MICRO-EPSILON

More Precision

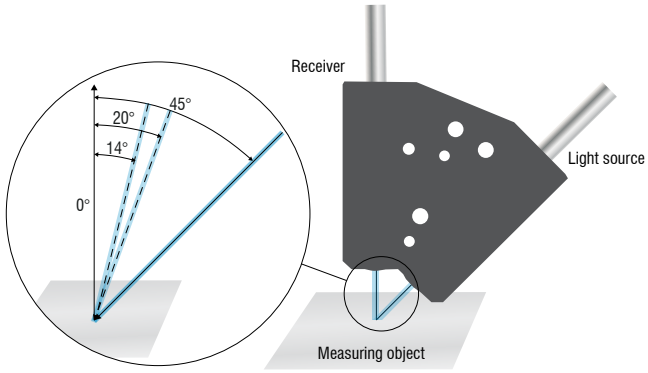
colorSENSOR // True Color Measuring Systems

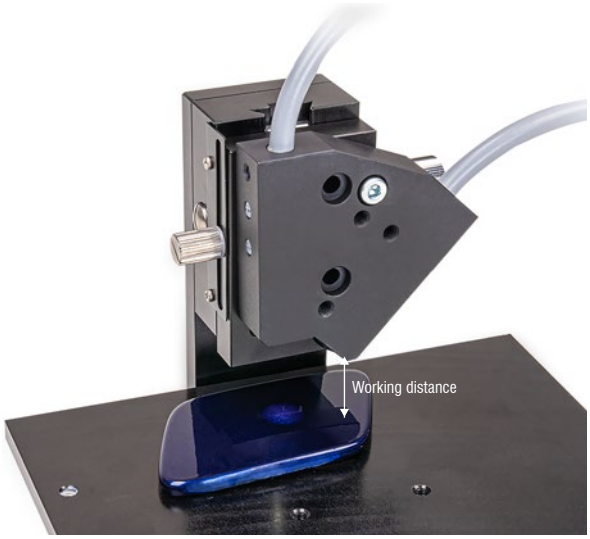
With the standard sensor, the light emitted by the controller is sent laterally at an angle of 45° (depending on type) onto the surface of the part to be inspected. The diffuse back reflection (surface color) of the sample is detected by the sensor at 0° (parallel) to the surface and transmitted to the controller via an optical fiber. The sensors are available with different measuring angles and spot sizes. Further measuring geometries are optionally available (e.g., 40°x:0°; 18°x:0°; ...)

The angular illumination of the CFS1 enables a punctual illumination of the measuring object without influencing the surface. This means that only the diffusely reflected part of the surface color is detected. This measurement arrangement is best suited for high-gloss and diffuse reflecting surfaces, since direct reflection (surface gloss) does not influence the measurement. The sensor cable has a standard FA connection and is therefore also compatible with other controllers (previous series such as LT or WLCS). The standard sensor offers many advantages in terms of performance and installation possibilities. Due to the external controller, less installation space is required at the measuring point.

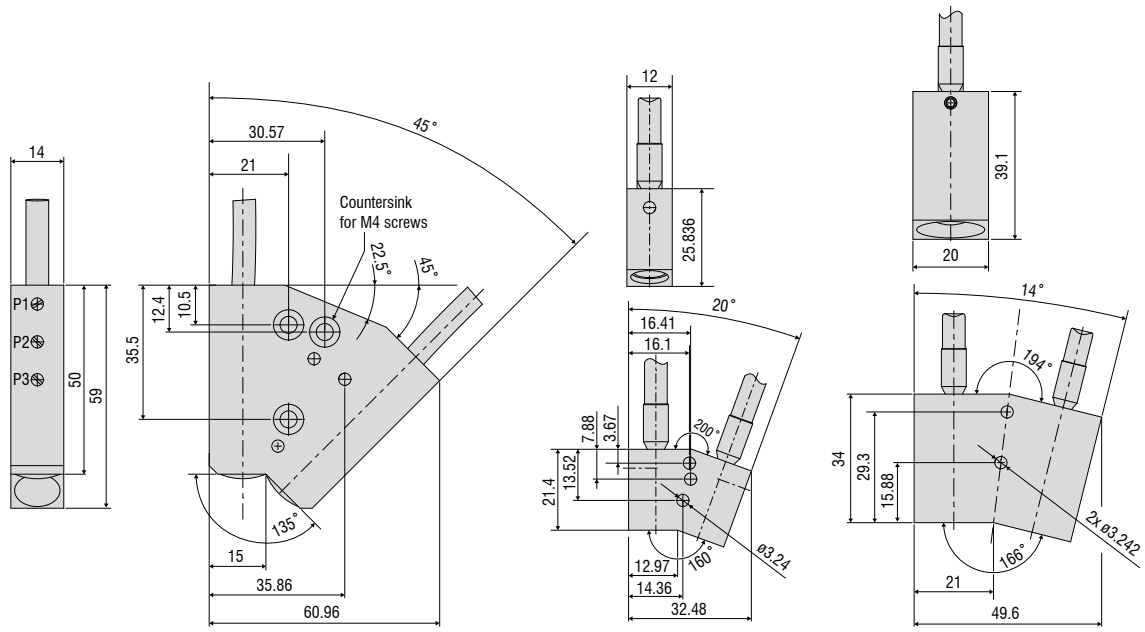
Measurement geometry

Standard sensor 45°x:0°, 20°x:0°, 14°x:0°





The standard sensor enables measurements of high-gloss surfaces.



Model		CFS1-V45			CFS1-V20	CFS1-V14
Part number		10824983			10824984	10824985
Type of sensor		Standard sensor				
		P1	P2	P3		
Working distance [1]	Start	12 mm	12 mm	9 mm	20 mm	50 mm
	Optimal	15 mm	15 mm	15 mm	33 mm	86 mm
	End	17 mm	17 mm	23 mm	45 mm	125 mm
Measurement spot diameter [1]	Start	11 mm	7 mm	17 mm	11 mm	19 mm
	Optimal	13 mm	7 mm	11 mm	10 mm	15 mm
	End	14 mm	18 mm	20 mm	18 mm	27 mm
Light spot diameter [1]	Start	15 mm	18 mm	20 mm	13 mm	23 mm
	Optimal	15 mm	18 mm	18 mm	13 mm	27 mm
	End	15 mm	18 mm	20 mm	20 mm	27 mm
Repeatability in rotation [1] [2] [4]		ΔE ≤ 4.7	ΔE ≤ 3.5	ΔE ≤ 3.2	ΔE ≤ 2.5	ΔE ≤ 1.3
Measurement geometry		45°x:0°			20°x:0°	14°x:0°
Min. target size (flat)		Ø 13 mm	Ø 7 mm	Ø 11 mm	Ø 10 mm	Ø 15 mm
Minimum curvature radius of target (curved)		130 mm	70 mm	110 mm	100 mm	150 mm
Sensitivity	Distance [1] [4]	< 24 ΔE / mm	< 12 ΔE / mm	< 2 ΔE / mm	< 3.3 ΔE / mm	< 0.3 ΔE / mm
	Tilt angle [1] [4]	< 1.2 ΔE / °			< 0.5 ΔE / °	< 0.5 ΔE / °
	Ambient light [1] [4]	< 0.3 ΔE / 1,000 lx			< 0.3 ΔE / 1,000 lx	< 0.3 ΔE / 1,000 lx
Permissible ambient light [1] [4]		< 40,000 lx			< 30,000 lx	< 20,000 lx
Max. tilt angle [1] [4]		±9°			±45°	±45°
Connection		integrated fiber-optic cable (axial) with metal-silicone (T) sheath, standard length 1.2 m; other lengths 0.3 ... 2.4 m optionally available				
Mounting		FA (M18x1)				
Temperature range	Storage / operation	Sensor head: -10 °C … +80 °C; cable: -60 °C … +180 °C				
Humidity		20 … 60 % r.H. (non-condensing)				
Protection class (DIN EN 60529)		IP54 [3]				
Material		Aluminum black anodized, glass, glass fiber bundle with metal-silicone coating (T)				
Weight		260 g			180 g	230 g
Compatibility		CFO controller (LT, WLCS, FES)				
Features		This sensor head has three adjustment positions for focusing the measuring spot; all cable variants are also available with different cable sheath, length 0.3 ... 2.4 m, vibration protection, IP protection and suitable for drag chains.			All cable variants are also available with different cable sheath, length 0.3 ... 2.4 m, vibration protection, IP protection and suitable for drag chains.	

The specified data apply to a white, diffuse reflecting surface (zenith white reference)

[1] In combination with colorSENSOR CFO200 and a repeatability of ΔE ≤0.3

[2] On titanium pearl mica from a distance of 30 mm

[3] With potted connection cable also available with IP67

[4] Valid for optimal working distance

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