



# More Precision

**colorSENSOR** // Colour Sensors, LED Analyzers





- Multiple-point colour testing system
- Optionally with up to 20 channels
- Colour testing in HSI and RGB colour space
- Colour differentiation/intensity test

#### Features:

- Universal connection of fibre optics
- Individual adaptation of the fibre optic configuration
- Each measuring point can be freely configured to colour, intensity and function
- Integration in test sequence
- Good/poor evaluation
- Output of HSI, RGB and XY values via RS232 or USB
- External trigger
- Replaceable fibre optic adapter
- Suitable for POF (2m) and glass fibre optics up to 5m
- Up to 20 testing points using different assembly kits

#### Anwendungen:

- Self-luminous object inspection
- LED test (binning)
- Indication test
- Display test
- 7 segment display inspection
- Checking up to 20 colours parallel and simultaneously  $\leq 1s$
- Frontpanel test
- With external illumination, multiple-point colour testing is possible

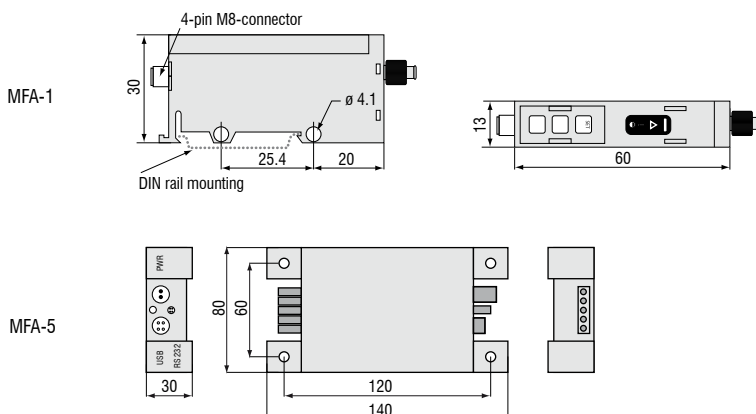
#### Function:

The colour, intensity and light information is fed directly from the measuring object to the MFA via single fibre bundles and evaluated at up to 20 points at the same time. The inspection of inaccessible and/or remote systems is not difficult with the MFA series, because the information is transmitted to the intelligent evaluation system via fibre optics.

The colorCONTROL MFA-5 can be enlarged up to 20 testing points using the module colorCONTROL MFA-5-M. Additionally, one of the assembly kits is required depending on the construction depths (see accessories). For example: 20 inspection tests require: 1x colorCONTROL MFA-5 + 3x colorCONTROL MFA-5-M + 1x assembly kit MFA-20.

#### Dimensions:

Dimensions in mm, not to scale



Type	MFA-1	MFA-5	MFA-5-M <sup>1)</sup>	MFA-5-P
Article number	11094302	11094050	11094051	11094052
Measuring points	1	5	extension of MFA-5 up to 10/15 or 20	5
Test spectrum	480 - 1000nm		450 - 650nm	
Power supply	10 - 30VDC	24VDC +/- 10% residual ripple	24VDC via MFA-5	5VDC
Current consumption	100mA	80mA-320mA	160-320mA	80mA
Interface	-	RS232, USB, daisy chain	daisy chain	RS232, USB, daisy chain
Inputs	1 external teach input	-	-	-
Outputs	1 switching output npn/pnp	-	-	-
	-	-	-	-
	-	-	-	-
Photo Receiver	1x black and white photodiode		5x TRUE COLOR photochip	
Accuracy	±5%		±4nm	
Resolution	-		9-81 pixels per measuring point	
Data memory	EEPROM	-	-	-
Object distance			typ. 1-5mm	
Fibre optic	incl. POF 1m; max. POF 2m / glass 5m		incl. POF 0.5m; max. POF 2m / glass 5m	
Colour space	-		HSI, RGB, XY + colour temperature in K	
Dynamic range			200lx - 4000lx	
Testing frequency	≤5Hz		≤1Hz (20 measuring points ≤1s)	
Operating temperature	0 to +60°C		0 to +50°C	
Humidity			20% to 80% rel. humidity (non-condensing)	
Protection class	IP 65	IP 50	IP 50	IP 0

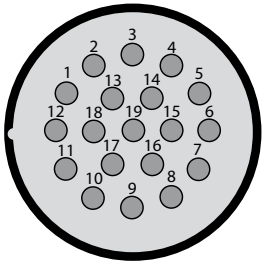
<sup>1)</sup> Modular extension to 10/15/20 measuring points

colorSENSOR accessories		
Art. no.	description	suitable for:
11234089	CAB-M23-19P-co-fm-straight; 2m-PUR; open ends	colorSENSOR WLCS M-41 (power and PLC)
11234097	CAB-M23-19P-co-fm-straight; 5m-PUR; open ends	colorSENSOR WLCS M-41 (power and PLC)
11234090	CAB-M9-3P-co-straight; 2m-PUR; RS232	colorSENSOR WLCS M-41 (RS232)
11234098	CAB-M9-3P-co-straight; 5m-PUR; RS232	colorSENSOR WLCS M-41 (RS232)
11234091	CAB-M9-8P-co-straight; 2m-PUR; open ends	colorSENSOR LT and OT series (power and PLC)
11234099	CAB-M9-8P-co-straight; 5m-PUR; open ends	colorSENSOR LT and OT series (power and PLC)
11234092	CAB-M9-5P-co-straight; 2m-PUR; RS232	colorSENSOR OT-3-XX-200 (RS232)
11234100	CAB-M9-5P-co-straight; 5m-PUR; RS232	colorSENSOR OT-3-XX-200 (RS232)
11234093	CAB-M9-4P-co-straight; 2m-PVC; RS232	colorSENSOR LT-1-ST; LT-2-XX (RS232)
11234101	CAB-M9-4P-co-straight; 5m-PVC; RS232	colorSENSOR LT-1-ST; LT-2-XX (RS232)
11234094	CAB-M9-4P-co-straight; 2m-PVC; USB	colorSENSOR LT-2-XX (USB)
11234102	CAB-M9-4P-co-straight; 5m-PVC; USB	colorSENSOR LT-2-XX (USB)
11234095	CAB-M5-4P-co-straight; 2m-PUR; RS232	colorSENSOR LT-1-LC-20; LT-3; OT-3 series (RS232)
11234103	CAB-M5-4P-co-straight; 5m-PUR; RS232	colorSENSOR LT-1-LC-20; LT-3; OT-3 series (RS232)
11234096	CAB-M5-4P-co-straight; 2m-PVC; USB	incl. RS232 to USB adapter suitable for: colorSENSOR LT-1-LC-20; LT-3; OT-3 series (USB)
11234104	CAB-M5-4P-co-straight; 5m-PVC; USB	incl. RS232 to USB adapter suitable for: colorSENSOR LT-1-LC-20; LT-3; OT-3 series (USB)
11234368	CAB-M5-4P-co-straight; 2m-PVC; RJ45-co-fm-Eth	incl. RS232 to Ethernet adapter suitable for: colorSensor LT-1-LC-20; LT-3; OT-3 series (Ethernet)
11234274	reflectance standard 1.25" Fluorilon	colorSENSOR and colorCONTROL
11233482	white reference modul	colorSENSOR LT-2-DU
2420065	PS2030 power supply 24V/24W/ 1A; 2m-PVC; terminal-2P-co-fm-straight	Power supply of all sensors with 24 V DC

colorCONTROL MFA accessories		
Art. no.	description	suitable for:
10814105	POF-2.2mm plastic fibre optic cable	colorCONTROL MFA
11251112	thread fitting; LWL; M4	POF-2.2
11251113	lens optic 6mm	thread fitting; LWL; M4
11253931	thread fitting; 3mm lens; LWL; M4	POF-2.2
11254108	thread fitting; 90° optics; LWL; M5	POF-2.2
11253959	reducer sleeve 2.2/1mm POF; 2 pcs.	colorCONTROL MFA for use of POF-1mm
10813842	POF-1mm fibre optic cable	colorCONTROL MFA in connection with the reducer sleeve 2.2/1mm POF
11253906	guide sleeve 1mm	POF-1mm
10824431	guide sleeve 1 mm x 50 mm	POF-1mm
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)

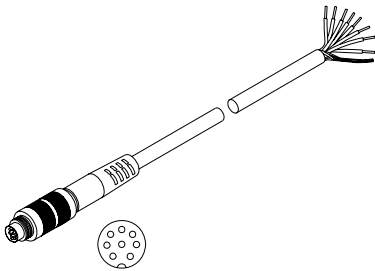
**Pin assignment**

**CAB-M23-19P-co-fm-straight; Xm-PUR; open ends**  
(Art. no.: 11234089; 11234097)



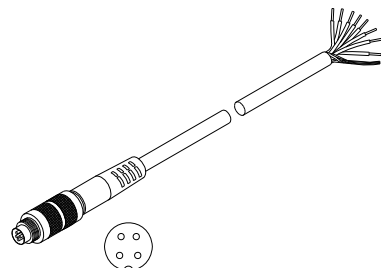
Pin	Colour	WLCS-M-41
1	green	IN TF
2	grey	OUT Int. OK
3	pink	n.c.
4	red	OUT 4
5	white	OUT 2
6	blue	GND (0V)
7	violet	n.c.
8	grey/pink	n.c.
9	red/blue	IN HOLD
10	white/green	IN 1
11	brown/green	IN 2
12	yellow	PE
13	white/yellow	Common
14	-	-
15	black	OUT 1
16	yellow/brown	OUT 3
17	white/grey	IN 3
18	grey/brown	IN 4
19	brown	+24V DC (±10%)

**CAB-M9-8P-co-straight; Xm-PUR; open ends**  
(Art. no.: 11234091; 11234098)  
Connection cable to power/PLC or digital I/O  
(max. length. 10m, sheath PUR)



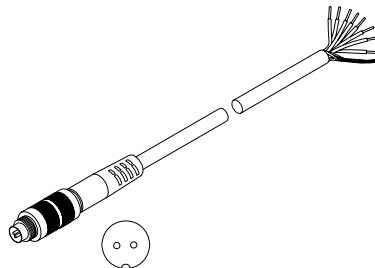
Pin	Colour	LT-1- LC-10 / ST	SB1 LT-2- ST/DU	SB2 LT-2- ST/DU	LT-1-LC-20 LT-3-XX/OT-3-XX
1	white	OUT 0	OUT 0 / OUT A 0	OUT 1	GND (0V)
2	brown	OUT 1	OUT 1 / OUT A 1	OUT 2	+24V DC (±10%)
3	green	IN 1	IN 1	OUT 3	IN 0
4	yellow	IN 0	IN 0	OUT 4	OUT 0
5	grey	n.c. / OUT 4	CLK (OUT K)	OUT 5	OUT 1
6	pink	OUT 3	OUT 2 / OUT A 2	OUT 6	OUT 2
7	blue	GND (0V)	GND (0V)	OUT 7	OUT 3
8	red	+24V DC (±10%)	+24V DC (±10%)	OUT 0	OUT 4

**CAB-M8-4P-co-fm-straight; Xm-PUR; open ends**  
(Art. no.: 11234305; 11234306)  
Connection cable to power/PLC  
(max. length 5m, sheath PUR)



Pin	Colour	MFA-1
1	brown	+ 24V DC
2	white	Extern Teach
3	blue	GND
4	black	NPN/PNP

**CAB-M9-2P-co-fm-straight; Xm-PUR; open ends**  
(Art. no.: 11294205; 11294206)  
Connection cable to power  
(max. length. 10m, sheath PUR)



Pin	Colour	MFA-5
1	white	+24V DC
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, fibre optic sensors and fibre optics



Colour recognition sensors, LED analyzers and colour online spectrometer



Measurement and inspection systems