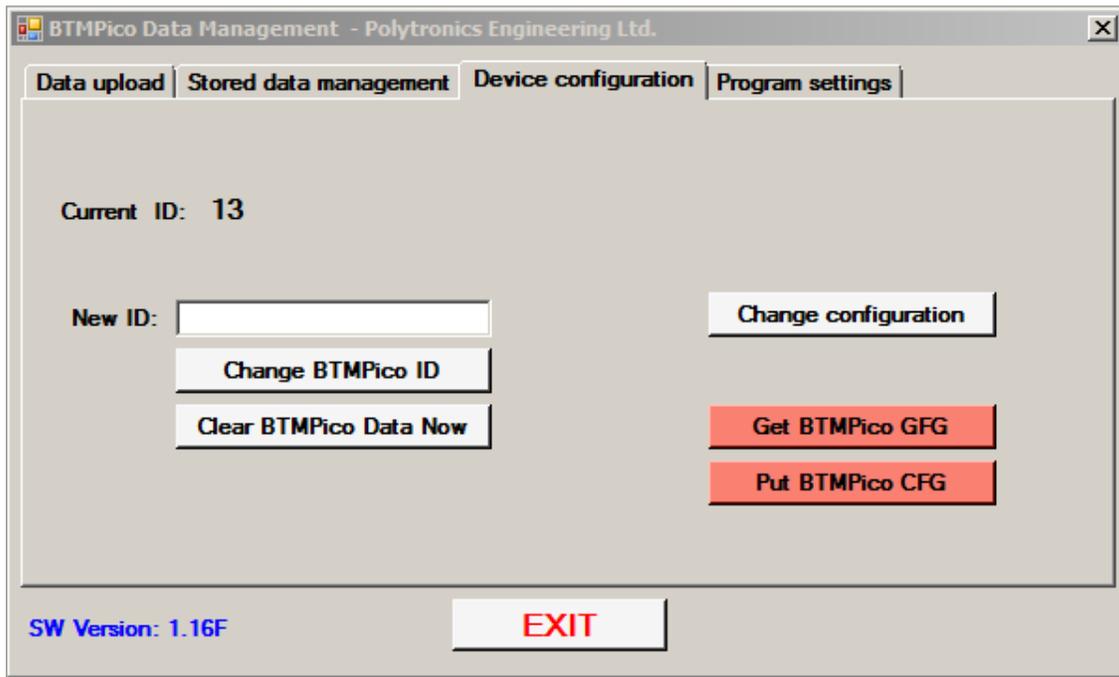


## 7 Device Configuration

Users can Change BTMPico ID, Clear BTMPico Data or change some of of the connected device's parameters. More extensive device reconfiguration is possible, but it must be performed in cooperation with Polytronics Engineering Ltd. Technical Support. Two salmon coloured buttons are provided for that purpose. Please do not attempt to use them without instructions from Technical Support. Using them inappropriately may damage the device's configuration to the point when it can be undone only at Polytronics' Lab facilities.



All device configuration operations require a unit to be connected to complete successfully.



Six connected device parameters can be changed via an entry form that appears after pressing Change configuration button. Users can change parameters shown and after pressing Save button the new parameters will be set internally in the connected device. Press Close form button to close this form.

