	<b>Tube Analyzer</b>	Dok Nr. QS-ID-036
	<b>User Manual</b>	Stand Sept 2010
		Revision 001

# Tube Analyzer

## User Manual

Stand: 06.04.2016



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## 1 General

The Tube Analyzer is developed to handle analog and pwm channels for the F24 and F96 types and only analog channels for the F8 type, sampled with a rate of 100KHz. These data will be saved in a tdms file, according to predefined measurement tubes.

The test run is configured by a measurement CSV file. This file defines the measurement tubes and their corresponding channels.

Furthermore there is a General Config file, which configures the default sample rates, pre- and posttrigger values etc.

Logging is active only INSIDE a tube, where the channels are sampled and the error counters are set according to the configuration.

For each pwm channel, three signals will be generated:

- Duty-cycle
- Period
- Amplitude

These signals are updated after full reception of a completed pwm period.

In order to achieve the synchronization of all channels, two digital trigger inputs will be used for the F24 and F96 types and an analog trigger for the F8 type.

## 2 Functionality

The user interface allows following functionality:

### 2.1 Loading of the measurement configuration

The measurement file consists of a list of tube configurations. One such tube is shown below:

```
3000|1|Light.InteriorLight.Left_Period|EMS.PWM.4.Period.P_Sample=1ms;P_Log=1000ms/  
ON|60000|995|1005|
```

This defines the start time and duration of the tube, the profile name, the tube limits, the signal and, optional, the sample rates. The Tube Analyzer software parses this text and retains the configuration data.

### 2.2 Setting the path and prefix for the measurement file

The measurement file must and will be created on the dedicated Tube Analyzer computer.

### 2.3 Starting the measurement

### 2.4 Aborting the measurement

The user can abort the measurement. Furthermore, the measurement can be so configured that it will abort once a certain number of errors has been detected.

### 2.5 Setting the interface in remote mode

In order to communicate with an external application, the user must first set the software in remote mode. The software communicates with the external application through LabVIEW Shared Variables. These have been specified in the Shared Variable specification for the external application.

### 2.6 Overview of the test results

### 2.7 Overview of the status

### 2.8 Editing the general configuration

The user can edit the error counter configuration, the default sample rates and the pre- and posttrigger values etc.

### 3 System Configuration

Before the first time use of the Tube Analyzer, the administrator must configure the system according to the local setting capabilities. For this, he has to check the MAX settings and change the HW.ini file accordingly.

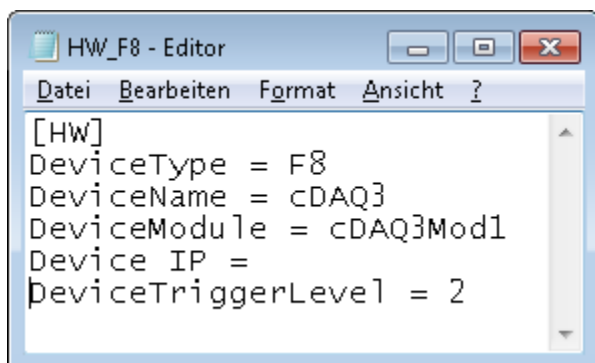
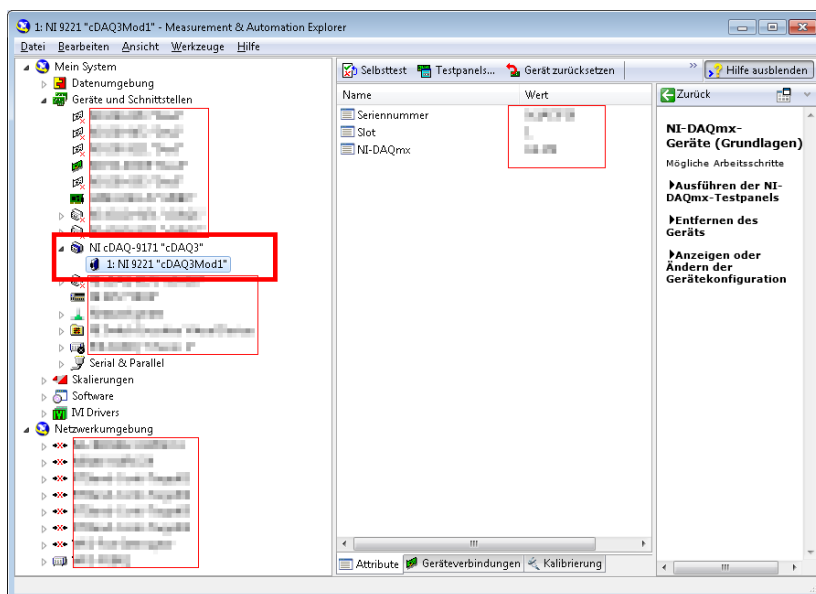
#### 3.1 F8 Configuration

The Device Name and Module must correspond to the ones in MAX.



The F8 is connected to the system via USB. If you configure the F8 for a certain USB port and then you connect it to another port, the MAX settings may change and the reconfiguration may be necessary.

The IP Address may remain empty. The Trigger Level value will be used to start the measurement based on this threshold and the values on the 8<sup>th</sup> analog channel.



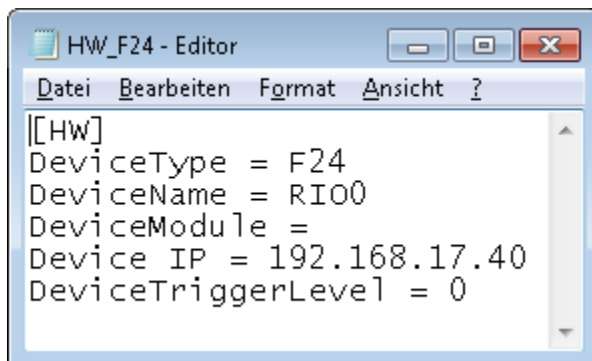
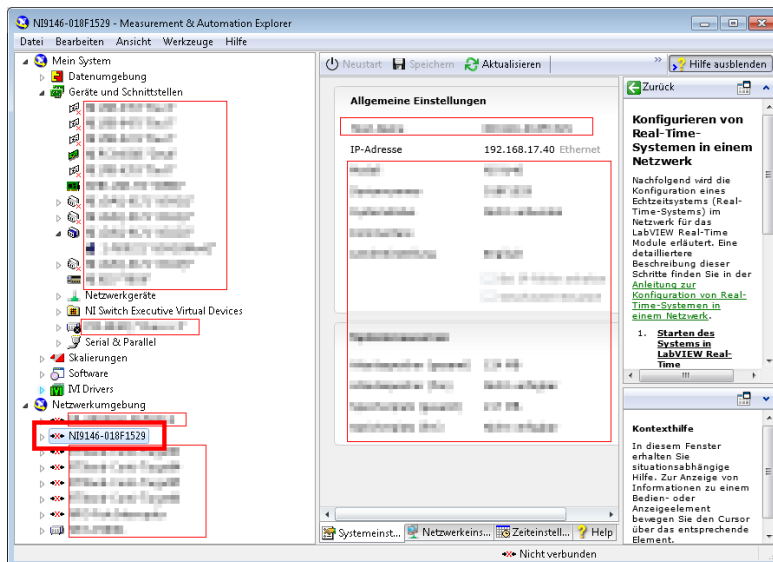
### 3.2 F24 Configuration

The Device Name and IP Address must correspond to the ones in MAX.



If the MAX settings change, the reconfiguration is necessary.

The Device Module may remain empty. The Trigger Level may remain 0.



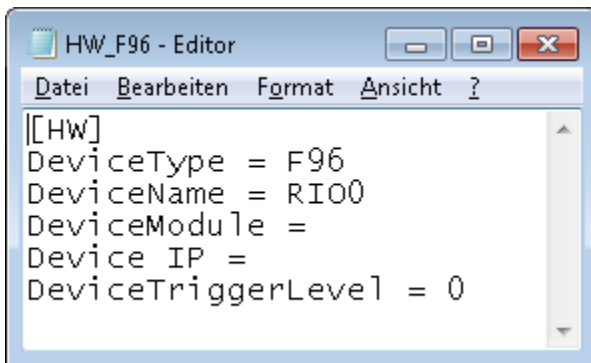
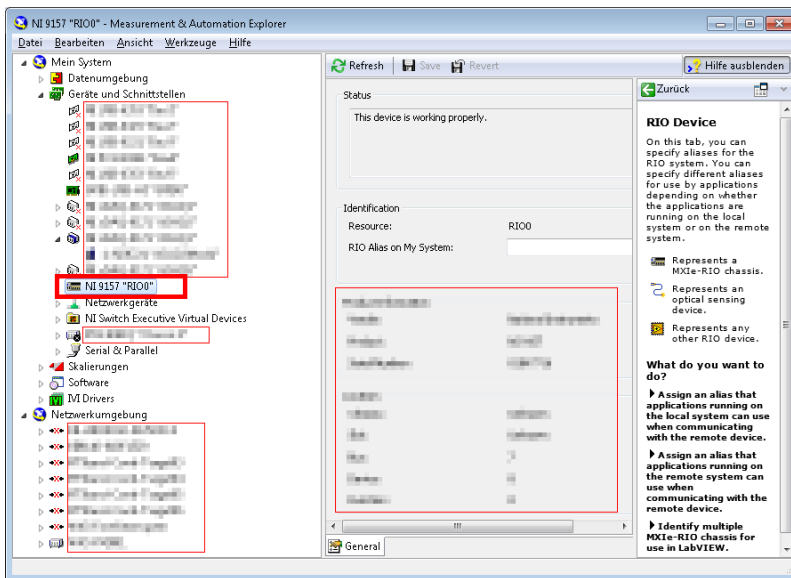
### 3.3 F96 Configuration

The Device Name must correspond to the one in MAX.



If the MAX settings change, the reconfiguration is necessary.

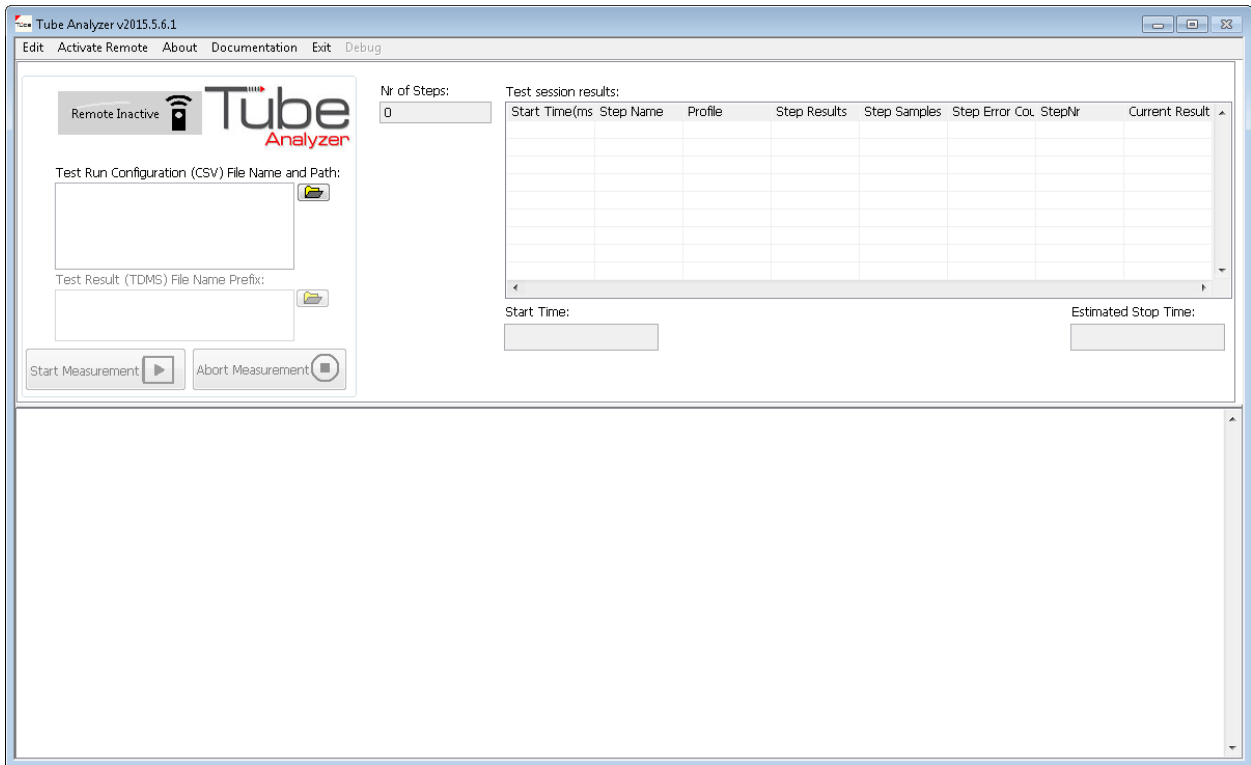
The Device Module and IP may remain empty. The Trigger Level may remain 0.



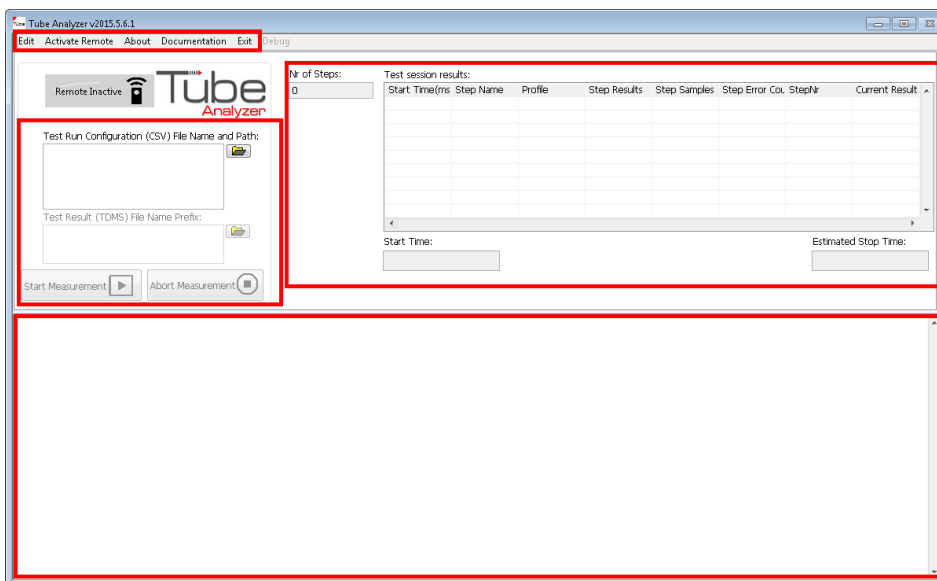


## 4 User Interface

When the user starts the program, the following interface is ready to be used:

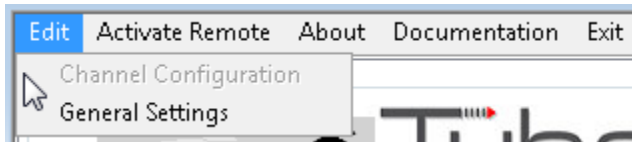


This display shows us the following information:



## 4.1 Menu

The runtime menu consists of 5 items:



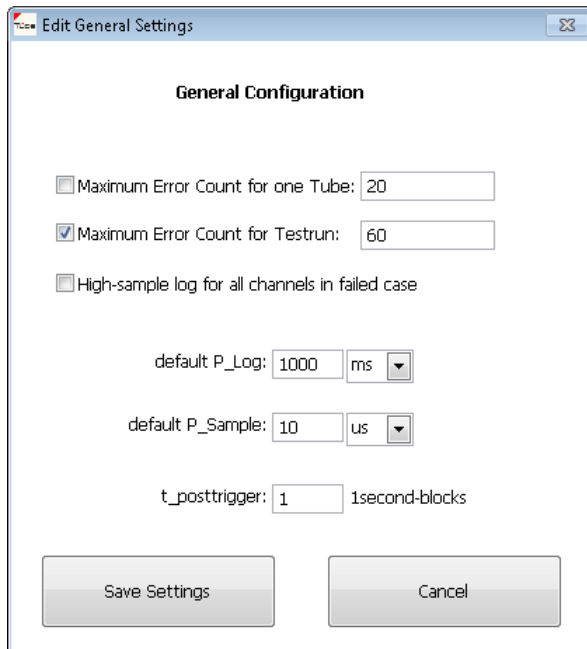
### 4.1.1 Edit

#### 4.1.1.1 Channel Configuration

For the F8 and F24 types, the Channel Configuration is deactivated.

#### 4.1.1.2 General Settings

The general settings define the basic settings that the user can adjust. Upon selecting the menu item, the following window will be displayed:

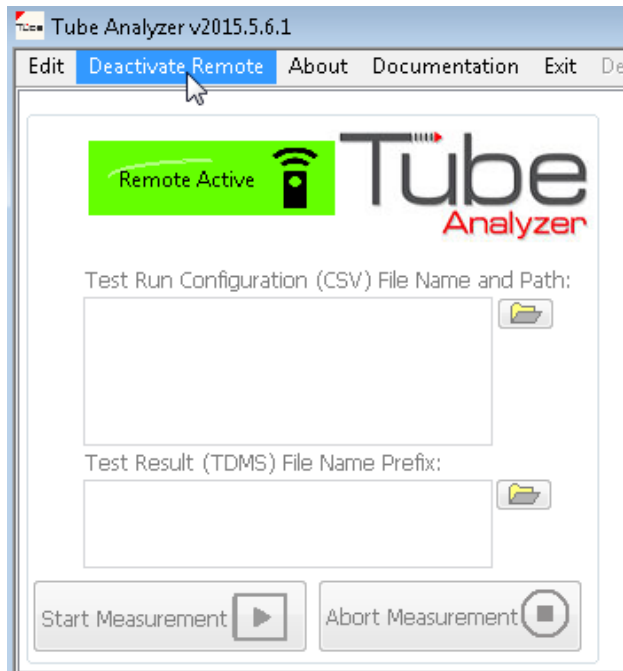


The user can define and activate the abort option when the number of error counts (in seconds) for one tube and/or the number of error counts (in seconds) for the whole testrun exceeds a certain values. As well, the user can set high sampling on all channels if one tube has errors. The default P\_Log and P\_Sample values, as well as the posttrigger value.

### 4.1.2 Activate/Deactivate Remote

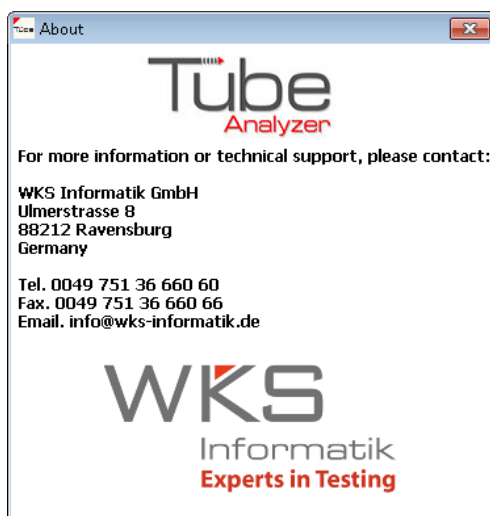
When the user selects the Remote mode, the remote display turns green and all the main functions (except editing the general configuration) remain deactivated until switched in the normal mode again.

At this point the external application takes control over the software.



### 4.1.3 About

The About window displays contact and support information:



#### 4.1.4 Documentation

The Documentation item opens the documentation folder and the user can open one of the PDF files there. Adobe Reader is needed.

#### 4.1.5 Exit

The Exit item stops the Tube Analyzer and deactivates the remote connection.

### 4.2 Test Run Configuration (CSV) File Name and Path

In normal mode, the user can load a measurement file. For this, he has to select one using the Test Run Configuration (CSV) File Name and Path control. A new window will be displayed, as seen below, with the results of the file parsing:

StepNo	StartTime(ms)	Name	Profile	Duration(ms)	Min	Max	Unit	ChannelNo	ChannelType	ChannelComponent
1	0,000	Analog 0	10	10000,000	0	20	V	0	Analog	
2	13000,000	Analog 0	10	14000,000	0	20	V	0	Analog	
3	0,000	Analog 7	10	27000,000	0	20	V	7	Analog	

Status:  
Reading and parsing Measurement File...  
Finished parsing.

Close Configuration

### 4.3 Test Result (TDMS) File Name Prefix

The user must define a prefix for the measurement file. The Browse button next to it can be used to define a target folder for the measurement file. The user can use the default one, or choose

another one. After this is set, the Start Measurement button becomes active. The last value set for this folder is saved as the default path for the next measurement.

#### 4.4 Start Measurement Button



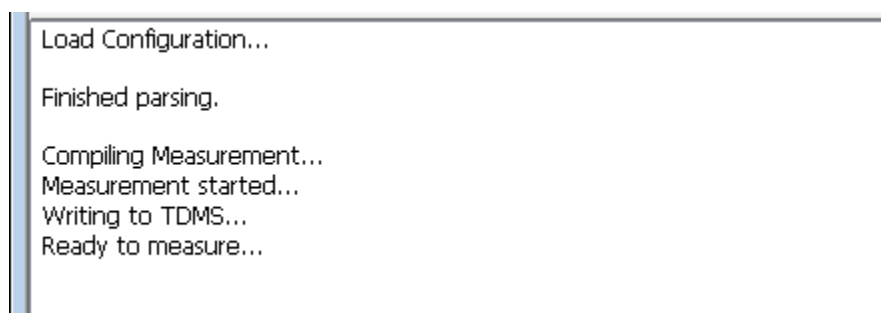
When all configuration is done, the user can start the measurement.

#### 4.5 Abort Measurement Button



The user can abort the measurement at all times.

#### 4.6 Status



## 4.7 Test Session Results

The Results list displays the current status of the tubes. Additionally, the number of steps is displayed, as well as start time and estimated stop time.

The screenshot shows the Tube Analyzer v2015.5.6.1 application window. The interface includes a menu bar (Edit, Activate Remote, About, Documentation, Exit, Debug), a status bar (Remote Inactive), and a main workspace. The workspace is divided into several sections:

- Configuration:** Fields for 'Test Run Configuration (CSV) File Name and Path' (C:\wks\_projekte\Continental\TubeAnalyzer2015\Development\LV\TestRuns\IndChannels\Fe\_2TubesCh0\_LowSample\_Passed\_tr.csv) and 'Test Result (TDMS) File Name Prefix' (testfile). Buttons for 'Start Measurement' and 'Abort Measurement' are present.
- Test Session Results:** A table displaying the current status of the tubes. The 'Nr of Steps' is 3. The table has columns for Start Time (ms), Step Name, Profile, Step Results, Step Samples, Step Error Coun, StepNr, and Current Results.
- Timing:** 'Start Time: 01.10.2015 15:29:17' and 'Estimated Stop Time: 01.10.2015 15:29:44'.
- Log:** A text area showing the status: 'Load Configuration... Finished parsing. Compiling Measurement... Measurement started... Writing to TDMS... Ready to measure...'.

Start Time (ms)	Step Name	Profile	Step Results	Step Samples	Step Error Coun	StepNr	Current Results
0,000000	Analog 0	lv124	Not run	0	0	1	Not run
13000,000000	Analog 0	lv124	Not run	0	0	2	Not run
0,000000	Analog 7	lv124	Not run	0	0	3	Not run

## 5 Test description

Once the configuration has been done and the user started the measurement, the actual tube measurement will take place.

During the test, the results are displayed in the Results list mentioned above and at the end of the measurement a .tdms file will contain only the sampled information and no statistic data. The statistic data as saved in a same-name CSV file and can be analyzed at a later time.

## 6 Error Messages

Important messages will be displayed in the Status Box and saved in a log file. Detailed queue and error messages are at this moment not displayed nor logged.

## 7 Updates

### 7.1 HW.ini definition

The HW.ini file has a new entry:

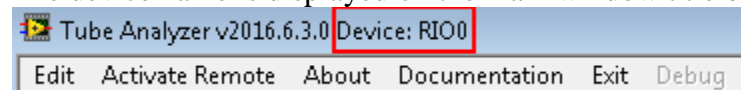
```
[HW]
DeviceType = F96
DeviceName = RIO0
DeviceModule =
Device IP =
DeviceTriggerLevel = 0
Trigger = 1
```

The Trigger value describes the start behavior of the F24 and F96 systems. For the F8 system, this value will be ignored.

If Trigger has a value of 1, the measurement on the rising edge of the start input, for a value of 0, the measurement will start on the rising edge of the clock input.

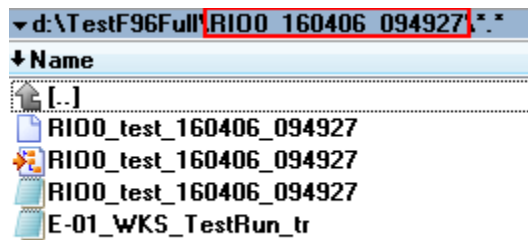
### 7.2 Device indication

The device name is displayed on the main window title bar:



### 7.3 Measurement folder

The measurement data is saved on the path set at 4.3 in a measurement folder:



The folder name is comprised of the device name, date and timestamp.

Each folder contains the measurement TDMS file, the corresponding tdms\_index and csv file and a copy of the testrun itself.

## 8 Contact and technical support

For contacting WKS Informatik GmbH, please use following channels:

**Address:**

Ulmerstrasse 8  
88212 Ravensburg  
Germany

**Telephone:** 0049 751 36 660 60

**Fax:** 0049 751 36 660 66

**Email:** [info@wks-informatik.de](mailto:info@wks-informatik.de)