

More Precision

colorSENSOR // Colors sensors, LED Analyzers





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

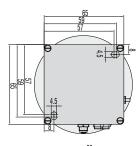
Features:

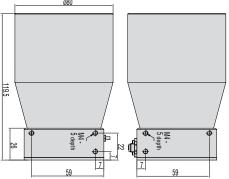
- Object distance typ. 50 mm 900 mm
- Integrated transmitter and receiving optics (coaxial)
- Color memory: 31 colors via Teach-in and software
- RS232 interface (optional USB adapter)
- Super bright white light LED
- Color, contrast and gray-scale detection
- Insensitive to external light up to 5000 Lux
- 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 (<0.01% / K)
- 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

OT-3-LD-500

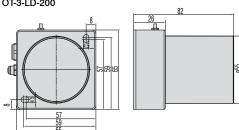




Dimensions:

Dimensions in mm, not to scale

OT-3-LD-200



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		ΔE ≤ 1.8		$\Delta E \leq 3.0$	
Color spaces	X/Y INT; s/i M (Lab)				
Averaging	over a maximum of 32,768 values				
Size of color memory		max. 31 colors i	n non-volatile EEPROM with	parameter sets	
Switching frequency		max. 35kHz (depending o	n 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 (± 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	OUT 0 - OUT 4, digital (0 V/+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 (Bind	der series 712) to PC: 4-pole	e flange socket (Binder serie	es 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 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 Δ E of 250 successive measurements of the color value of a light gray reference tile (R = 61%), measured with sensor FAR-T-A2.0-2,5-1200-67° at 1000 Hz and brightness adjustment with a white standard (R = 95%) 2 suitable for illumination testing

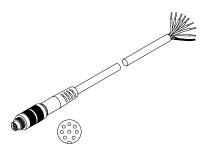
colorSENSOF	R Accessory	
Art. No.	Description	suitable for:
11234717	CAB-M12-8P-co-fm-straight; 2m-PUR; open ends	colorSENSOR CFO (SYS; power and PLC)
11234718	CAB-M12-8P-co-fm-straight; 5m-PUR; open ends	colorSENSOR CFO (SYS; power and PLC)
11234722	CAB-M12-8P-co-straight; 2m-PUR; open ends	colorSENSOR 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

colorCONTR	OL 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

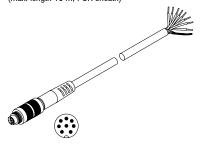
(art.no.: 11234717; 11234718) Connection cable SYS; Power and PLC (max. length 10 m, PUR sheath)



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	ОТ-3-ХХ
1	white	OUT 0 / OUT A 0	OUT1	GND (0V)
2	brown	OUT 1 / OUT A 1	OUT2	+24 VDC (± 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 (± 10%)	OUT0	OUT4

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

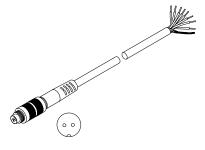
(art.no.: 11234305; 11234306) Connection cable to Power/PLC (max. length 5 m, PUR sheath)



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





