



More Precision

color**SENSOR** // Color sensors, LED Analyzers





- Multipoint color recognition system
- Optionally with up to 495 channels
- Color inspection in HSI and RGB color spaces
- Color differentiation/intensity tests/function tests

Features:

- Versatile coupling possibilities for fiber optics
- Individual configuration of fiber optics
- Each measuring position is freely configurable in terms of color, intensity and function
- Integration into testing process
- Good/bad evaluation
- Output of HSI, RGB and XY values via RS232, USB and Ethernet
- External trigger
- Exchangeable adapter for fiber optics
- Suitable for POF (2 m) and optical glass fiber optics up to 5 m
- Up to 20 testing points using different assembly kits

Applications:

- Testing self-luminous objects
- LED tests (binning)
- Indication tests
- Display tests
- Display tests with 7 segments
- Parallel and simultaneous inspection of up to 100 colors ≤ 1 s
- Front panel tests
- With external illumination, multipoint color testing is possible

Function:

The information about color, intensity and light are directly transmitted from the measuring object to the MFA sensor via single fiber bundles and evaluated at up to 20 points at the same time.

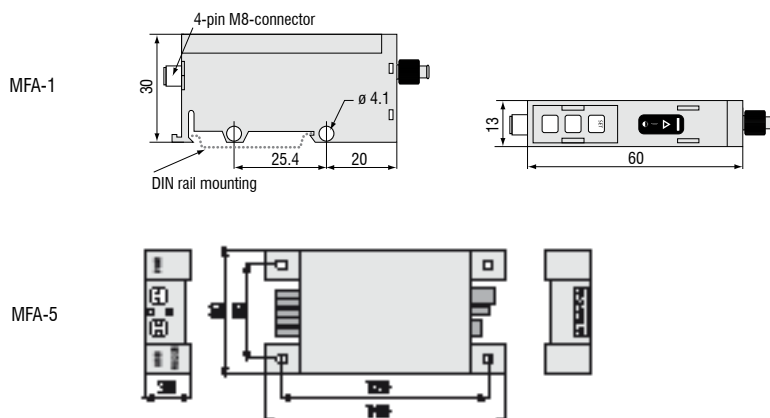
The inspection of inaccessible specimens and/or specimens situated far apart from one another can easily be achieved using the MFA series, as optical fibers transmit the information to the evaluation unit.

Using the colorCONTROL MFA-5-M expansion module, the colorCONTROL MFA-5 can be extended by 5 testing points to 20 testing points. Additionally, one of the assembly kits is required depending on the construction depths (see accessories). For example: 20 testing points require: 1x colorCONTROL MFA-5 + 3x colorCONTROL MFA-5-M + 1x assembly kit MFA-20.

The colorCONTROL MFA-5-P board model is delivered without protection housing and can be interconnected with other MFA-5-P sensors. Here it is possible to switch up to 99 MFA-5-P sensors in series and to test 495 channels simultaneously.

Dimensions:

Dimensions in mm, not to scale



| Model | MFA-1 | MFA-5 | MFA-5-M ¹⁾ | MFA-5-P |
|------------------------|---|---|------------------------------|-------------------------|
| Article number | 11094302 | 11094050 | 11094051 | 11094052 |
| Detection points | 1 | 5 | extension of MFA-5 by 5 each | 5 |
| Test spectrum | 480 - 1000 nm | 450 - 650 nm | | |
| Supply voltage | 10 - 30 VDC | 24 VDC \pm 10 % residual ripple | 24 VDC via MFA-5 | 5 VDC |
| Current consumption | 100 mA | 80 mA - 320 mA | 160 - 320 mA | 80 mA |
| Interface | - | RS232, USB, Daisy Chain | Daisy Chain | RS232, USB, Daisy Chain |
| Inputs | 1 external teach input | - | - | - |
| Outputs | 1 switching output NPN/PNP | - | - | - |
| | - | - | - | - |
| | - | - | - | - |
| Photo receiver | 1 x b/w photodiode | 5x True Color photo chip | | |
| Accuracy | \pm 5 % | \pm 4 nm | | |
| Resolution | - | 9 - 81 pixels / detection point | | |
| Data memory | EEPROM | - | - | - |
| Object distance | typ. 1 - 5 mm | | | |
| Optical fiber (length) | incl. POF 1 m; max. POF 2 m / glass 5 m | incl. POF 0.5 m; max. POF 2 m / glass 5 m | | |
| Color space | - | HSI, RGB, XY + color temperature in K | | |
| Dynamic range | 200 lx - 4000 lx | | | |
| Testing frequency | \leq 5 Hz | \leq 1 Hz (100 detection points \leq 1 s) | | |
| Operating temperature | 0 ... +60 °C | 0 ... +50 °C | | |
| Humidity | 20 % to 80 % rel. humidity (non-condensing) | | | |
| Protection class | IP65 | IP50 | IP50 | IP0 |

¹⁾ Modular expansion to 10/15/20 measuring positions

colorSENSOR Accessory

| Art. No. | Description | suitable for: |
|----------|--|---|
| 11234717 | CAB-M12-8P-co-fm-straight; 2m-PUR; open ends | colorSENSOR CFO (SYS; power and PLC) |
| 11234718 | CAB-M12-8P-co-fm-straight; 5m-PUR; open ends | colorSENSOR CFO (SYS; power and PLC) |
| 11234722 | CAB-M12-8P-co-straight; 2m-PUR; open ends | colorSENSOR CFO200 (digital I/O; PLC) |
| 11234723 | CAB-M12-8P-co-straight; 5m-PUR; open ends | colorSENSOR CFO200 (digital I/O; PLC) |
| 11234735 | CAB-M12-4P-co-straight; 2m-PUR-Cat5e; RJ45-Eth | colorSENSOR CFO (Ethernet) |
| 11234736 | CAB-M12-4P-co-straight; 5m-PUR-Cat5e; RJ45-Eth | colorSENSOR CFO (Ethernet) |
| 11234713 | CFO mounting adapter | colorSENSOR CFO |
| 11234762 | CFO DIN rail mounting kit | colorSENSOR CFO |
| 11234763 | CFO DIN rail mounting adapter | colorSENSOR CFO |
| 11234091 | CAB-M9-8P-co-straight; 2 m-PUR; open ends | colorSENSOR LT and OT series (power und PLC) |
| 11234099 | CAB-M9-8P-co-straight; 5 m-PUR; open ends | colorSENSOR LT and OT series (power und PLC) |
| 11234093 | CAB-M9-4P-co-straight; 2 m-PVC; RS232 | colorSENSOR LT-2-DU (RS232) |
| 11234101 | CAB-M9-4P-co-straight; 5m-PVC; RS232 | colorSENSOR LT-2-DU (RS232) |
| 11234094 | CAB-M9-4P-co-straight; 2m-PVC; USB | colorSENSOR LT-2-DU (USB) |
| 11234102 | CAB-M9-4P-co-straight; 5m-PVC; USB | colorSENSOR LT-2-DU (USB) |
| 11234095 | CAB-M5-4P-co-straight; 2m-PUR; RS232 | colorSENSOR OT-3 Serie (RS232) |
| 11234103 | CAB-M5-4P-co-straight; 5m-PUR; RS232 | colorSENSOR OT-3 series (RS232) |
| 11234096 | CAB-M5-4P-co-straight; 2m-PVC; USB | incl. RS232/USB converter suitable for: colorSENSOR OT-3 series (USB) |
| 11234104 | CAB-M5-4P-co-straight; 5m-PVC; USB | incl. RS232/USB converter suitable for: colorSENSOR OT-3 series (USB) |
| 11234368 | CAB-M5-4P-co-straight; 2m-PVC; RJ45-fm-Eth | incl. RS232/Ethernet converter suitable for: colorSENSOR OT-3 series (Ethernet) |
| 11234694 | White standard 30 mm zenith | colorSENSOR and colorCONTROL |
| 11234695 | White standard 30 mm zenith calibrated | colorSENSOR and colorCONTROL |
| 11233482 | White reference module | colorSENSOR LT-2-DU |
| 2420065 | PS2030 power supply 24 V / 24 W / 1 A; 2m-PVC; terminal-2P-co-fm-straight | Power supply of all sensors with 24 VDC |

colorCONTROL MFA Accessory

| Art. No. | Description | suitable for: |
|----------|---|--|
| 10814105 | POF-2.2mm fiber optics | colorCONTROL MFA |
| 11251112 | Fiber-optic thread fitting; M4 | POF-2,2 |
| 11251113 | Mountable lens 6 mm | Fiber-optic thread fitting; M4 |
| 11253931 | Fiber-optic thread fitting; 3 mm lens; M4 | POF-2,2 |
| 11254108 | Fiber-optic thread fitting; 90° lens, M5 | POF-2,2 |
| 11253959 | Reducing adapter 2.2/1 mm POF; 2 pc. | colorCONTROL MFA for use of POF-1mm |
| 10813842 | POF-1mm fiber optics | colorCONTROL MFA in connection with the reducing adapter 2.2/1mm POF |
| 11253906 | End sleeve 1 mm | POF-1 mm |
| 10824431 | End sleeve 1 mm x 50 mm | POF-1 mm |
| 11234305 | CAB-M8-4P-co-fm-straight; 2m-PUR; open ends | colorCONTROL MFA-1 (power and PLC) |
| 11234306 | CAB-M8-4P-co-fm-straight; 5m-PUR; open ends | colorCONTROL MFA-1 (power and PLC) |
| 11294205 | CAB-M9-2P-co-fm-straight; 2m-PUR; open ends | colorCONTROL MFA-5 (power) |
| 11294206 | CAB-M9-2P-co-fm-straight; 5m-PUR; open ends | colorCONTROL MFA-5 (power) |
| 11234094 | CAB-M9-4P-co-straight; 2m-PVC; USB | colorCONTROL MFA-5 (USB) |
| 11234102 | CAB-M9-4P-co-straight; 5m-PVC; USB | colorCONTROL MFA-5 (USB) |
| 11234095 | CAB-M5-4P-co-straight; 2m-PUR; RS232 | colorCONTROL MFA-5 (RS232) |
| 11234103 | CAB-M5-4P-co-straight; 5m-PUR; RS232 | colorCONTROL MFA-5 (RS232) |
| 11294243 | Assembly kit MFA-10 | colorCONTROL MFA-5 + MFA-5-M |
| 11294244 | Assembly kit MFA-15 | colorCONTROL MFA-5 + 2 x MFA-5-M |
| 11294245 | Assembly kit MFA-20 | colorCONTROL MFA-5 + 3 x MFA-5-M |
| 11294203 | CAB-socket board-6P-co-fm-straight; 2m-PVC; 2P-open ends | colorCONTROL MFA-5-P (power) |
| 11294054 | CAB-socket board-6P-co-fm-straight; 1m-PVC; USB | colorCONTROL MFA-5-P (USB and power) |
| 11294204 | CAB-socket board-4P-co-fm-straight; 2.5m-PVC; RS232 | colorCONTROL MFA-5-P (RS232) |

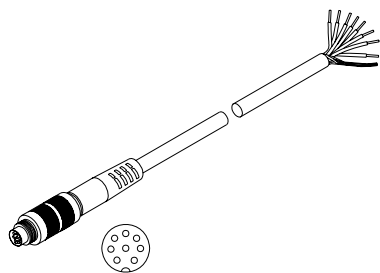
Pin assignment

CAB-M12-8P-co-fm-straight; Xm-PUR; open ends

(art.no.: 11234717; 11234718)

Connection cable SYS; Power and PLC

(max. length 10 m, PUR sheath)



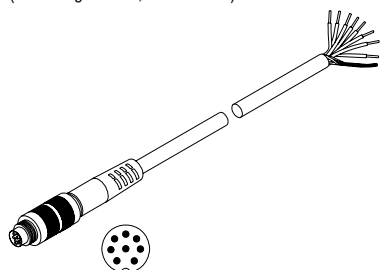
| Pin | Color | CFO100/200 |
|-----|--------|------------|
| 1 | white | IN0 |
| 2 | brown | +UB |
| 3 | green | TX |
| 4 | yellow | RX |
| 5 | gray | OUT0 |
| 6 | pink | OUT1 |
| 7 | blue | GND |
| 8 | red | OUT2 |

CAB-M9-8P-co-straight; Xm-PUR; open ends

(art.no.: 11234091; 11234098)

Connection cable to power/PLC or digital I/O

(max. length 10 m, PUR sheath)



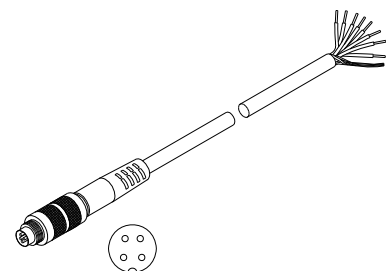
| Pin | Color | LT-2-DU SB1 | LT-2-DU SB2 | OT-3-XX |
|-----|--------|----------------------|-------------|----------------------|
| 1 | white | OUT 0 / OUT A 0 | OUT1 | GND (0V) |
| 2 | brown | OUT 1 / OUT A 1 | OUT2 | +24 VDC (\pm 10%) |
| 3 | green | IN1 | OUT3 | IN0 |
| 4 | yellow | IN0 | OUT4 | OUT0 |
| 5 | gray | CLK (OUT K) | OUT5 | OUT1 |
| 6 | pink | OUT 2 / OUT A 2 | OUT6 | OUT2 |
| 7 | blue | GND (0V) | OUT7 | OUT3 |
| 8 | red | +24 VDC (\pm 10%) | OUT0 | OUT4 |

CAB-M8-4P-fm-co-straight; Xm-PUR; open ends

(art.no.: 11234305; 11234306)

Connection cable to Power/PLC

(max. length 5 m, PUR sheath)



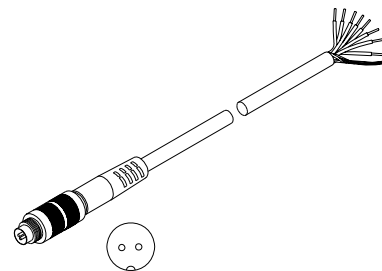
| Pin | Color | MFA-1 |
|-----|-------|----------------|
| 1 | brown | + 24 VDC |
| 2 | white | External Teach |
| 3 | blue | GND |
| 4 | black | NPN/PNP |

CAB-M9-2P-co-fm-Straight; Xm-PUR; open ends

(Art.-No.: 11294205; 11294206)

Connection cable Power

(max. length 10 m, PUR sheath)



| Pin | Color | MFA-5 |
|-----|-------|---------|
| 1 | white | +24 VDC |
| 2 | brown | GND |

High performance sensors made by Micro-Epsilon



Sensors and systems for displacement and position



Sensors and measurement devices for non-contact temperature measurement



2D/3D profile sensors (laser scanner)



Optical micrometers, fiber optic sensors and fiber optics



Color recognition sensors, LED analyzers and color inline spectrometer



Measurement and inspection systems

