MICRO-EPSILON

More Precision

colorSENSOR CFO250 // True Color Controller with fast output of measurement values

True Color Controller
colorSENSOR CFO250

- Repeatability in color DeltaE ≤0.3
- Measuring rate up to 30 kHz
- Fast output of measurement values (Lab/XYZ) up to 500 Hz
- Output trigger (edge/level) for measurement values
- Multi-teach feature
- Color memory for 320 colors in 254 color groups

Fast. Precise. Versatile.

The colorSENSOR CFO250 is a high-performance controller for precise color recognition in industrial measurement tasks. Color evaluation is performed internally based on taught colors and the result is output via the digital switching outputs at a speed of up to 30 KHz.

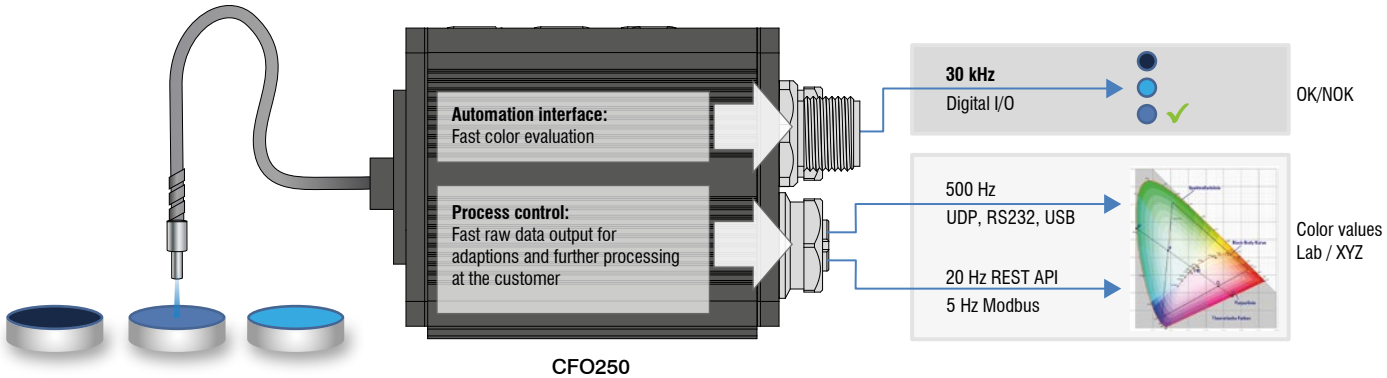
Using a simplified 3-byte protocol, the unweighted raw data can also be transmitted directly to a PLC or machine system in Lab or XYZ at up to 500 Hz via a UDP, RS232 or USB interface.

Measurement data output can be continuous or only on demand. Corresponding edge or level triggers also control for how long or how many measured values are output.

Powerful software for more precision

The intuitive web interface allows easy teach-in of 254 color groups with 320 colors in total. Multi-teach can alternatively be done via the keys.

One function alone adapts the illumination, averaging and signal amplification to the current measurement situation. Furthermore, tolerance models and tolerance values can be adjusted individually.

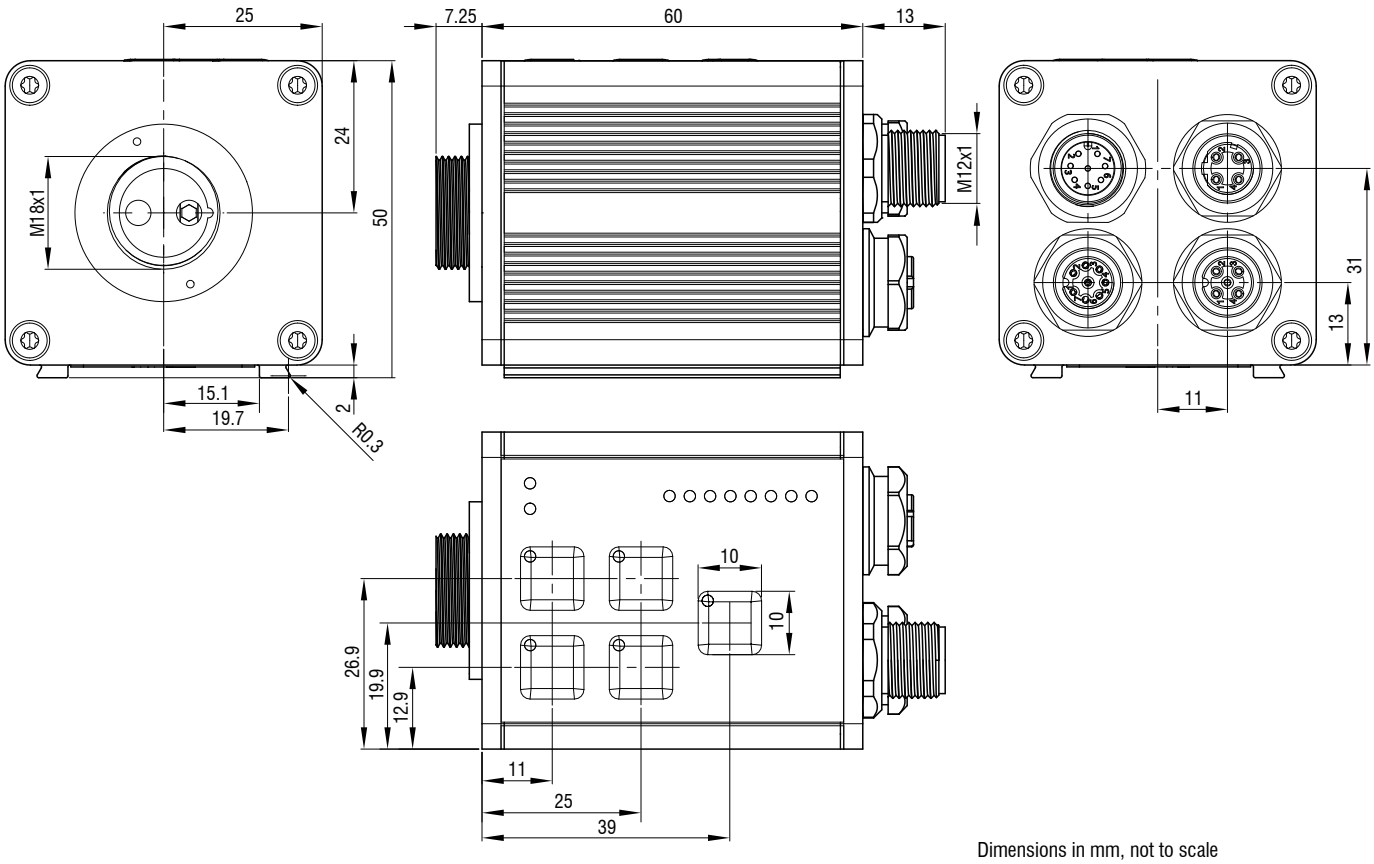


CFO250

Model		CFO250
Article number		10235603
No. of measurement channels		1
Repeatability [1]		$\Delta E \leq 0.3$
Color distance		$\Delta E \leq 0.6$
Spectral range		400 ... 680 nm
Color spaces		XYZ, xyZ, L*a*b, L*u*v, u'v'L*
Illuminants		D65
Standard observer		2°
Tolerance		Classify model; Sphere (ΔE); Cylinder (ΔL, Δab); Box (ΔL, Δa, Δb)
Memory		max. 320 colors in non-volatile EEPROM with parameter sets
Measuring rate		Standard 1 kHz; max. 30 kHz
Output of measurement values		Lab, XYZ max. 500 Hz via UDP, RS232 and USB max. 20 Hz via REST-API max. 5 Hz via Modbus
Temperature stability		< 0.1 % FSO / K [2]
Light source		White light LED (425 ... 750 nm); AC operation (adjustable or OFF for primary light source, switchable via software)
Permissible ambient light		max. 40,000 lx (depending on the CFS sensor)
Synchronization		Synchronization is possible
Supply voltage		18 ... 28 VDC
Max. current consumption		500 mA
Signal input		4 inputs (IN0 - IN3): IN0 via keypad; IN0 - IN3 configurable via web page (trigger, teach, clear, lock, adjust)
Digital interface		RS232 (standard 9600 kBaud), Ethernet, USB, Modbus (TCP/RTU) [3] [4]
Switching output		OUT0 - OUT7 Push-Pull / NPN / PNP (max. 30 kHz, color recognition, binary coding 254 color groups)
Connector	Optical	Screwable fiber optic cable via FA socket M18x1, length 0.3 m ... 2.4 m, min. bending radius 18 mm)
	Electrical	Power/PLC: 8-pin flange connector M12A; signal: 8-pin flange socket M12A; Ethernet: 4-pin flange socket M12D (DHC-capable); USB: 5-pin flange socket M12A
Mounting		DIN rail mounting/screw connection via adapter
Temperature range	Storage	-10 ... +85°C
	Operation	-10 ... +55°C
Humidity		20 % r. H. ... 80 % r. H. (nicht kondensierend)
Shock (DIN EN 60068-8-27)		15 g / 6 ms in 3 axes, two directions and 1000 shocks each
Vibration (DIN EN 60068-2-6)		2 g / 10 … 500 Hz in 3 axes, 10 cycles each
Protection class (DIN EN 60529)		IP65 (connected)
Material		Aluminum, black anodized
Weight		approx. 200 g
Compatibility		with all CFS sensors [5]
Control and indicator elements		Operation via keypad and web interface, visualization with 13 white LEDs
Special features		Multi-color teach function, automatic adjustment of the illumination brightness, measurement signal amplification and averaging depending on the measurement frequency, adjustable hold time of > 30 µs

1) Maximum color distance ΔE of 1000 successive measurements of the color value of a red and a dark gray reference tile (R = 5%), measured with the CFS4-A20 sensor at 1000 Hz and brightness adjustment with a white standard (R=95%)
2) FSO = Full Scale Output
3) RS232 adjustable up to max. 115200 kBaud
4) Optional connection via PROFINET, EtherNet/IP or EtherCAT via interface module
5) Also compatible with previous series (FAR, FAD, FAL, FAZ and FAS)

Dimensions:



Dimensions in mm, not to scale

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