OPTICAL MICROMETERS, RF65x SERIES

PURPOSE

Contactless diameter, gaps and technological object position measurement.

WORKING PRINCIPLE

The micrometer operation is based on the so-called 'shadow' principle. The micrometer consists of two blocks – transmitter and receiver. Radiation of a semiconductor LED is collimated by a lens. With an object placed in the collimated beam region, shadow image formed is scanned with a photo-detector array. A processor calculates the position (size) of the object from the position of shadow border (borders).

MODELS

RF651 — universal micrometers
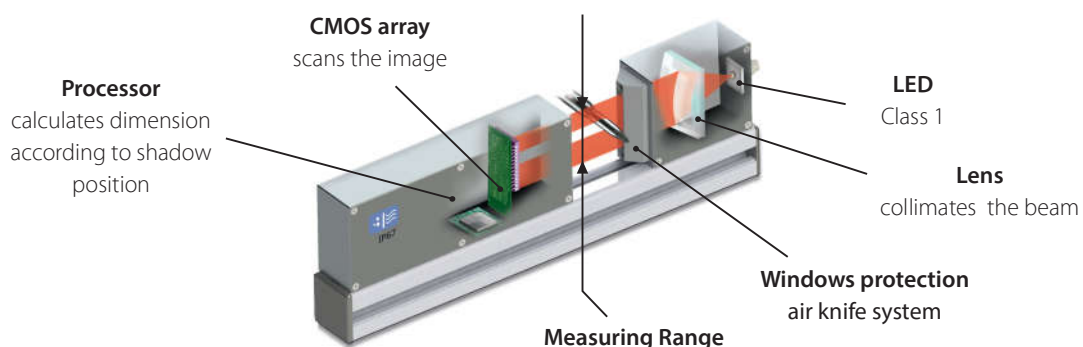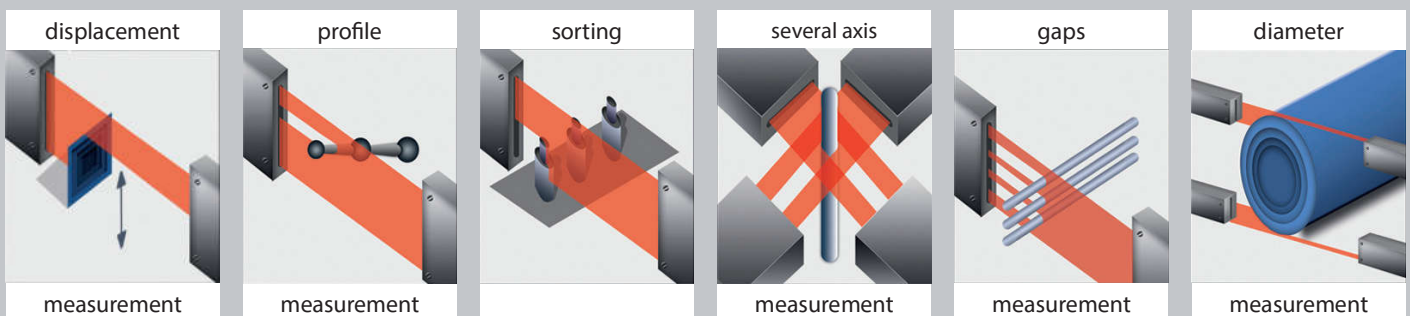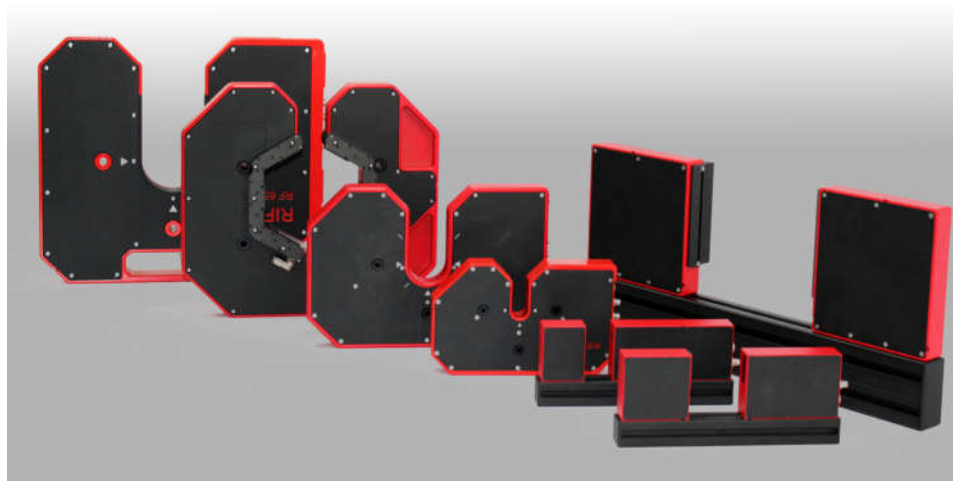
RF656 — high-precision micrometers with telecentric optics

RF656XY and RF656.3 — two and three axis micrometers

RF656.2D — 2D optical micrometers

RF659 — edge sensors

MAIN FEATURES

- **Measurement range from 5 to 100 mm**
- **Up to ±0.3 µm accuracy**
- **Up to 10 000 Hz sampling rate**
- **RS232/RS485/Ethernet +4...20 mA/0...10V**
- **Micrometers with telecentric lens**
- **Mutual synchronization of the sensors (master-slave)** for multi-axis measurement tasks
- **Service Software** for micrometers parameterization
- **Free SDK and examples** for Windows, Linux, .NET, MATLAB, LabVIEW
- **Dual, three and multi axis Micrometers**
- **Air-knife window protection**

displacement	profile	sorting	several axis	gaps	diameter
measurement	measurement	measurement	measurement	measurement	measurement

Processor
calculates dimension according to shadow position

CMOS array
scans the image

LED
Class 1

Lens
collimates the beam

Windows protection
air knife system

Measuring Range

	A, mm	B, mm	C, mm	D, mm	E, mm	H, mm	H1, mm	K, mm	N, mm
RF651-25	51	139	62	25	13	28	42.5	30	30
RF651-50	91	120	134	50	20	31	45.5	40	80
RF651-75	128	132	132	75	15	31	45.5	40	80
RF651-100	165	165	150	98	20	31	45.5	40	80
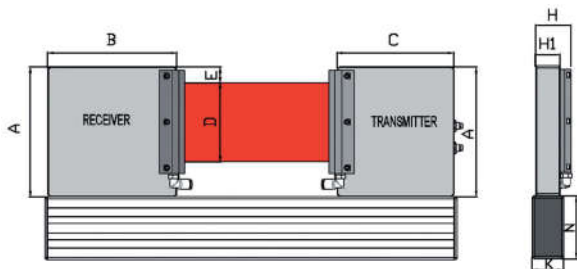
	A, mm	B, mm	C, mm	D, mm	E, mm	K, mm	R, mm	M, mm	N, mm
RF656-5	66	50	158	5	14	28	2	30	30
RF656-10	50	70	126	10	11.5	56	6	30	30
RF656-25	72	74	106	25	7	63	10	30	30
RF656-50	105	134	110	50	20	150	25	30	60
RF656-75	135	148	125	75	17	200	40	40	80
RF656-100	175	170	160	100	20	300	50	40	80
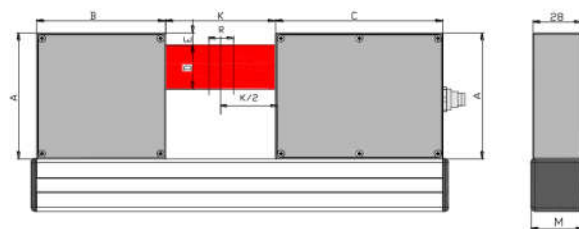
RF65X-	RF651-25	RF651-50	RF651-75	RF651-100	RF656-5	RF656-10	RF656-25	RF656-50	RF656-75	RF656-100
Measurement range, mm	25	50	75	100	±1x5	±3x10	±5x25	±7x50	±9x75	±10x100
Minimum size of the object, mm	0.5	1	1.5	2	0.05 (0.1)	0.1 (0.2)	0.25 (0.5)	0.5 (1)	0.75 (1.5)	1 (2)
Accuracy[1], µm	±5	±10	±15	±20	±0.3	±0.5	±1	±2	±3	±5
Measurement frequency, Hz	500	500	500	500	500	2000	2000	2000	2000	2000
Light source	LED									
Laser safety class	1 (IEC60825-1)									
Output interface — digital	RS232 (max. 921.6 kbit/s) or RS485 (max. 921.6 kbit/s) or Ethernet & (RS32 or RS485)									
Output interface — analog										
Synchronization input	2.4 – 5 V (CMOS, TTL)									
Logic output	three outputs, NPN: 100 mA max; 40 V max									
Power supply, V	24 (9 …36)									
Power consumption, W	1.5..2									
Housing material	aluminum									
Weight (without cable), gram	600	2000	2600	4000	700	700	700	1600	3200	4500

[1] typical data obtained when a knife edge was used to interrupt the beam and distance between transmitter and receiver is equal of two measurement range
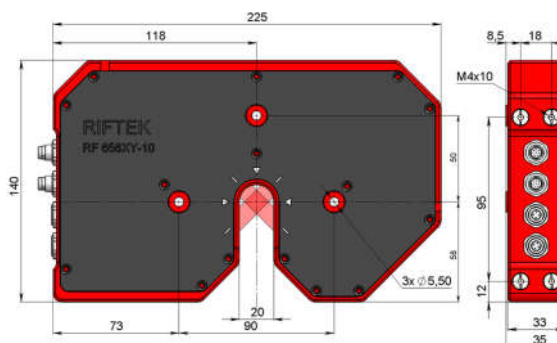
RF656 TWO AND THREE AXIS MICROMETERS. TWIN MICROMETERS

The parameters for each axis of the micrometer match to the parameters of the corresponding single-axis micrometer, see Table above.
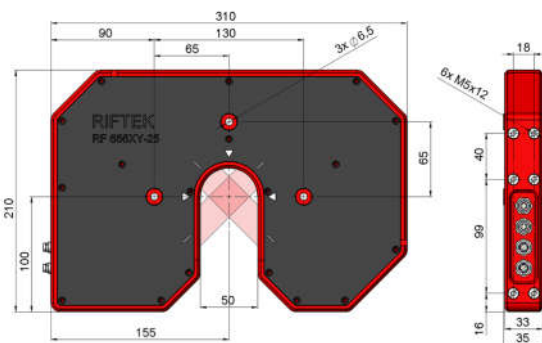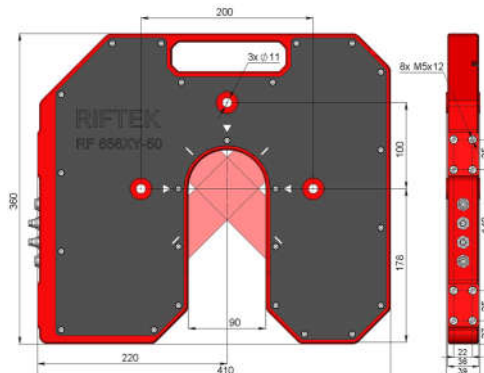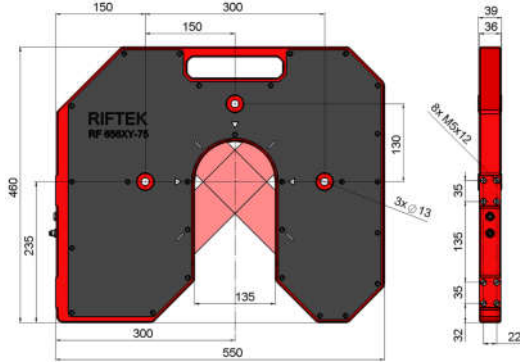
RF656XY-5
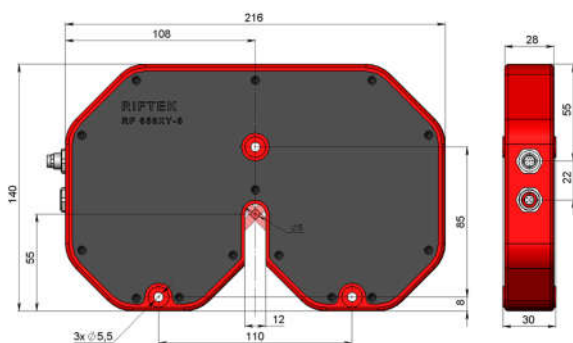
RF656XY-5

RF656XY-25

RF656XY-50

RF656 TWO AND THREE AXIS MICROMETERS. TWIN MICROMETERS

RF656XY-75

RF656XY-100
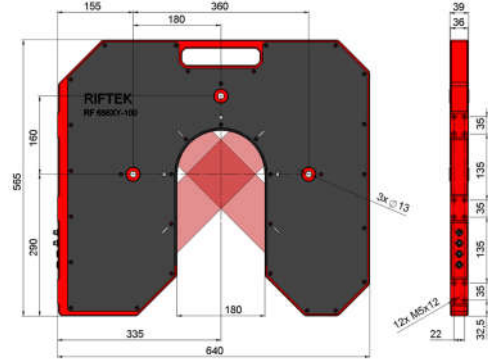
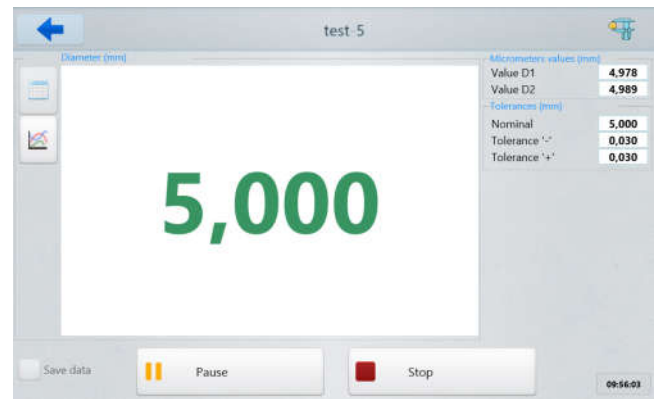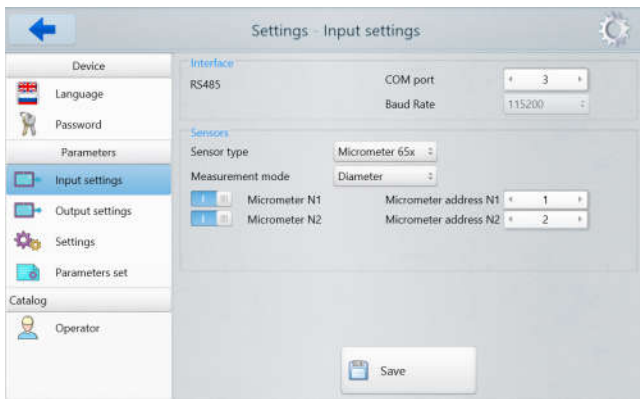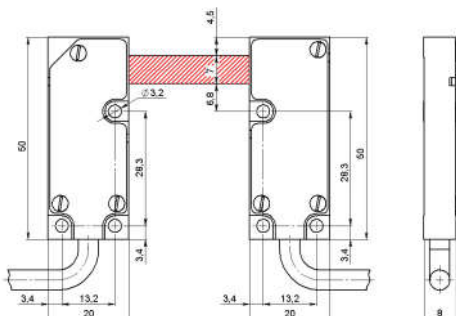### RF656.3-25
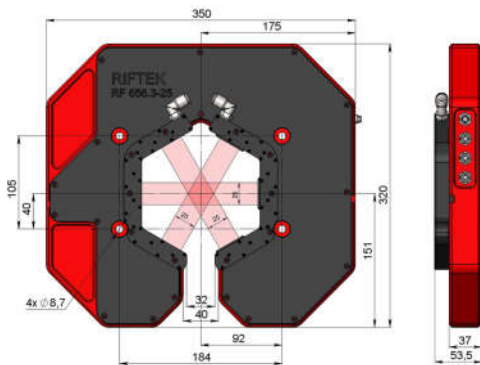
RF656TWIN-75
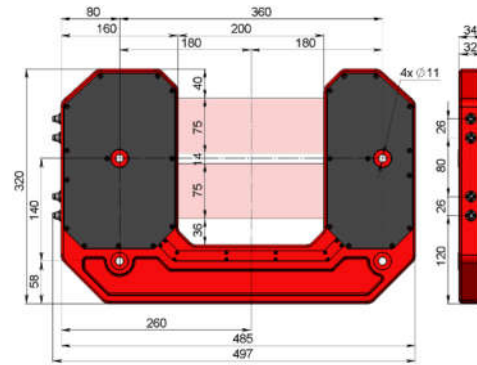
SOFTWARE

EDGE AND DIAMETER SENSORS — RF659 Series

The sensors are intended for non-contact measuring and monitoring the position of the edge (edges) of various objects, such as tapes, plates, substrates, etc.

Parameter	Value
Distance between transmitter and receiver	30 mm
Measurement range	7 mm
Accuracy	±20 µm