



RIFTEK
Sensors & Instruments



SPACERS THICKNESS MEASUREMENT SYSTEM

RF035 Series

User's manual

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1. Safety precautions

- Use supply voltage and interfaces indicated in the system specifications.
- In connection/disconnection of cables, the system power must be switched off.
- Do not use the system in locations close to powerful light sources.
- To obtain stable results, wait about 20 minutes after sensor activation to achieve uniform sensor warm-up.

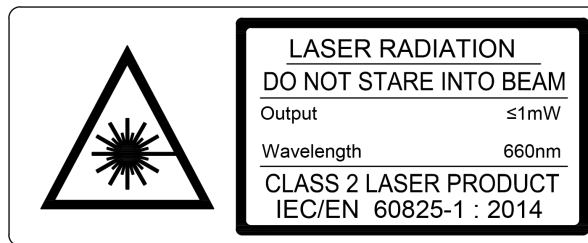
2. CE compliance

The system has been developed for use in industry and meets the requirements of the following Directives:

- EU directive 2014/30/EU. Electromagnetic compatibility (EMC).
- EU directive 2011/65/EU, “RoHS” category 9.

3. Laser safety

The system contains laser sensors that belong to Class 2 according to IEC/EN 60825-1:2014. Maximum output power is 1 mW. The following warning label is placed on the sensor body:



The following safety measures should be taken while operating the sensor:

- Do not target laser beam to humans.
- Do not disassemble the sensor.
- Avoid staring into the laser beam.

4. General information

The system is designed for non-contact laser scanning and measurement of spacers thickness.

Field of application: large-scale production.

5. Basic technical data

Parameter		Value
Thickness measurement range, mm		from 0.6 to 3.5
Measurement accuracy, μm		± 5
Spacers diameter, mm		25.4
Productivity, pcs/hour		>1000
Light source		red semiconductor laser, 660 nm wavelength
Output power, mW		<1
Laser safety class		2 (IEC60825-1)
Interface		Ethernet
Power supply, V		220
Environmental resistance	Vibration	20 g / 10...1000 Hz, 6 hours for each of XYZ axes
	Shock	30 g / 6 ms
	Permissible ambient light, lx	30000
	Relative humidity, %	5-95 (no condensation)
	Operating ambient temperature, °C	0...+45
	Storage temperature, °C	-20...+70
Dimensions, mm		442x240x339
Housing material		aluminum

Note: System parameters can be changed for a specific task.

6. Example of item designation when ordering

RF035-Tmin/Tmax-D

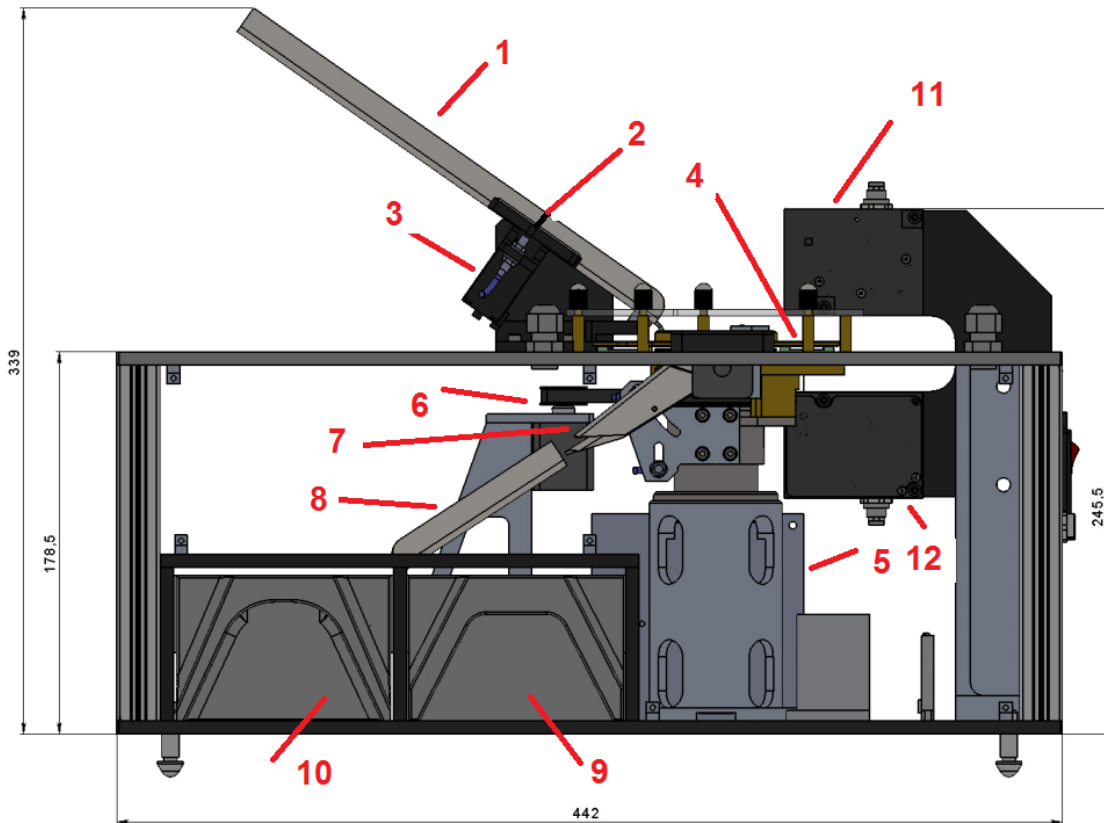
Symbol	Description
Tmin/Tmax	Minimum/maximum spacers thickness, mm
D	Spacers diameter, mm

Example: RF035-0.6/3.5-25.4 – Spacers Thickness Measurement System RF035 Series, thickness measurement range - from 0.6 to 3.5 mm, spacers diameter - 25.4 mm.

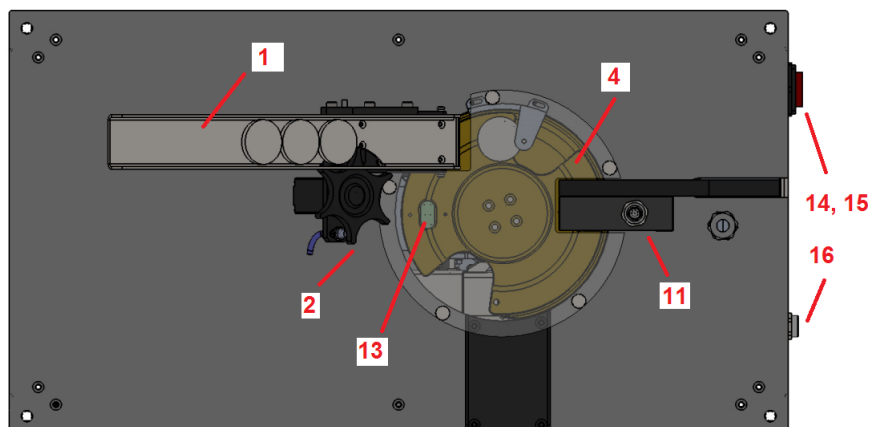
7. Structure and operating principle

Operation of the system is based on the principle of laser scanning of the spacer surface by two laser sensors located on the opposite sides of the spacer.

The structure of the system is shown below (the side covers are removed):



The system contains a base, on which the following parts are installed: a tray for spacers (1), dispenser (2) with a drive (3), disc (4) with a drive (5), rotation drive for spacers (6), tray for defective spacers (7), tray for good spacers (8), containers (9) and (10) for collecting the defective and good spacers respectively, laser sensors (11) and (12).



Disc (4) carries two calibration spacers (13) of the known thickness. On the side panel, there is a connector for power supply and a turn-on button (14 and 15), and a connector for connection to PC.

The system operates as follows.

Controlled spacers are manually placed on the tray (1), the dispenser (2) successively throws the spacers onto the rotating disk (4), which moves the spacers in the measuring zone of laser sensors (11) and (12). When the spacer is in the measuring zone, it is rotated by the drive (6), and, as a result, the thickness is measured in a spiral on the spacer surface, which allows to register the extended surface defects. After the measurement, the spacer comes into the tray (7), which tilts and throws it into the container for defective spacers (9), or into the container for good spacers (10).

8. Connection

- Connect the power cable to 220V.
- Connect the Ethernet cable to PC.

9. Network setting

The system is shipped with the following default network configuration:

- IP address: 192.168.0.3.

It is imperative to configure the network card of the PC in the following address space: 192.168.0.X.

10. Service program

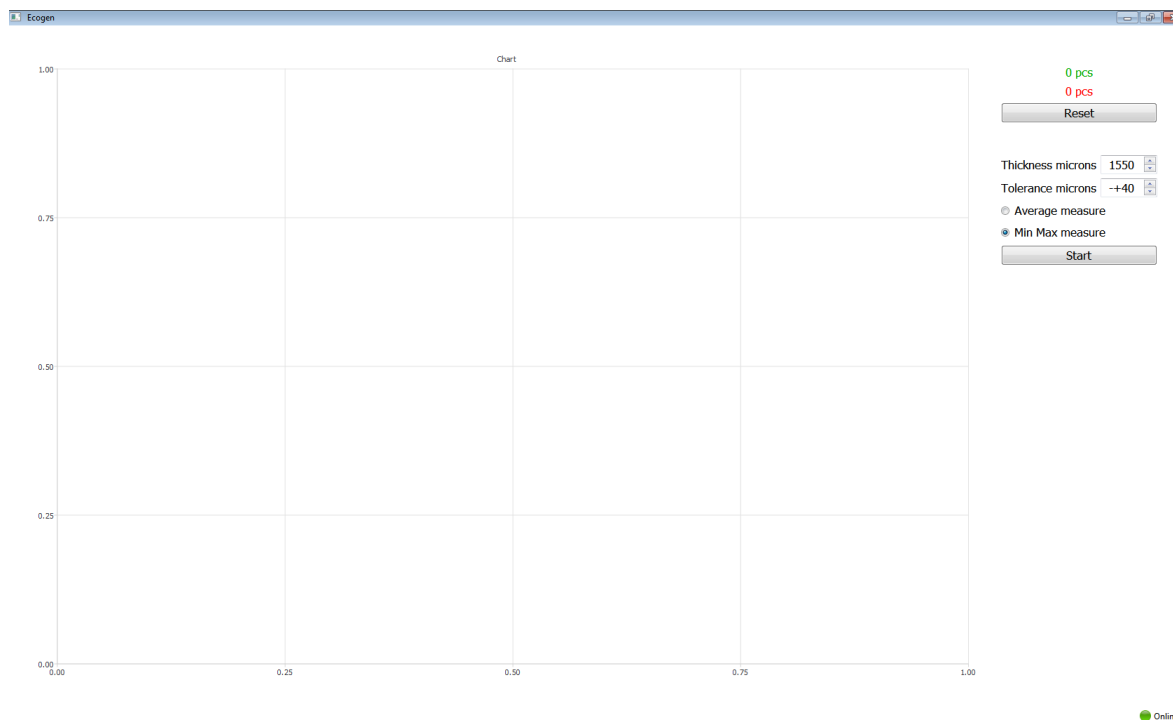
To run the service program, you need to double-click on the executable file - **RF035.exe**.

10.1. System requirements

- Operating system Windows 7 and later.

10.2. Main window

After you run the service program, the main window appears:



10.3. Setting parameters

Before you start, you need to set (check) the following parameters:

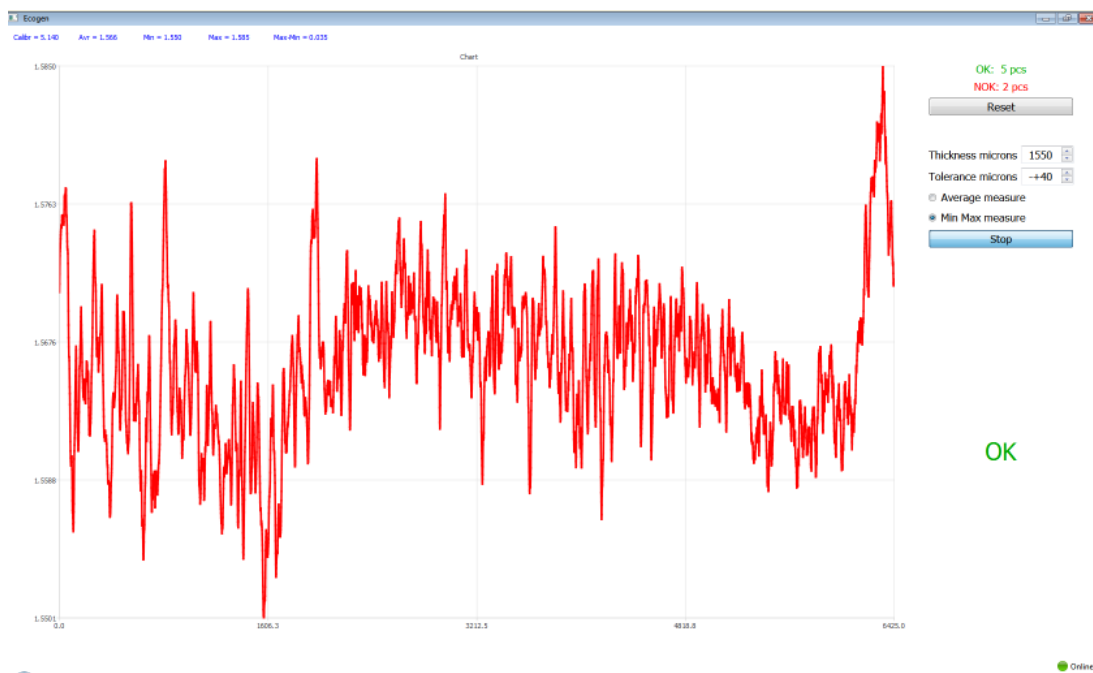
- **Thickness, microns** (nominal thickness value).
- **Tolerance, microns.**
- Sorting method:
 - **Average measure** (average thickness value).
 - **Min Max measure** (minimum and maximum thickness values).

10.4. Measurement procedure

After you set/check all parameters, the system is ready to use.

To start the measurement process, click **Start**. Measurement and sorting of the spacers are performed automatically.

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The number of good spacers (**OK**) and the number of defective spacers (**NOK**) are displayed in the upper right corner of the window.

A graphical representation of the thickness profile of the last measured spacer is shown in the central part of the window.

In the upper left part of the window, you can see the thickness value of the calibration spacer (**Calibr**), average thickness value (**Avr**), minimum thickness value (**Min**), maximum thickness value (**Max**), and the difference between the minimum and maximum values (**Max Min**). All values are given for the last measured spacer.

10.5. Log

Measurement results are written to the file (**measures.csv**), which is located in the directory with the service program.

11. Technical support

Technical assistance related to incorrect work of the system and to problems with a service program is free.

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

12. Warranty policy

Warranty assurance for the Spacers Thickness Measurement System RF035 Series - 24 months from the date of putting in operation; warranty shelf-life - 12 months.

13. Revisions

Date	Revision	Description
19.06.2018	1.0.0	Starting document.

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