



More Precision

colorSENSOR // Colors sensors, LED Analyzers





- Color sensor for reflecting and structured surfaces
- 31 colors can be saved
- Polarized illumination for highly reflecting surfaces
- Color and gray scale evaluation
- PC programming via RS232

Features:

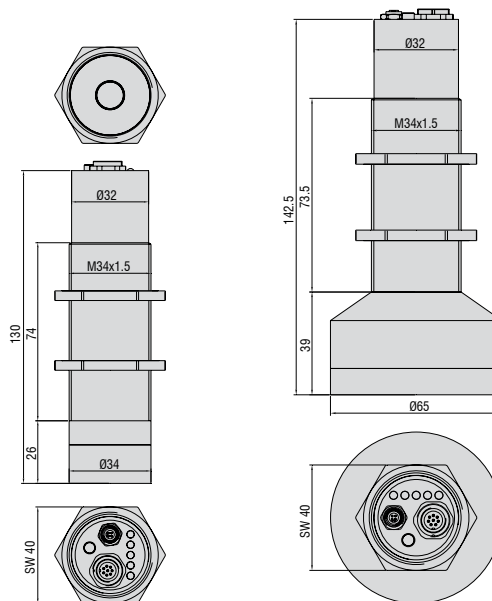
- White light LED ring with polarization filter, covered with clear glass
- Object distance, typically 10 mm - 300 mm
- Polarization filter (strongly reduces the gloss effect)
- Color memory: 31 colors via Teach-in and software
- RS232 interface (optional USB adapter)
- Insensitive to external light up to 5000 Lux
- Switchable brightness readjustment
- Max. switching frequency: 30 kHz
- Different evaluation algorithms can be activated, e.g. „BEST HIT“ mode
- Switching state display via 5 yellow LEDs
- Switchable averaging function
- Color control of self-luminous objects

Application examples:

- Color recognition on highly reflective and/or strongly structured surfaces
- Detection of color rings
- Color mark recognition in printing industry
- Packaging control
- Color sorting tasks
- Color control of self-luminous object (LEDs, displays, etc.)

Dimensions:

Dimensions in mm, not to scale



OT-3-HR-30-8/OT-3-HR-30-16
OT-3-HR-50-12.5/OT-3-HR-50-25

OT-3-HR-80-36

| Model | OT-3-HR-30-8 | OT-3-HR-30-16 | OT-3-HR-50-12.5 | OT-3-HR-50-25 | OT-3-HR-80-36 |
|-----------------------------|---|---------------------|--|---------------------|---|
| Article number | 10234079 | 10234080 | 10234081 | 10234082 | 10234083 |
| Object distance | typ. 10 mm - 40 mm ideal distance 30 mm | | typ. 20 mm - 80 mm ideal distance 50 mm | | typ. 40 mm - 100 mm ideal distance 80 mm |
| Light spot | Ø 4 - 10 mm | Ø 8 - 20 mm | Ø 5 - 20 mm | Ø 10 - 40 mm | Ø 30 - 40 mm |
| Light spot diameter | Ø 8 mm with 30 mm | Ø 16 mm with 30 mm | Ø 12.5 mm with 50 mm | Ø 25 mm with 50 mm | Ø 36 mm with 80 mm |
| Repeatability ¹⁾ | $\Delta E \leq 0.9$ | | | | |
| Color distance | $\Delta E \leq 1.8$ | | | | |
| Color spaces | X/Y INT; s/i M (Lab) | | | | |
| Averaging | over a maximum of 32,768 values | | | | |
| Size of color memory | max. 31 colors in non-volatile EEPROM with parameter sets | | | | |
| Switching frequency | max. 30kHz (depending on number of colors learned and setting for averaging) | | | | |
| Temperature drift X, Y | < 0.01 % / K | | | | |
| Light source | 8x white light LEDs | 8x white light LEDs | 8x white light LEDs | 8x white light LEDs | 12x white light LEDs |
| | AC/DC modes (adjustable or OFF for self-luminous objects, switchable via software) | | | | |
| Type of illumination | polarization filter, focused | | | | |
| Effect from illumination | strongly reduced gloss effect, suitable for highly reflecting surfaces | | | | |
| Ambient light | up to 5000 Lux (AC mode) | | | | |
| Alternating light operation | AC: typ. 10 kHz to 40 kHz (depending on amplification level AMP1 to AMP8) DC: switchable by PC software | | | | |
| Power supply | +24 VDC ($\pm 10\%$), reverse polarity protection, overload-proof | | | | |
| Power consumption | typ. 320 mA | | | | |
| Max. switching current | 100 mA, short circuit proof | | | | |
| TEACH key/inputs | 1 key and IN0 for external teaching of the color references | | | | |
| Outputs | OUT 0 - OUT 4, 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 | power/PLC: 8-pole flange socket; (Binder series 712) PC: 4-pole flange socket (Binder series 712) | | | | |
| Connection cable | to power/PLC: art. no. 11234091 to 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 0 ms to 100 ms | | | | |
| 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%)

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)



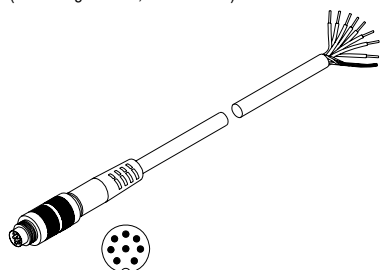
| Pin | Color | CFO100/200 |
|-----|--------|------------|
| 1 | white | IN0 |
| 2 | brown | +UB |
| 3 | green | TX |
| 4 | yellow | RX |
| 5 | gray | OUT0 |
| 6 | pink | OUT1 |
| 7 | blue | GND |
| 8 | red | OUT2 |

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)



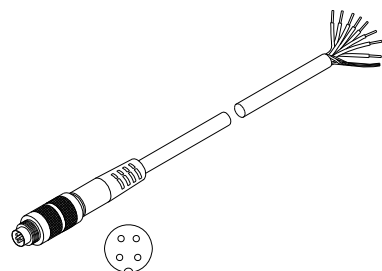
| Pin | Color | LT-2-DU SB1 | LT-2-DU SB2 | OT-3-XX |
|-----|--------|----------------------|-------------|----------------------|
| 1 | white | OUT 0 / OUT A 0 | OUT1 | GND (0V) |
| 2 | brown | OUT 1 / OUT A 1 | OUT2 | +24 VDC (\pm 10%) |
| 3 | green | IN1 | OUT3 | IN0 |
| 4 | yellow | IN0 | OUT4 | 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)



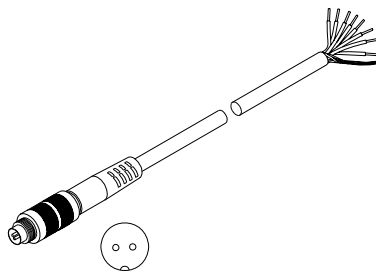
| Pin | Color | MFA-1 |
|-----|-------|----------------|
| 1 | brown | + 24 VDC |
| 2 | white | External Teach |
| 3 | blue | GND |
| 4 | black | NPN/PNP |

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

