



More Precision

colorSENSOR // Color sensors, LED Analyzers





- Color sensor for large distances
- 31 colors can be saved
- Coaxial lens for large working distances up to 900mm
- Color and gray scale evaluation
- PC programming via RS232

Features:

- Object distance typ. 50 mm - 900 mm
- Integrated transmitter and receiving optics (coaxial)
- Color memory: 31 colors per Teach-in and software
- RS232 interface (optional USB adapter)
- Super bright white light LED
- Color, contrast and gray-scale detection
- Switchable brightness readjustment
- Max. switching frequency: 35 kHz
- Different evaluation algorithms can be activated e.g., "BEST HIT" mode
- Switching state display via 5 yellow LEDs
- Temperature compensation (<math><0.01\% / K</math>)
- Switchable averaging function
- Color control of self-luminous objects

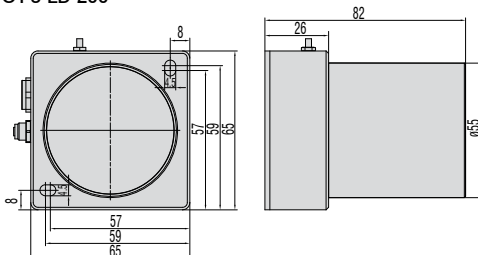
Application examples:

- Color recognition from a large distance up to 900 mm
- Correct product positioning in production machines
- Packaging control
- Color sorting tasks
- Color assignment with cars
- Detection of bottle crates
- Paper recycling recognition
- Illumination recognition as per color and intensity

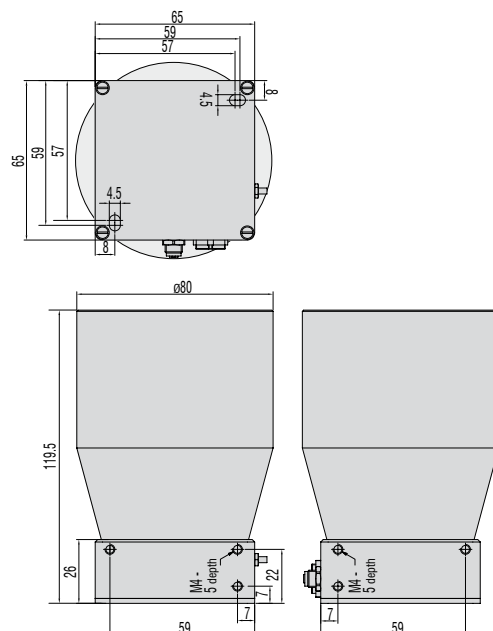
Dimensions:

Dimensions in mm, not to scale

OT-3-LD-200



OT-3-LD-500



| Model | OT-3-LD-200-6 | OT-3-LD-200-12 | OT-3-LD-200-26 | OT-3-LD-500-23 | OT-3-LD-500-50 |
|-----------------------------|--|---|---|--|--|
| Article number | 10234434 | 10234437 | 10234438 | 10234085 | 10234086 |
| Object distance | typ. 100 - 700 mm ideal distance 200 mm | typ. 50 - 500 mm ideal distance 200 mm | typ. 50 - 500 mm ideal distance 200 mm | typ. 100 - 900 mm ideal distance 500 mm | typ. 100 - 900 mm ideal distance 500 mm |
| Light spot | Ø 4 - 28 mm | Ø 4 - 32 mm | Ø 6 - 70 mm | Ø 6 - 46 mm | Ø 8 - 105 mm |
| Light spot diameter | Ø 6 mm with 200 mm | Ø 12 mm with 200 mm | Ø 26 mm with 200 mm | Ø 25 mm with 500 mm | Ø 58 mm with 500 mm |
| Repeatability ¹⁾ | | $\Delta E \leq 0.9$ | | | $\Delta E \leq 1.5$ |
| Color distance | | $\Delta E \leq 1.8$ | | | $\Delta E \leq 3.0$ |
| Color spaces | X/Y INT; s/i M (Lab) | | | | |
| Averaging | over a maximum of 32768 values | | | | |
| Size of color memory | max. 31 colors in non-volatile EEPROM with parameter sets | | | | |
| Switching frequency | max. 35 kHz (depending on number of colors learned and setting for averaging) | | | | |
| Temperature drift X,Y | < 0.01 % / K | | | | |
| Light source | ultra-bright white light LED, AC/DC/PULSE modes (adjustable or OFF for self-luminous objects, switchable via software) ²⁾ | | | | |
| Type of illumination | coaxial | | | | |
| Effect from illumination | large object distance | | | | |
| Ambient light | up to 5000 Lux (in AC and PULSE modes) | | | | |
| Alternating light operation | AC: typ. up to 20 kHz (depending on amplification level AMP1 to AMP8) DC: typ. up to 35 kHz PULSE: typ. switchable by PC software up to 5 kHz | | | | |
| Power supply | +24 VDC ($\pm 10\%$), reverse polarity protection, overload-proof | | | | |
| Power consumption | typ. 160 mA | | | | |
| Max. switching current | 100 mA, short circuit proof | | | | |
| TEACH key/inputs | 1 key and IN0 for external teaching of the color references | | | | |
| Outputs | OUT0 - OUT4, digital (0V/+Ub), short circuit proof, 100 mA max. switching current npn/pnp capable (switchable light/dark switching) | | | | |
| Switching state display | visualization with 5 yellow LEDs | | | | |
| Interface | RS232 (optional USB) | | | | |
| Type of connector | to PLC: 8-pole flange socket (Binder series 712) to PC: 4-pole flange socket (Binder series 707) | | | | |
| Connection cable | power/PLC: art.no. 11234091 / PC: art.no. 11234095 (RS232); 11234096 (USB) | | | | |
| Receiver | 3-color filter detector (XYZ TRUE COLOR Detector, color filter curve according to CIE1931) | | | | |
| Software | colorCONTROL S | | | | |
| Pulse extension | adjustable from 0ms to 100ms | | | | |
| Signal amplification | 8 stages (AMP1 - AMP8), adjustable | | | | |
| Housing material | Aluminum, anodized black | | | | |
| Operating temperature | -20 ... +55 °C | | | | |
| Storage temperature | -20 ... +85 °C | | | | |
| Protection class | IP67 (lens), IP64 (electronics) | | | | |
| EMC test according to | DIN EN60947-5-2 | | | | |

¹⁾ Maximum color distance ΔE of 250 successive measurements of the color value of a light gray reference tile (R = 61%), measured with sensor FAR-TA2.0-2,5-1200-67° at 1000 Hz and brightness adjustment with a white standard (R=95%)

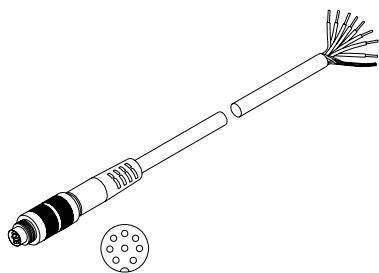
²⁾ Suitable for illumination testing

| colorSENSOR Accessory | | |
|-----------------------|--|--|
| Art. No. | Description | suitable for: |
| 11234717 | CAB-M12-8P-fm-co-straight; 2m-PUR; open ends | colorSENSOR CFO (SYS; power and PLC) |
| 11234718 | CAB-M12-8P-fm-co-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; 2m-PUR; open ends | colorSENSOR OT (power and PLC) |
| 11234099 | CAB-M9-8P-co-straight; 5m-PUR; open ends | colorSENSOR OT (power and PLC) |
| 11234095 | CAB-M5-4P-co-straight; 2m-PUR; RS232 | colorSENSOR OT (RS232) |
| 11234103 | CAB-M5-4P-co-straight; 5m-PUR; RS232 | colorSENSOR OT (RS232) |
| 11234096 | CAB-M5-4P-co-straight; 2m-PVC; USB | incl. RS232/USB converter suitable for: colorSENSOR OT (USB) |
| 11234104 | CAB-M5-4P-co-straight; 5m-PVC; USB | incl. RS232/USB converter suitable for: colorSENSOR OT (USB) |
| 11234368 | CAB-M5-4P-co-straight; 2m-PVC; RJ45-fm-Eth | incl. RS232/Ethernet converter suitable for: colorSENSOR OT (Ethernet) |
| 11234694 | White standard 30 mm zenith | colorSENSOR and colorCONTROL |
| 11234695 | White standard 30 mm zenith calibrated | colorSENSOR and colorCONTROL |
| 2420065 | PS2030 power supply 24V/24W/ 1A; 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-2.2 mm 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-1 mm |
| 10813842 | POF-1mm fiber optics | colorCONTROL MFA in connection with the reducing adapter 2.2/1 mm POF |
| 11253906 | Guide sleeve 1 mm | POF-1 mm |
| 10824431 | Guide sleeve 1 mm x 50 mm | POF-1 mm |
| 11234305 | CAB-M8-4P-fm-co-straight; 2m-PUR; open ends | colorCONTROL MFA-1 (power and PLC) |
| 11234306 | CAB-M8-4P-fm-co-straight; 5m-PUR; open ends | colorCONTROL MFA-1 (power and PLC) |
| 11294205 | CAB-M9-2P-fm-co-straight; 2m-PUR; open ends | colorCONTROL MFA-5 (power) |
| 11294206 | CAB-M9-2P-fm-co-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) |

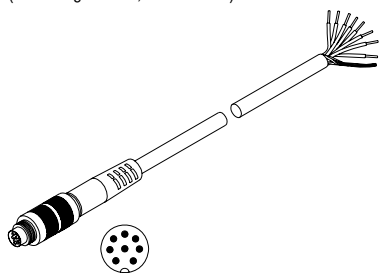
Pin assignment

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)



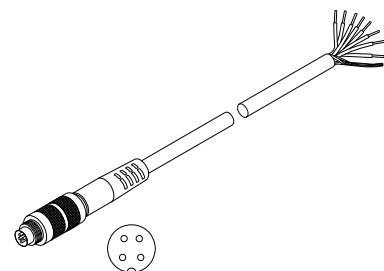
| Pin | Color | CFO100/200 |
|-----|--------|------------|
| 1 | white | IN0 |
| 2 | brown | +UB |
| 3 | green | TX |
| 4 | yellow | RX |
| 5 | gray | OUT0 |
| 6 | pink | OUT1 |
| 7 | blue | GND |
| 8 | red | OUT2 |

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)



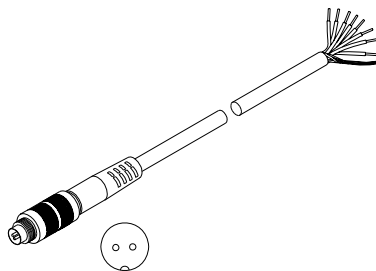
| Pin | Color | OT-3-LD |
|-----|--------|------------------------|
| 1 | white | GND (0V) |
| 2 | brown | +24 VDC ($\pm 10\%$) |
| 3 | green | IN0 |
| 4 | yellow | OUT0 |
| 5 | gray | OUT1 |
| 6 | pink | OUT2 |
| 7 | blue | OUT3 |
| 8 | red | OUT4 |

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 | + 24VDC |
| 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

