MICRO-EPSILON

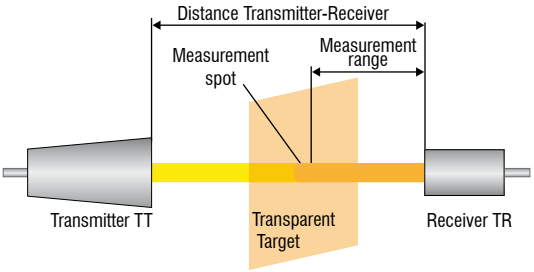
More Precision

colorCONTROL ACS7000 // Inline color measuring system

- *Measurement of transparent and self-luminous objects*
- *Measurement distance: max. 300mm*
- *Measurement geometry: transmitted light*
- *Measurement spot: ø 5/ø 9mm (at a measurement distance up to 200mm)*

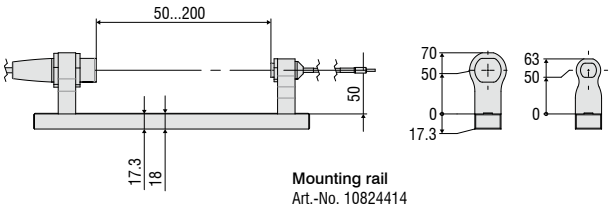
The ACS3 transmission sensor is applied for measurements of self-luminous objects and transparent objects such as film, glass and Plexiglas®. The color of self-luminous objects can be detected as well for which only the receiver unit is required. Measuring transparent objects requires a transmitter (TT) and receiver unit (TR) which are easily installed by using a mounting set.

Measurement geometry
Transmitted light

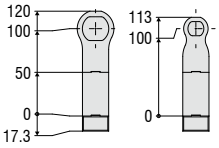


Transmission sensor with transmitter (TT) and receiver (TR) 0°:180°

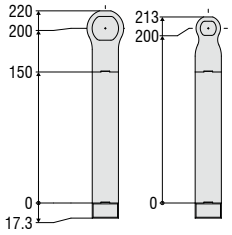
FCS-ACS3-200 mounting rail



Mounting rail
Art.-No. 10824414



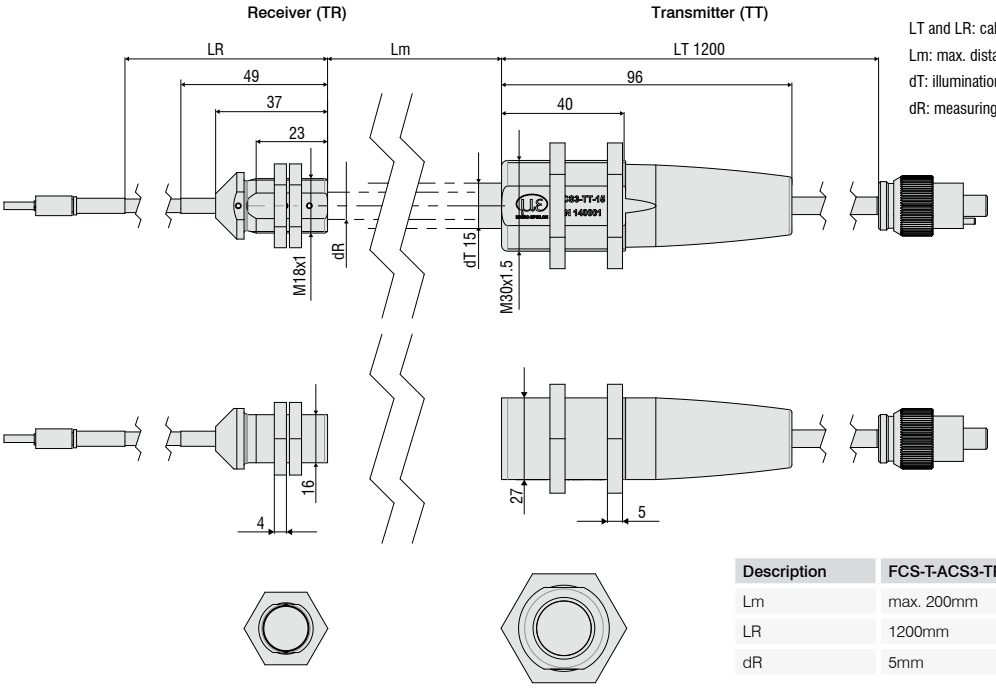
FCS-ACS3 mounting adapter 50mm
Art.-No. 10824423



FCS-ACS3 mounting adapter 150mm
Art.-No. 10824422

Fiber-optic sensor FCS-T-	ACS3-TR5-200-1200	ACS3-TR9-200-1200	ACS3-TT15-200-1200
Article number	10824411	10824412	10824413
Measurement geometry (illumination / receiver)	Receiver	Receiver	Transmitter
Measuring spot diameter	5mm for <100mm [1]	9mm for <200mm [1]	15mm for 200mm [5]
Optimal measurement distance	10 ... 100mm [2] [3]	10 ... 200mm [2] [3]	10 ... 200mm
Permissible measurement distance	10 ... 200mm [2] [3]	10 ... 300mm [2] [3]	10 ... 300mm
Distance tolerance [4]	<0.01 ΔE/mm [6] <0.005 ΔE/mm [2]	<0.01 ΔE/mm [6] <0.005 ΔE/mm [2]	-
Tilt angle tolerance [4]	<0.05 ΔE/°	<0.05 ΔE/°	-
Ambient light tolerance at max. LED performance	<0.05 ΔE/1000lux	<0.05 ΔE/1000lux	-
Dimensions	Ø22 x 40mm	Ø22 x 40mm	Ø30 x 96mm
Weight (sensor incl. optical fiber)	70g	70g	220g
Length of the optical fiber/sensor cable (optical-fiber cable)	1.2m (max. 30m)	1.2m (max. 30m)	1.2m (max 1.8m)
Bending radius sensor cable	70mm	70mm	70mm
Protection class	IP64	IP64	IP64
Operating temperature	-20 °C ... +50 °C	-20 °C ... +50 °C	-20 °C ... +50 °C
Storage temperature	-20 °C ... +50 °C	-20 °C ... +50 °C	-20 °C ... +50 °C
Shock resistance	DIN EN 60068-2-29; 15g, 6ms		
Vibration resistance	DIN EN 60068-2-6; 2g / 10Hz…500Hz		

[1] Measurement spot diverges with increasing distance between receiver and target
[2] Valid in combination with ACS3-TT15-200 for the transmission measurement (transmitted light)
[3] When measuring the transmission, the “optimal measurement distance” and the “permissible measurement distance” refer to the distance between transmitter and receiver. The sample can be at any position between transmitter and receiver.
[4] Tilt angle tolerance and distance tolerance were determined in transmission with different color glass filters (thickness 2.5mm, refraction index 1.5). When measuring the illumination (only receiver), these were determined with uniformly illuminated (Lambertian) diffuser by tilting the transmitter towards the receiver.
[5] Illumination spot diameter
[6] When using it as receiver sensor for illumination measurement

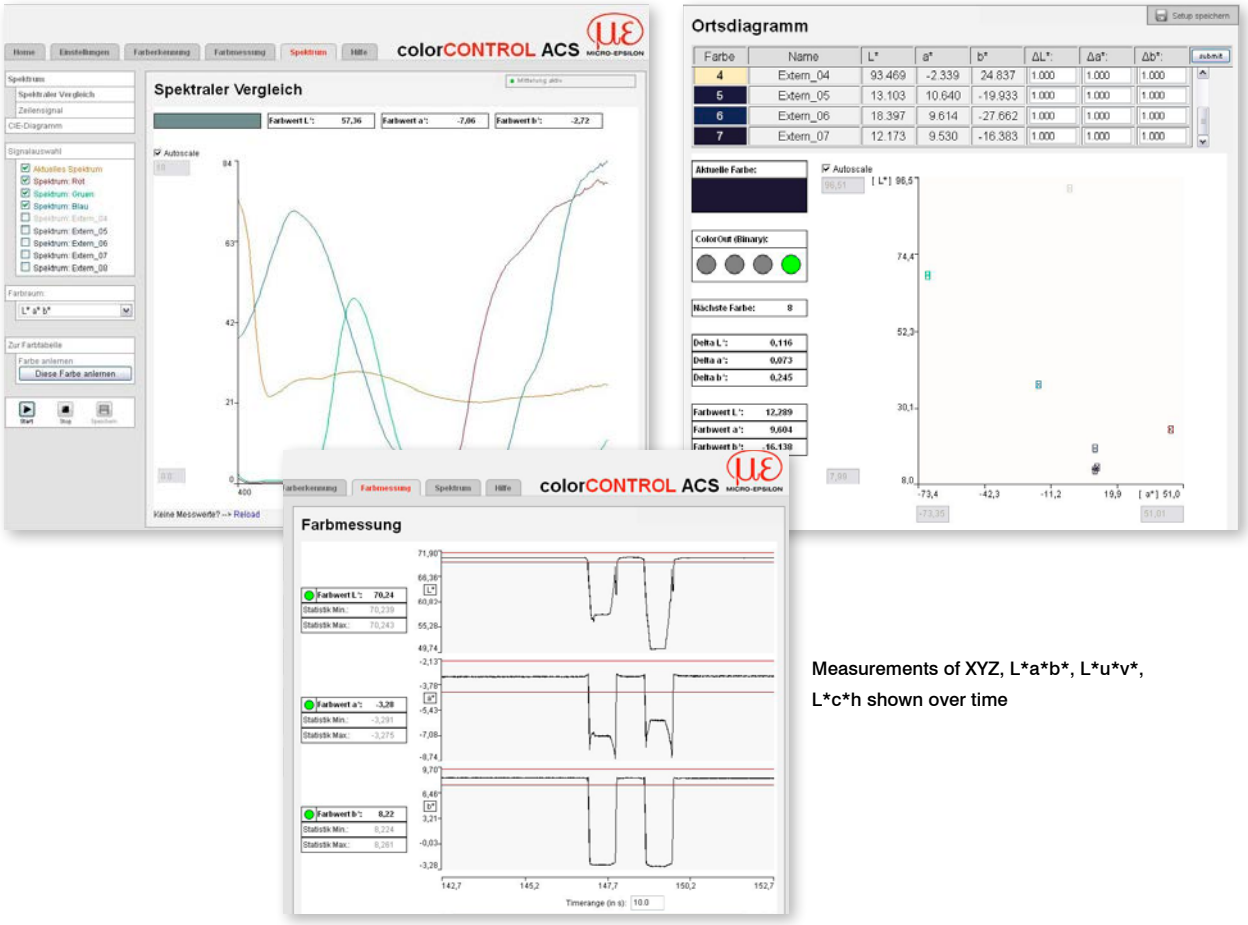


LT and LR: cable lengths
Lm: max. distance between the two sensors
dT: illumination spot size
dR: measuring spot size

Description	FCS-T-ACS3-TR5-200-1200	FCS-T-ACS3-TR9-200-1200
Lm	max. 200mm	max. 300mm
LR	1200mm	1200mm
dR	5mm	9mm

Spectrum and color location in user interface

Depiction of color values in the color space



Measurements of XYZ, L*a*b*, L*u*v*, L*c*h shown over time

Applications:

- Inline measurement in production lines, all industries: plastics, wood, paper, glass, films, injection molding, textiles and medicine
- Color measurement of interior parts
- Inspection of car paint

Advantages:

- Continuous process measurement to ensure consistent product quality
- Direct influence on the production process is possible
- Reduction of production cost
- Waste reduction

Inline measurement of the color gradient of glass, Plexiglas®, PET and PVC films and paper

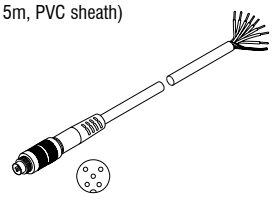
Measurement of the zinc strip color in production

Interior and attachment parts in the automotive industry

colorCONTROL ACS accessories		
Art. no.	Description	suitable for
11234694	White standard 30mm Zenith	colorSENSOR and colorCONTROL
11234695	White standard 30mm Zenith	colorSENSOR and colorCONTROL
11234696	White standard 5x5cm Zenith	colorSENSOR and colorCONTROL
11234697	White standard 5x5cm Zenith calibrated	colorSENSOR and colorCONTROL
11234222	CAB-M9-4P-St-ge;2m-PUR;open	colorCONTROL ACS7000 (power)
11234225	CAB-M9-4P-St-ge;5m-PUR;open	colorCONTROL ACS7000 (power)
11234091	CAB-M9-8P-St-ge;2m-PUR;open	colorCONTROL ACS7000 (digital I/O, Sync.)
11234099	CAB-M9-8P-St-ge;5m-PUR;open	colorCONTROL ACS7000 (digital I/O, Sync.)
11234223	CAB-M9-7P-St-ge;2m-PUR;open	colorCONTROL ACS7000 (Color Out)
11234226	CAB-M9-7P-St-ge;5m-PUR;open	colorCONTROL ACS7000 (Color Out)
11294232	CAB-RJ45-Eth; 2m-PVC-Cat5e; RJ45-Eth	colorCONTROL ACS7000 (Ether-net/-CAT)
11293257	CAB-RJ45-Eth; 5m-PVC-Cat5e; RJ45-Eth	colorCONTROL ACS7000 (Ether-net/-CAT)
11294277	CAB-RJ45-Eth-Cross; 3m-PVC-Cat5e; RJ45-Eth	colorCONTROL ACS7000 (Ether-net/-CAT)
11293258	CAB-RJ45-Eth-Cross; 5m-PVC-Cat5e; RJ45-Eth	colorCONTROL ACS7000 (Ether-net/-CAT)
11234224	CAB-M9-5P-co-straight; 2m-PVC-RS422; open ends	colorCONTROL ACS7000 (RS422)
11234227	CAB-M9-5P-co-straight; 5m-PVC-RS422; open ends	colorCONTROL ACS7000 (RS422)
11234230	CAB-M9-5P-co-straight; 2m-PVC-RS422; Sub-D-15P-co-straight	colorCONTROL ACS7000 (IF2008)
11234231	CAB-M9-5P-co-straight; 5m-PVC-RS422; Sub-D-15P-co-straight	colorCONTROL ACS7000 (IF2008)
2213017	IF2008 Interface card RS422 / PCI-card	colorCONTROL ACS7000 (RS422/PC)
2213025	IF2001/USB 1-channel RS422/USB converter	colorCONTROL ACS7000
10824338	FCS-ACS1-30/0 adapter tactile	FCS-X-ACS1-30/0-50-XXXX
10824424	FCS-ACS adapter TT-TR	all ACS sensor heads (connection illumination into receiving fibers)
10824804	FCS-ACS3 90° Aufsatz	FCS-X-ACS3 TT and TR
10824414	FCS-ACS3-200 mounting rail	FCS-X-ACS3
10824423	FCS-ACS3 mounting adapter 50mm	FCS-ACS3-200 mounting rail
10824422	FCS-ACS3 mounting adapter 150mm	FCS-ACS3-200 mounting rail
10824708	FCS-ACS1/ILD1420 adapter plate angled	FCS-X-ACS1 distance readjustment with ILD1420
10824709	FCS-ACS2/ILD1420 adapter plate angled	FCS-X-ACS2 distance readjustment with ILD1420
10824710	FCS-ACS2/ILD1420 adapter plate angled	FCS-X-ACS2 distance readjustment with ILD1420
2420065	PS2030 power supply 24V/24W/ 1A; 2m-PVC; terminal-2P-co-fm-straight	CAB-M9-4P-co-straight; Xm-PUR; open ends (power)

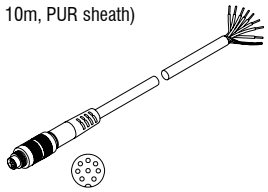
Pin assignment

CAB-M9-5P-co-straight; Xm-PVC-RS422; open ends
(art.no.: 11234224; 11234227)
Connection cable RS422
(max. length 5m, PVC sheath)



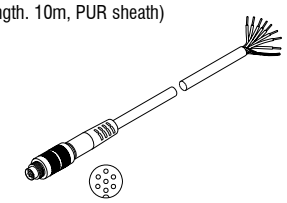
Pin	Color	ACS7000	15 PIN IF2008	10 PIN IF2001
1	white	TX	3	3
2	brown	/TX	4	4
3	green	/RX	2	2
4	yellow	RX	1	1
5	gray	GND RS422 (DC isolated)	15	9

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, PUR sheath)



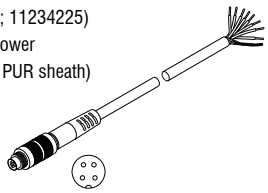
Pin	Color	ACS7000
1	white	Error
2	brown	GND Error
3	green	Sync. OUT
4	yellow	GND Sync. OUT
5	gray	Sync. IN
6	pink	GND Sync. IN
7	blue	LLL/ HLL
8	red	LLL/ HLL

CAB-M9-7P-co-straight; Xm-PUR; open ends
(art.no.: 11234223; 11234226)
Connection cable color OUT
(max. length. 10m, PUR sheath)



Pin	Color	ACS7000
1	white	OUT0
2	brown	OUT1
3	green	OUT2
4	yellow	OUT3
5	gray	GND
6	pink	n. c.
7	blue	n. c.

CAB-M9-4P-co-straight; Xm-PUR; open ends
(art.no.: 11234222; 11234225)
Connection cable Power
(max. length. 10m, PUR sheath)



Pin	Color	ACS7000
1	white	n. c.
2	brown	+24V DC (±15%)
3	black	n. c.
4	blue	GND (0V)

High performance sensors made by Micro-Epsilon

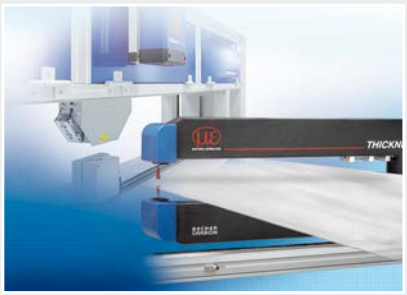
Sensors and systems for displacement and position

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

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