RIFTEK
Sensors & Instruments

SOFTWARE APPLICATION

RF65X Measuring

User's manual

info@riftek.com
www.riftek.com

Contents

1. General information....3
2. Main program menu....3
3. Setting up the connection and operating mode....4
   3.1. Language....4
   3.2. Password....5
   3.3. Input settings....6
   3.4. Settings....6
   3.5. Parameters set....7
   3.6. Operator....9
   3.7. Signal....10
4. Measurement....11
5. Calibration....12
   5.1. Preparing for calibration....12
   5.2. Connecting sensors....13
   5.3. Measurement....13
   5.4. Calibration....14
6. Database....15
7. Technical support....16
8. Revisions....16

1. General information

This program is designed to work with the RF65x, RF656XY and RF65x Twin optical micrometers.

The program implements:

- measuring the objects and control of their parameters,
- checking for the compliance of parameters with specified tolerances,
- saving the results to the database.

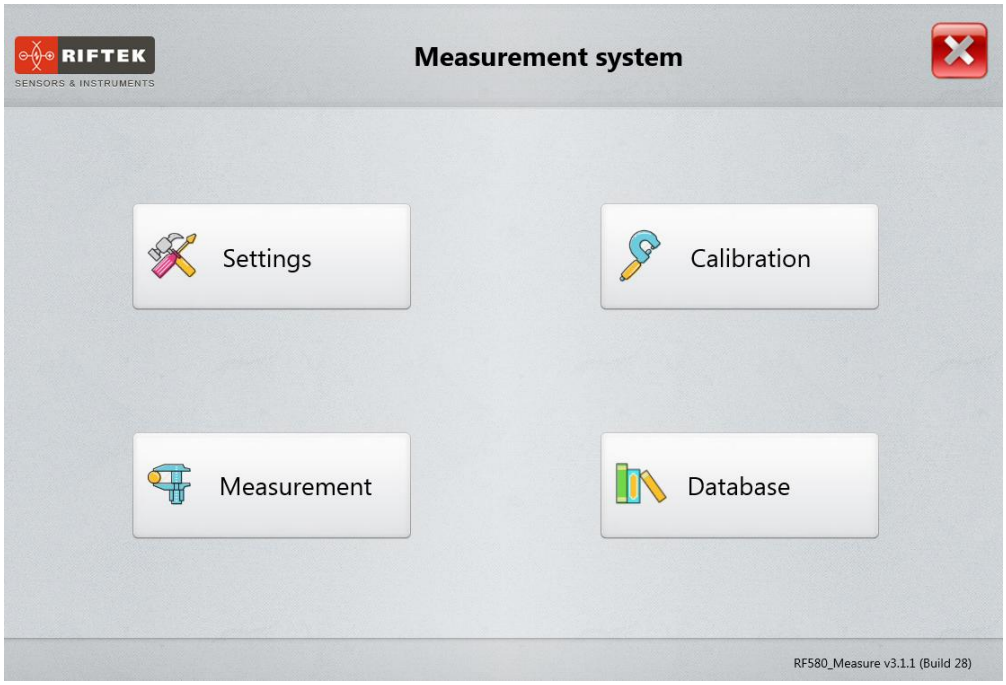
Measurement results can be filtered and sorted. Results are displayed both in tabular and graphical form.

The program allows you to work with a single micrometer or with a system of micrometers. Inside the system, the sensors can work independently of each other (multichannel measurements), or measure the objects together, for example, control the width, thickness and diameter of large objects, where measurements of several sensors are used for calculations. After selecting the operating mode, the parameters of the sensors are automatically configured.

In addition, it is possible to calibrate the system in order to improve the measurement accuracy, and to control the state of the optical path using signals from linear sensors.

2. Main program menu

After turning on the device, the main program menu appears:

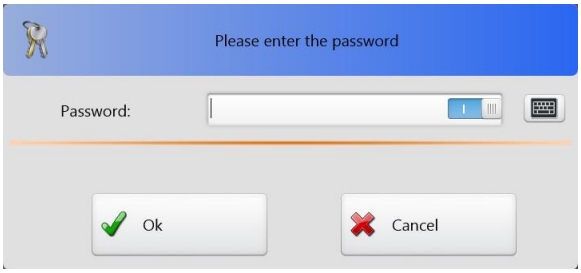


Buttons assignment:

Button	Assignment
Settings	Configuring system parameters.
Measurement	Measuring the object.
Calibration	Calibrating the system.
Database	Browsing the database.

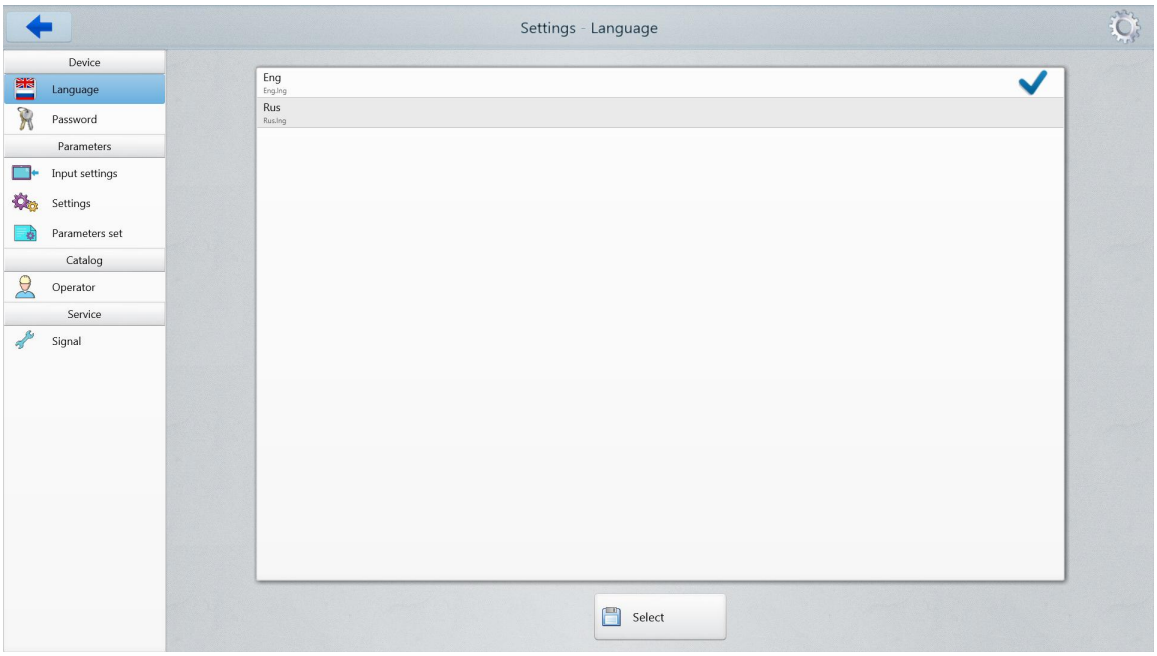
3. Setting up the connection and operating mode

Before starting to work with the system, you need to configure the parameters. Tap the **Settings** button in the main menu. The program will ask for a password. When initially installed, the program accepts the following password: 1111. Enter this password in the **Password** field and tap **Ok**.



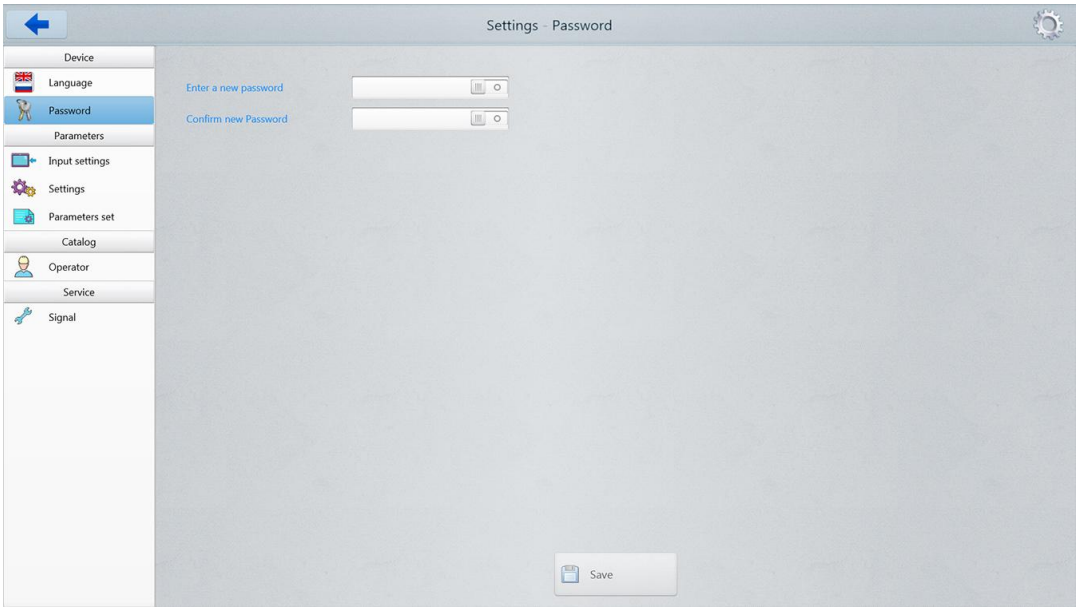
3.1. Language

To change the program language, tap **Language**, select the language support file, and tap **Select**.



3.2. Password

To change a password, tap **Password**. Then enter the new password, confirm it, and tap **Save**.

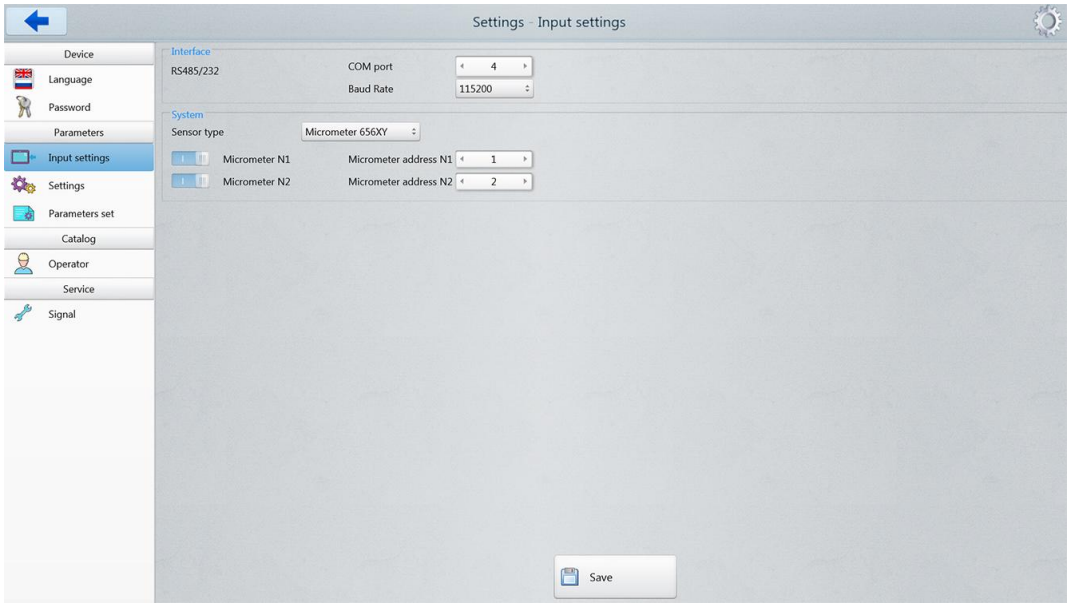


The program will prompt you to confirm the action:

Tap **Yes** to save the new password, or tap **No** to cancel the action.

3.3. Input settings

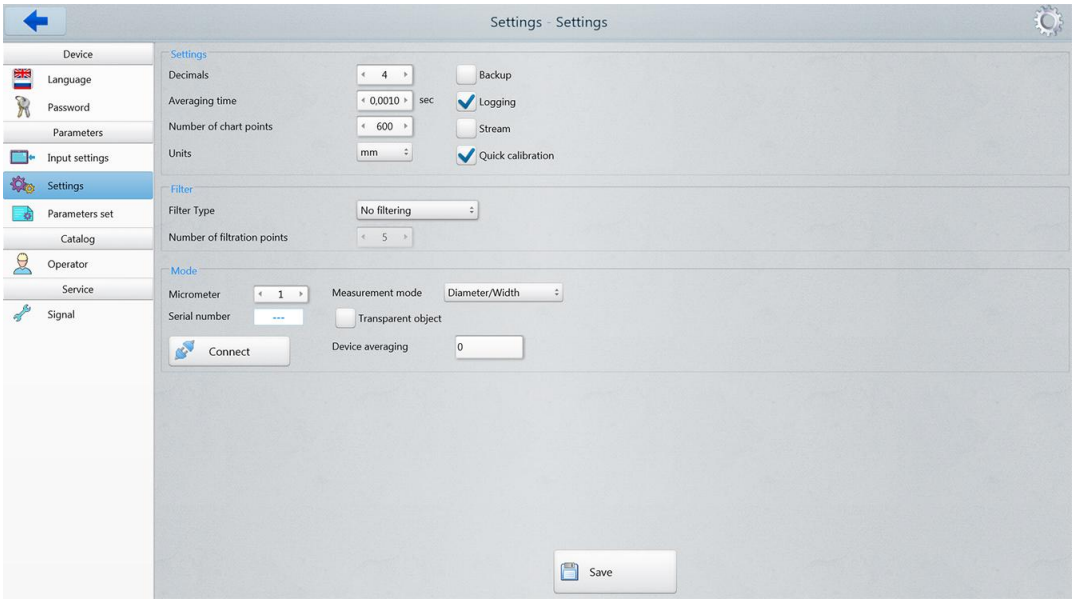
The **Input settings** tab:



In the **Interface** section, the user can specify the COM port of the device and the baud rate. In the **System** section, the user can select the sensor type (65x, 656XY, 65x Twin), select the number of sensors and specify their network addresses. To save the changes, tap **Save**.

3.4. Settings

The **Settings** tab:



In the **Settings** section, the user can specify the number of decimal places for measurement results (**Decimals**). The user can also set the **Averaging time** (the time during which the measurement results are displayed / saved), the **Number of chart points** (the number of measurements displayed on the chart) and the **Units** (units of measurements). To back up the database, select the **Backup** option. To create a log file, select the **Logging** option. To measure in Stream mode, select the **Stream** option (for

correct operation in Stream mode, synchronization is required). The **Quick calibration** option is used for calibration during measurement.

In the **Filter** section, you can configure the filtering of measurements. Filtering is used to reduce noise and achieve better resolution. The parameters are described in the table below.

Parameter		Description
Filter Type	No filtering	No filtering.
	Moving average	The "Moving average" filter. The number of filter points for the measured values, which is used to calculate the arithmetic mean. Each new measured value is added, the first measured value is removed from the averaging.
	Median filter	The median filter. The median is formed from a preselected number of filtration points for measurement values. The incoming measured values are sorted again after each measurement. Subsequently, the mean value will be considered as the median. If the number of filter points is an even number, then the two average measurement values are added and divided by two.
Number of filtration points		This parameter specifies the number of measurement values to which the filter applies.

In the **Mode** section, you can select the measurement mode. The modes are described in the table below.

Mode	Description
Diameter/Width	Diameter/width measurement mode. This mode is used to measure the diameter of solids of revolution and the width of sheet materials.
Position/Center	Position/center detection mode. The device searches for the starting and ending borders of the object and calculates its middle.
Border	Border search mode (knife mode). The micrometer finds the border of the controlled object.
Slit/Hole	Slit/hole measurement mode. This mode is used to measure the width of a slit or hole.
Transparent object	This option allows you to measure the objects made of transparent materials (film, glass, silicone, optical fiber).

The **Device averaging** parameter is used to specify the number of averaged measurements. To average the measurements, the micrometer uses the **Moving average** filter.

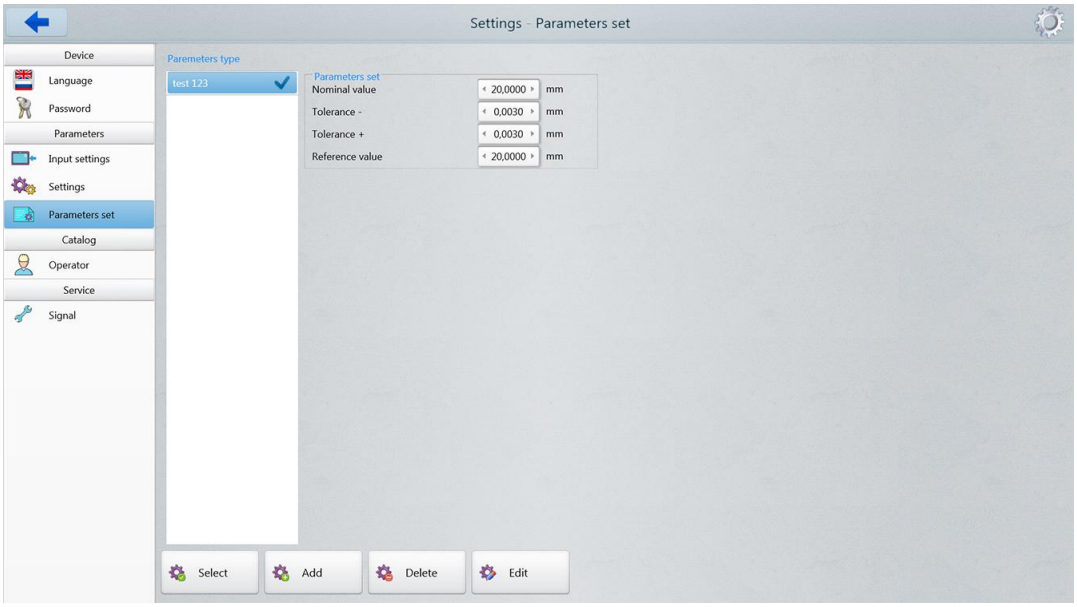
In order to configure the settings, the user must connect to the micrometer by clicking the **Connect** button. Next, you need to select the measurement mode, select the **Transparent object** option if necessary, and set the **Device averaging** parameter.

To save the changes, tap **Save**.

3.5. Parameters set

To work with the system, you need to select a set of parameters that will be used in the measurement process.

The **Parameters set** tab:



The **Nominal value** parameter is the ideal size of the measured object. The **Tolerance -** and **Tolerance +** parameters are the permissible deviations of measurements from the nominal value. The **Reference value** parameter is the size of the reference object used for calibration.

In this tab, you can perform the following actions:

- ***Selecting a set of parameters***

To select a set of parameters to use in the measurement process, select it from the **Parameters type** list and tap the **Select** button.

- ***Adding a new set of parameters***

Tap the **Add** button, specify the nominal thickness of the measured object, tolerances and the reference value. Tap the **Save** button to add the set.

- ***Deleting a set of parameters***

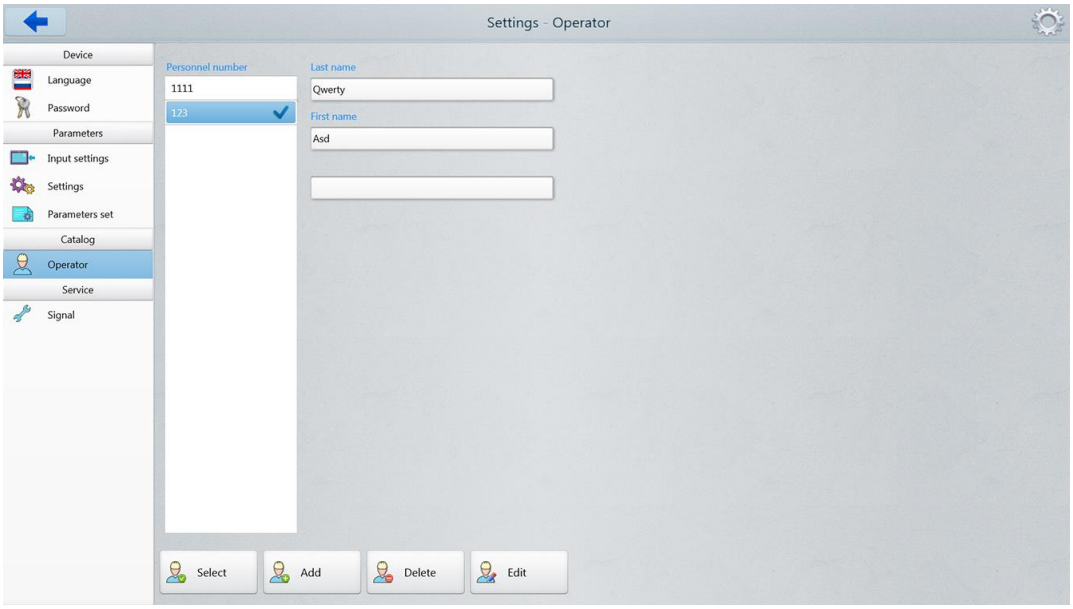
Select a set from the list, tap the **Delete** button and confirm the action.

- ***Editing a set of parameters***

Select a set from the list and tap the **Edit** button. Then confirm the changes by tapping the **Save** button.

3.6. Operator

The **Operator** tab:



In this tab, you can add information about the operator (his personnel number, last name and first name).

The following actions can be performed:

- ***Selecting an operator***

To select an operator, select his **Personnel number** from the list and tap the **Select** button.

- ***Adding a new operator***

Tap the **Add** button, enter the operator's personnel number, his last name and first name. Tap the **Save** button to add the operator.

- ***Deleting an operator***

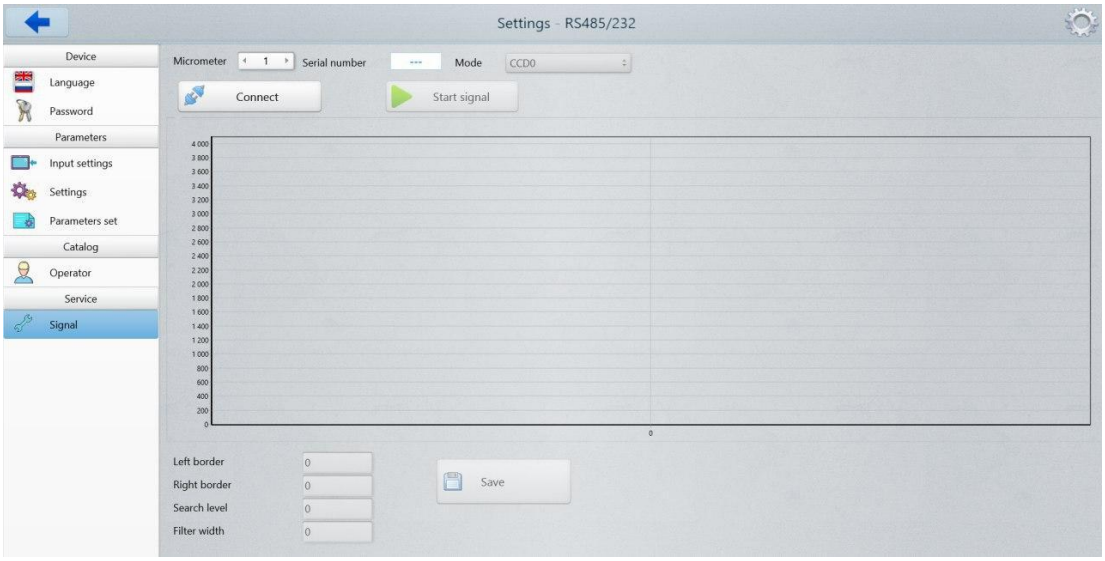
Select an operator from the list, tap the **Delete** button and confirm the action.

- ***Editing operator's data***

Select an operator from the list and tap the **Edit** button. Then confirm the changes by clicking the **Save** button.

3.7. Signal

The **Signal** tab:



This tab is used for maintenance, as well as monitoring the state of the optical path by signals from linear sensors. The user must connect to the device by tapping the **Connect** button. Then you need to tap the **Start signal** button. The micrometer signal will be displayed on the graph. The signal display mode can be selected from the **Mode** list.

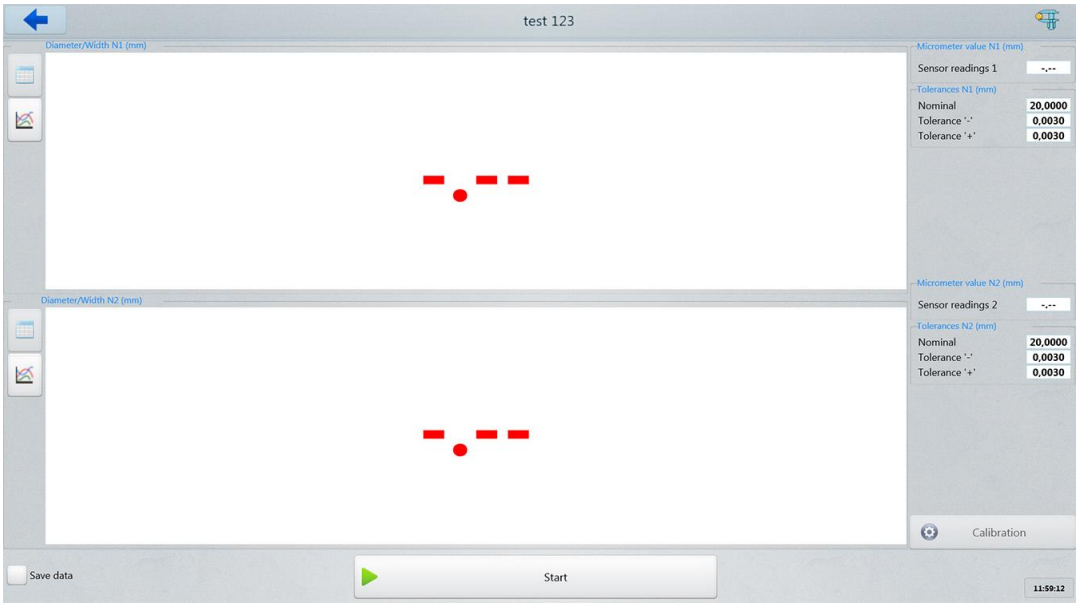
In this tab, you can also configure some parameters of the micrometer. Parameters are described in the table below.

Parameter	Description
Left border	Limiting the signal on the left border.
Right border	Limiting the signal on the right border.
Search level	The value from the signal start line for finding the borders of the object.
Filter width	The area where the search for the border is performed.

This tab can only be used by qualified specialists, or under the supervision of RIFTEK employees. If you specify incorrect parameters, the device may stop working or work incorrectly. Therefore, it is strictly forbidden to change the parameters without the recommendation of RIFTEK employees.

4. Measurement

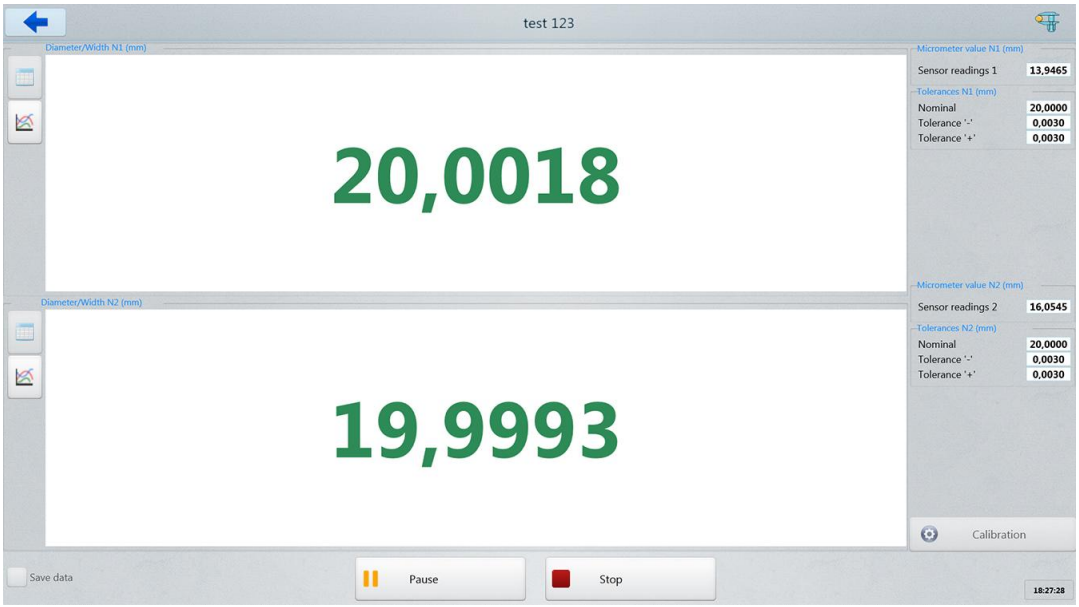
Tap the **Measurement** button in the main menu of the program. The **Measurement** window appears.



This window displays:

- the name of the selected set of parameters;
- the current measured value (green or red);
- sensor readings (**Sensor readings 1** and **Sensor readings 2**);
- the nominal value of the measured parameter (**Nominal**);
- tolerances (**Tolerance '-'** and **Tolerance '+'**);

To save the measurement results to the database, select the **Save data** option.
To start the measurement process, tap the **Start** button.
The **Measurement** window:



To stop the measurement process, tap **Stop**. To pause the measurement process, tap **Pause**.

When the thickness value does not exceed the tolerances, it will be displayed in green, otherwise - in red.

To view the data in graphical form, tap .

To calibrate the system after measuring the reference object, tap the **Calibration** button.

5. Calibration

The parameters are controlled within the working range of the sensor (sensors).

5.1. Preparing for calibration

For optimal control of parameters, the sensor (sensors) should be mounted so that the controlled object (objects) is located in the middle of the working range of the sensor. Since the laser sensor is calibrated in its own coordinate system, and the thickness measurement is carried out relative to the base surface on which the controlled object is located, it is necessary to calibrate the sensor relative to the base surface. The calibration must be done by using a sample whose parameters are already known.

Follow the steps below to perform the calibration procedure properly:

- Install the calibration sample in the control area.
- Go to the **Settings** window, tap **Parameters set**, and enter the sample parameters in the **Reference value** field.
- Go back to the main menu and tap the **Calibration** button. The **Calibration** window appears. The name of the selected set of parameters is displayed to the right of the window name.

The **Calibration** window:

5.2. Connecting sensors

To connect to the sensors, tap the **Connect** button. If the devices are successfully connected, the main information about the sensors will be displayed on the left side of the window.

The **Calibration** window:

5.3. Measurement

In order to calibrate the devices, you first need to get their measurements. Tap the **Start** button to start the measurement process. The **Sensor readings 1** and **Sensor readings 2** parameters take values equal to the readings of the sensors in their own coordinate system.

The **Calibration** window:

5.4. Calibration

Tap the **Calibration** button to start the calibration process. **Calibration point** is a calibration constant used to translate sensor measurements from its own coordinate system to the user's coordinate system. The **Diameter/Width** parameter (corresponds to the measurement mode selected in the settings) takes values equal to the sensor reading in the coordinate system of the base surface on which the sample is installed.

The **Calibration** window:

If the value of the **Diameter/Width** parameter is equal to the value of the **Reference value** parameter, the calibration is correct. Tap the **Save** button.

6. Database

During the system operation, the thickness values are written to the database (provided that the **Save data** option is selected).

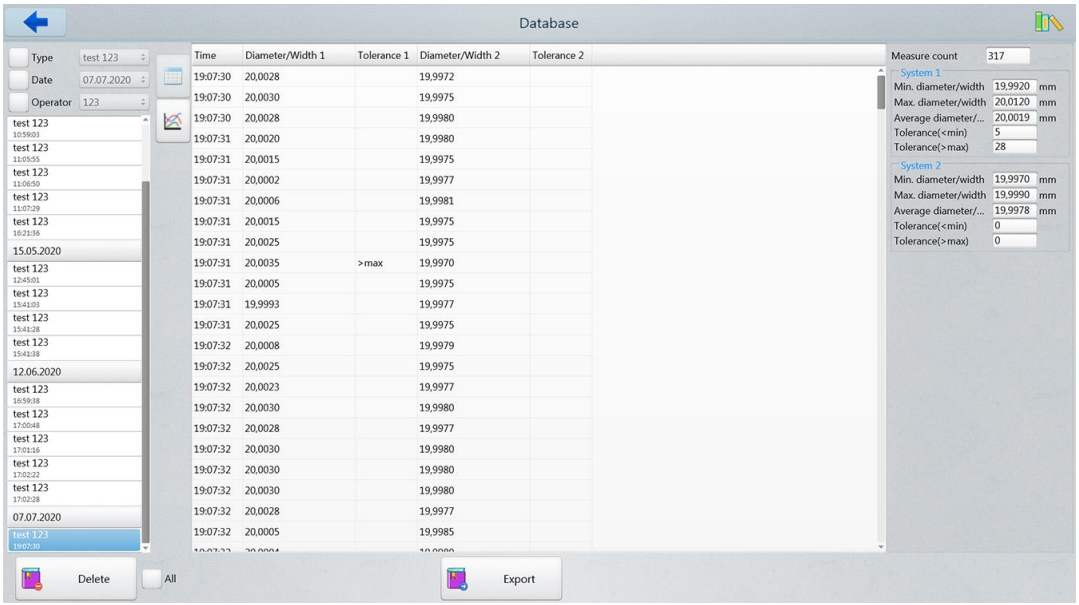
To browse the database, tap the **Database** button in the main menu. The **Database** window appears. Then you need to select a set of measurements from a list located on the left side of the window.

Data can be presented both in tabular and graphical form.

To view the data in graphical form, tap :

To select a device whose measurements must be displayed on the screen, use the option on the right side of the window.

To view the data in tabular form, tap :



To work with the table, use a vertical scrollbar.

The information about the table is displayed on the right side of the window.

To delete a single measurement, tap on it in the table and then tap the **Delete** button.

To delete all measurements, select the **All** checkbox and then tap the **Delete** button.

Data can be exported to CSV, XLS and XML formats - tap the **Export** button and select the required format.

The information about the measurement is located on the right side of the window. To search for the required measurement, use the options located on the left side of the window.

7. Technical support

Requests for technical assistance should be addressed at support@riftek.com.

8. Revisions

Date	Revision	Description
10.04.2020	1.0	Starting document.