MICRO-EPSILON

More Precision

combiSENSOR KSB6430 // Sensor system for thickness measurement of electrode coatings

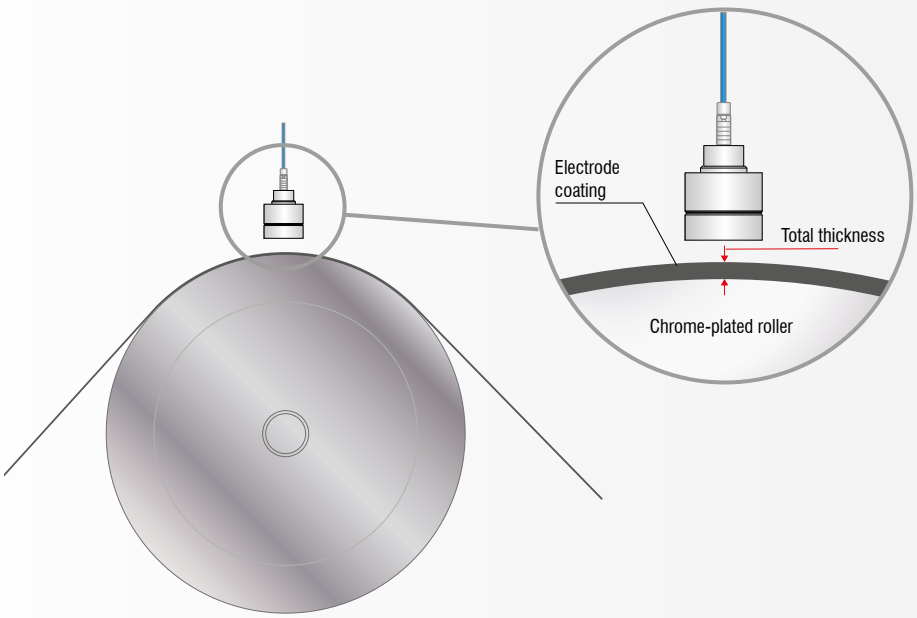
Sensor system for precise one-sided thickness measurement
combiSENSOR KSB6430

- Extremely high temperature resistance and stability from -10 °C to +180 °C
- PROFINET / EtherNet/IP, EtherCAT
- One-sided thickness measurement with a target thickness from 5 µm to 3 mm
- Repeatability from 0.5 µm
- Measurement on steel rollers with chrome coating

Sensor system for thickness measurement of electrode coatings

The combiSENSOR KSB combines an eddy current and a capacitive displacement sensor in one housing and enables precise, non-contact thickness measurement of electrode coatings on metallic substrates.

Its high temperature stability allows for the combiSENSOR to provide constant measurement values even at fluctuating ambient temperatures. In addition, the sensor is resistant to soiling which makes it ideal for harsh industrial applications where reliability and precision are crucial factors.



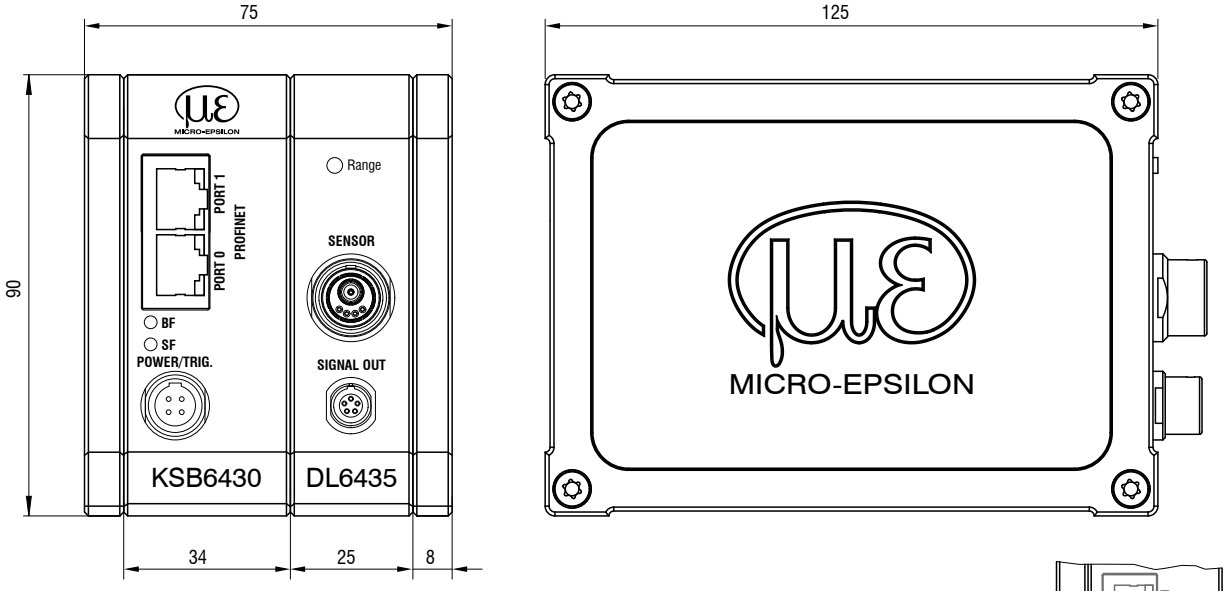
Measuring principle

The combiSENSOR KSB measures the coating thickness with a capacitive sensor to measure the distance from the coating and an eddy current sensor to measure the distance from the metal roller. The difference between the two signals provides the total thickness of the coated film, while mechanical influences are automatically compensated for.

Controller		KSB6430
Model		KSH5 (03)
Insulator thickness (D)[1]		5 µm ... 3 mm
Working distance		2 mm ... 5 mm, best performance at 2.5 mm ... 4.0 mm
Resolution[2][3]	Static (100 Hz)	0.02 µm
	Dynamic (3,9 kHz)	0.075 µm
Repeatability[4]		± 0.5 µm
Frequency response (-3dB)[5]		1 kHz
Temperature stability[6]	Sensor	< 0.25 µm/K
	Controller	< 0.25 µm/K
Supply voltage		12 … 36 VDC
Power consumption		5.5 W (24 VDC)
Digital interface		EtherCAT / PROFINET / EtherNet
Analog output		0 ... 10 V per value (distance 1, distance 2 and thickness)
Connection		Sensor: pluggable cable via socket; Supply/trigger: 4-pin connector; signal: analog via 4-pin connector, digital via RJ45 connector (see accessories for suitable connection cables)
Mounting	Controller	DIN rail mounting; desktop device
	Sensor	Radial clamping
Temperature range	Storage	Sensor: -10 ... +85 °C; cable: -10 ... +125 °C; controller: 10 ... +75 °C
	Operation	Sensor: -10 ... +180 °C; cable: -10 ... +125 °C; controller: +10 ... +60 °C
Shock (DIN EN 60068-2-27)		15 g / 6 ms in 3 axes, two directions each, 1000 shocks each
Vibration (DIN EN 60068-2-6)		0.75 mm / 10 ... 500 Hz in 3 axes, 2 directions and 10 cycles each 2 g / 10 ... 500 Hz in 3 axes, 2 directions and 10 cycles each
Protection class (DIN EN 60529)		Sensor: IP54; controller: IP40
Weight		Sensor: approx. 80 g, controller: approx. 750 g
Control and indicator elements		3 x color LEDs for range / status

[1] Insulator thickness below 40 µm on request
[2] RMS noise relates to mid of measuring range
[3] Difference signal of the digital output, measured at working distance = 50 % FSO
[4] Only applies at constant temperature and homogeneous material characteristics of the roller
[5] Only applies if sampling rate 3900Sa/s is set
[6] For recommended mounting position

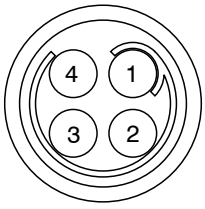
Controller



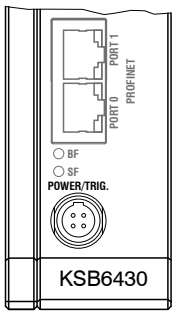
Pin assignment for power supply and signal

PIN	Wire color PC6200-3/4	Signal	Description
1	Brown	+24VIN	+24 VDC supply
2	White	Zero VIN	GND supply
3	Yellow	TRI_IN+	Trigger IN+, TTL level
4	Green	TRI_IN-	Trigger IN-
Shield			

PC6200-3/4 is an assembled supply and trigger cable that is 3 m long.

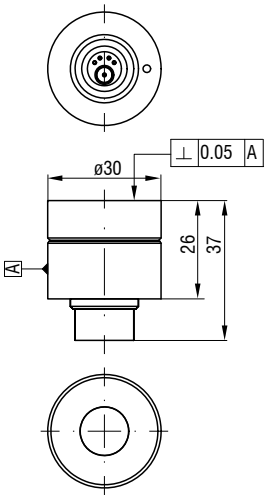


View: solder side,
4-pin ODU port

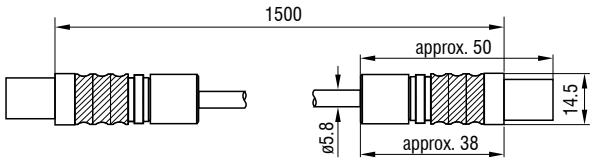


Supply input on controller,
4-pin plug

Sensor KSH5 (03)



Sensor cable KC 1.5 m (art. no. 2903630)

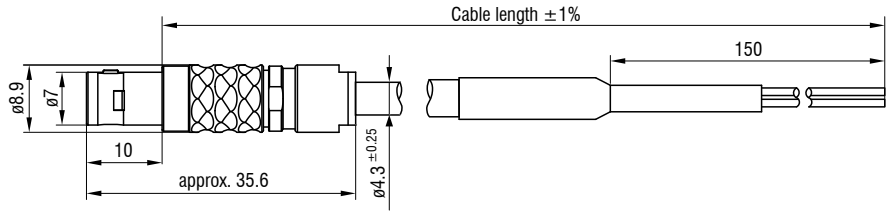


Scope of supply

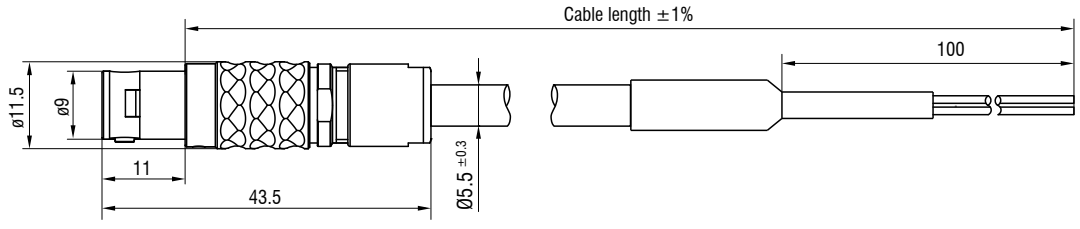
- KSB sensor
- Sensor cable KC (1.5 m)
- Controller
- PC6200 3/4 Supply and trigger cable (3 m)

Accessories	
PC6200-3/4	Supply and trigger cable, 4-pin, 3 m long
SCAC3/5	Signal output cable, analog, 5-pin, 3 m long
PS2020	Power supply unit for DIN rail mounting; input 230 VAC (115 VAC); output 24 VDC / 2.5 A; L/W/H 120x120x40 mm

SCAC3/5 Signal cable (art. no. 2902112)



PC6200-3/4 Supply and trigger cable (art. no. 2901881)



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