MICRO-EPSILON

More Precision.

Sensor systems for testing LEDs and self-luminous objects

Color | Intensity | Function | Light spectrum

LEDs and Illumination

MFA

Sensor system for LED tests
colorCONTROL MFA

- Multipoint color recognition system
- Series with 7 detection points: MFA-7, MFA-14, MFA-21, MFA-28
- Color inspection in the XYZ, xyY, Luv, uvL and RGB color spaces
- Color distinction, intensity test & functional test
- Output of the dominant wavelength (λ_{dom}) and color temperature (CCT)

Features:
- Universal coupling of MFS receiver sensors
- Available with either 7, 14, 21 or 28 measurement channels
- Individual adaption of the sensor configuration
- Each measuring position is freely configurable in terms of color, intensity and function
- Integration into testing process via RS232, RS422 or USB interface
- Output of XYZ, xyY, Luv, uvL, RGB, CCT, λ_{dom} values
- Exchangeable MFS receiver sensors
- Sensor cables with max. 2m-plastic fiber or with max. 5m-glass fibers
- Software for comprehensive evaluation and display

Applications:
- Testing self-luminous objects
- LED tests (binning)
- Indicator tests
- Display tests
- 7-segment display tests
- Front panel tests

Function:
The information about color, intensity and light are directly transmitted from the measuring object to the MFA sensor via single fiber bundles. One MFA-28 simultaneously monitors up to 28 specimens.

The inspection of inaccessible specimens and/or specimens that are situated far apart from one another can easily be achieved using the MFA series, as optical fibers transmit the information to the evaluation unit.

Advantages
- High repeatability
- High measuring rate and dynamics
- Customer-specific MFS sensors (length and design)
- Digital interfaces: USB, RS422 or RS232

Model		MFA-7	MFA-14	MFA-21	MFA-28
Article number		11094994	11094995	11094996	11094997
No. of measurement channels		7	14	21	28
Repeatability [1]		xy < ±0.000025			
Spectral range		400 … 700 nm			
Sensitivity range		1 … 50.000 lx			
Measurement values		XYZ, xyY, Luv, uvL, RGB, CCT, λdom			
Measuring rate [2]		< 100 Hz	< 80 Hz	< 60 Hz	< 50 Hz
Temperature stability	Zero point	< 0.09 % FSO / K			
	Sensitivity	< 0.09 % FSO / K			
Supply voltage		+ 24 V DC ±10%			
Maximum power consumption		500 mA			
Digital interface		USB, RS422 or RS232			
Connector	Optical	7 connections or ports for MFS sensors	14 connections or ports for MFS sensors	21 connections or ports for MFS sensors	28 connections or ports for MFS sensors
	Electrical	8-pole M12 socket for RS422 / RS232 / USB 4-pin plug for power supply			
Mounting		Screw connection with four through-holes			
Temperature range	Storage	-10 … +55 °C			
	Operation	+0 … +50 °C			
Air humidity		20 ... 80 % r.H. (non-condensing)			
Shock (DIN EN 60068-2-27)		15 g / 6 ms + two directions, 1000 shocks in each of 3 axes			
Vibration (DIN EN 60068-2-6)		2 g / 10 … 500 Hz + 10 cycles in each of 3 axes			
Protection class (DIN EN 60529)	Front side	IP20			
Material		Aluminum housing, coated in black			
Weight		247 g	262 g	278 g	293 g
Compatibility		with all MFS sensors			
Control and indicator elements		Status LED (green: smooth operation; orange: error; blue: overmodulation)			

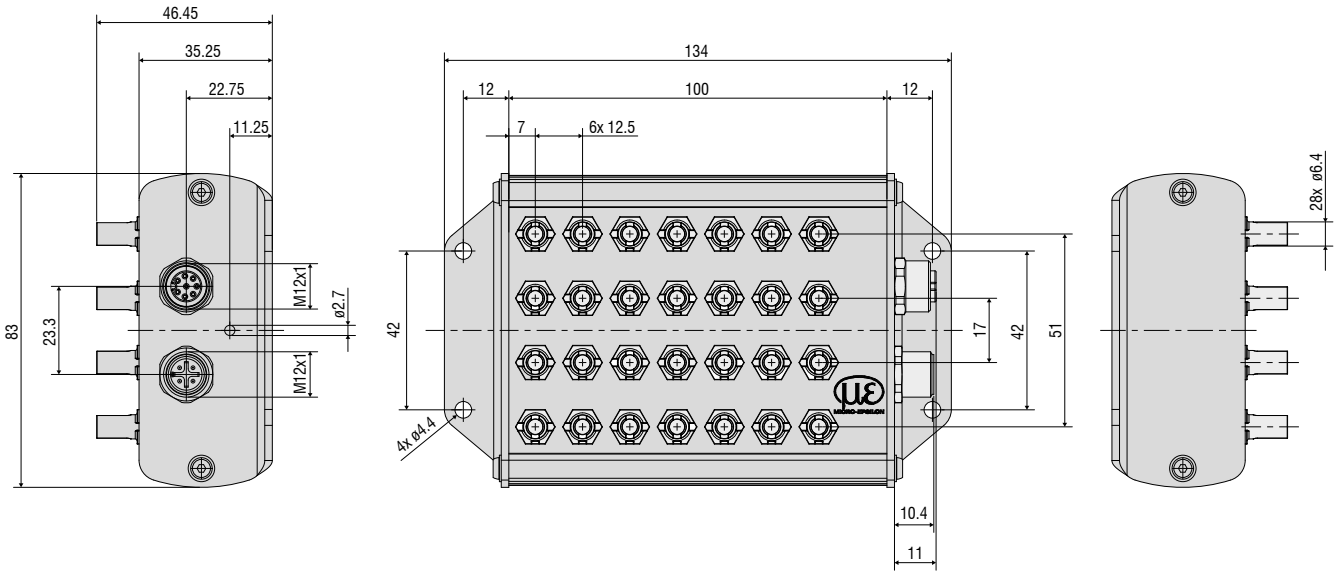
FSO = Full Scale Output

[1] Maximum color deviation in x and y of 1000 consecutive measurements on red, green, blue and white light of an RGB LED with 12W/m and 300 lm/m. Measured with MFS-K04 sensor at 10 Hz data rate and brightness adjustment to RGB color mixture white with maximum illuminance.

[2] Valid for a baud rate of 230400 and the transmission of the color values plus time stamp. The measuring rate decreases when transmitting λdom and CCT.

Dimensions:

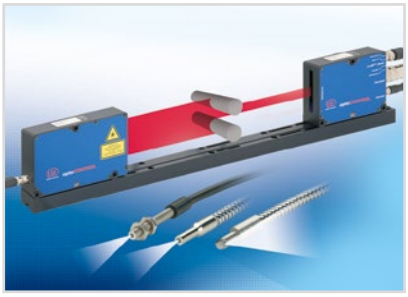
Dimensions in mm, not to scale



Sensors and systems for displacement, distance and position

Sensors and measurement devices for non-contact temperature measurement

Measuring and inspection systems for metal strips, plastics and rubber



Optical micrometers and fiber optics, measuring and test amplifiers

Color recognition sensors, LED analyzers and inline color spectrometers

3D measurement technology for dimensional testing and surface inspection

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