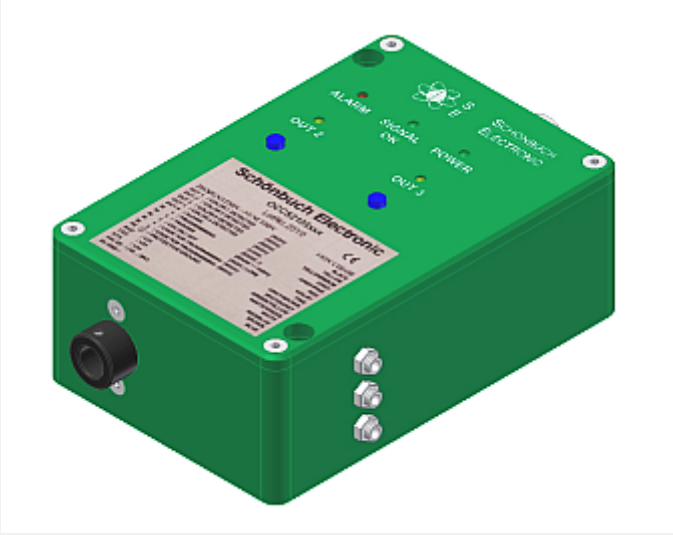
Color-OPTOR®

OCCS2107-EMB

The color sensor OCCS2107-EMB allows fast and non-contacting detection, monitoring, teaching, etc. of any kinds of colored objects.

Due to the compact design of this color sensor and its integrated intelligence in the form of a microcontroller, measurement problems can be solved with outstanding ease.



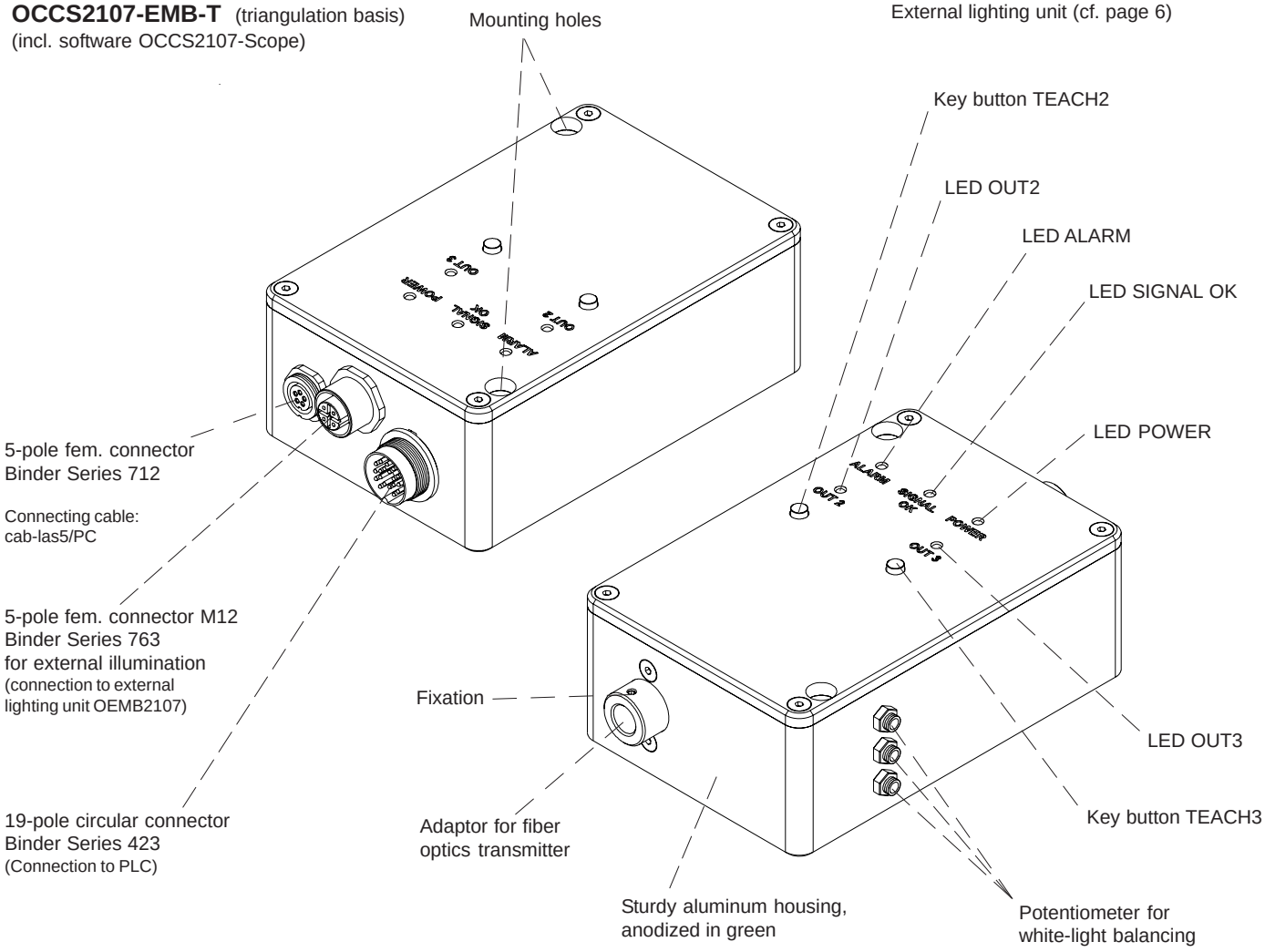
Design

Product name:

OCCS2107-EMB-R (reflection basis)
OCCS2107-EMB-T (triangulation basis)
(incl. software OCCS2107-Scope)

Accessories:

OEMB2107
External lighting unit (cf. page 6)



Schönbuch Electronic GmbH • Am Anger 8 • 82237 Wörthsee
Tel. +49 (0)8153 90 888 0 • Fax +49 (0)8153 90 888 49
info@schoenbuch-electronic.de • www.schoenbuch-electronic.de

Technical Data

Mechanical Data

Design	2-channel compact device with external, modulated illumination (OEMB2107)
Outer dimensions	L x W x H approx. 140,5 mm x 80 mm x 45 mm
Housing material	Aluminum (anodized in green)
Weight	approx. 450 g
Connector type	1x 19-pole circular connector Binder Series 423 (connection to PLC) 1x 5-pole fem. connector Binder Series 712 (connection to PC) 1x 5-pole fem. connector M12 Binder Series 763 (connection to ext. lighting unit OEMB2107) 1x adaptor for fiber optics transmitter
Fastening of the housing	M4 screw fastening in a 94 mm x 70 mm grid
Enclosure rating	Housing: IP64, optics: IP64
Temperature range	0 ... 40 °C

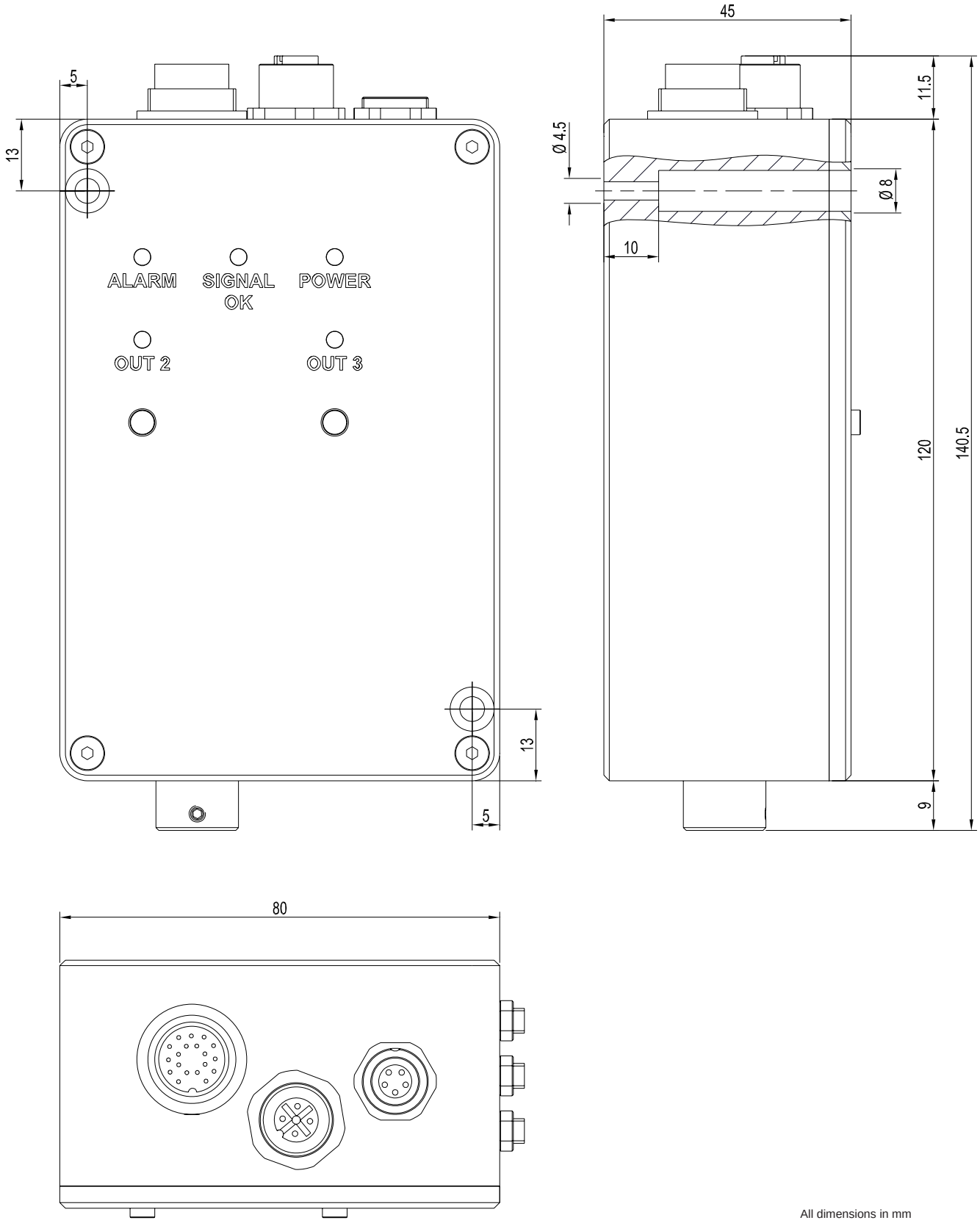
Electrical Data

Distribution voltage	15 V ... 30 V, reversed polarity protected
LED for POWER indication	green
Residual ripple	± 10%
Power input (unloaded outputs with illumination)	approx. 15 W
Illumination (supplied from the color sensor)	24 V / 14 W
Inputs programming (IN1, IN2, IN3, IN4)	PNP 24 V DC
Input level	low <= 1 V DC high >= 12 V DC
Output color detected (OUT2, OUT3)	PNP / NPN
LED for OUTPUT indication	yellow
Output SIGNAL OK (OUT2)	PNP / NPN
LED for ALARM	red
LED for SIGNAL OK	green
Output level	low <= 2,5 V DC high U_B - 1 V DC
Output load	max. 100 mA, short-circuit proof
Computer interface (service data)	RS232
Setting of color references	learnable via key button TEACH-IN
Color memory capacity (color references)	non-volatile EEPROM with parameter sets for 2 colors max.
Color detection (continuous)	by way of setpoint/actual value comparison with taught color reference within the set tolerances (software)
Object dwell time	min. 1 ms
Evaluation time	1 ms

Optical Data

Measuring principle	Three-color process on transmission or diffuse reflection basis. By means of fibre-optic scanning specified by the sensor head type (400 ... 700 nm)
Number of sensor heads	1
Measuring distance	Diffuse reflection (depending on the sensor head): 3 ... 80 mm Triangulation (depending on the sensor head): 50 ... 1000 mm
Distance tolerance	depending on color selectivity and sensor head focus: max. ± 50 %
Measuring spot	depending on the sensor head: min. Ø 0,7 mm

Dimensions



All dimensions in mm

General Data

Input/output functions:

Color detected output (channel 2, 3):
OUT3-CH2, OUT4-CH3 Color detected

If, within the set tolerances, the scanned color matches the taught reference color, the respective output is switched to +24V or 0V (can be set with the software). If there is no match, this output is 0V or +24V, respectively. The status of the outputs is visualised by the two LEDs OUT3 and OUT4.

ALARM output:
OUT2-ALARM

The color sensor performs internal function monitoring of the transmitter source. If an error is detected, the ALARM LED lights up and the output is switched to +24V.

Programming input:
IN1 Programmng

There are three ways of teaching a reference color to the color sensor:

1)
Teaching by means of the user interface:
See manual

2)
Teaching by using buttons TEACH2 and TEACH3:
The buttons TEACH2 and TEACH3 must be enabled in order to perform teaching with these buttons. The two buttons are enabled by way of the IN2-ENABLE input by setting IN2 to +24V. Now the reference color must be positioned in front of the sensor. Pressing the TEACH2 button then teaches this color to channel 2. Depending on the OUTMODE setting (software parameter), the CH2 LED visualises that the color was taught and recognised. The same applies to the TEACH3 button.
In the future every surface will be compared with the data that are stored in channel 2 and channel 3. In case of a match, the corresponding output will be activated.

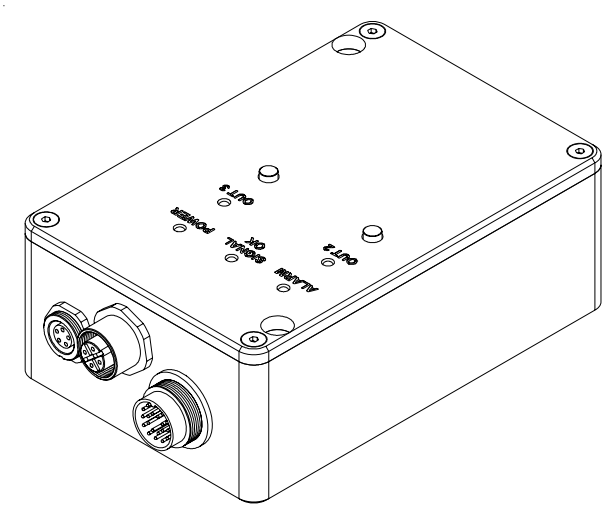
3)
Teaching by using inputs IN1-EXTTEACH, IN3-CH2, and IN4-CH3:
In order to perform this type of teaching, the TEACH2 and TEACH3 buttons must first be disabled, i.e. IN2 must be set to 0V or must not be connected.
If, for example, teaching should be performed to channel 2, IN3-CH2 must be set to +24V. The IN3-CH2 input must be HIGH for at least 25ms, before the present reference color can be taught to channel 2 with a negative edge at IN1-EXTTEACH. Depending on the OUTMODE setting (software parameter), the CH2 LED visualises that the color was taught and recognised.
The same applies to IN4-CH3.
In the future every surface will be compared with the data that are stored in channel 2 and channel 3. In case of a match, the corresponding output will be activated.

Connector Assignment

Connection to PLC:

19-pole fem. connector Binder Series 423

Pin:	Color:	Assignment:
R	brown	+24VDC (15V ... 30V)
P	blue	GND (0V)
D	red	IN1 - EXT TEACH
B	violet	IN2 - ENABLE
K	white/grey	IN3 - CH2
I	grey/brown	IN4 - CH3
C	black	OUT1 - SIGNAL OK
A	grey/pink	OUT2 - ALARM
H	yellow	OUT3 - CH2
L	yellow/brown	OUT4 - CH3



Connection to PC:

5-pole fem. connector Binder Series 712

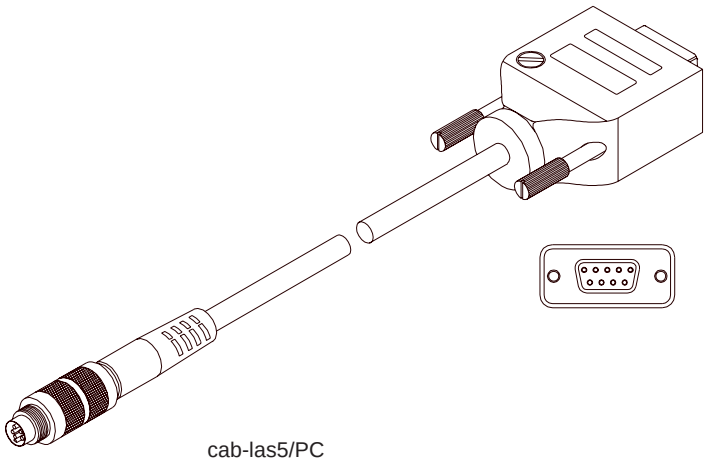
Pin:	Assignment:
1	GND (0V)
2	TX0
3	RX0
4	not connected
5	not connected

Connecting cable:
cab-las5/PC

Connecting Cable

Connecting cable:

cab-las5/PC Length: 2 m Outer jacket: PUR



cab-las5/PC

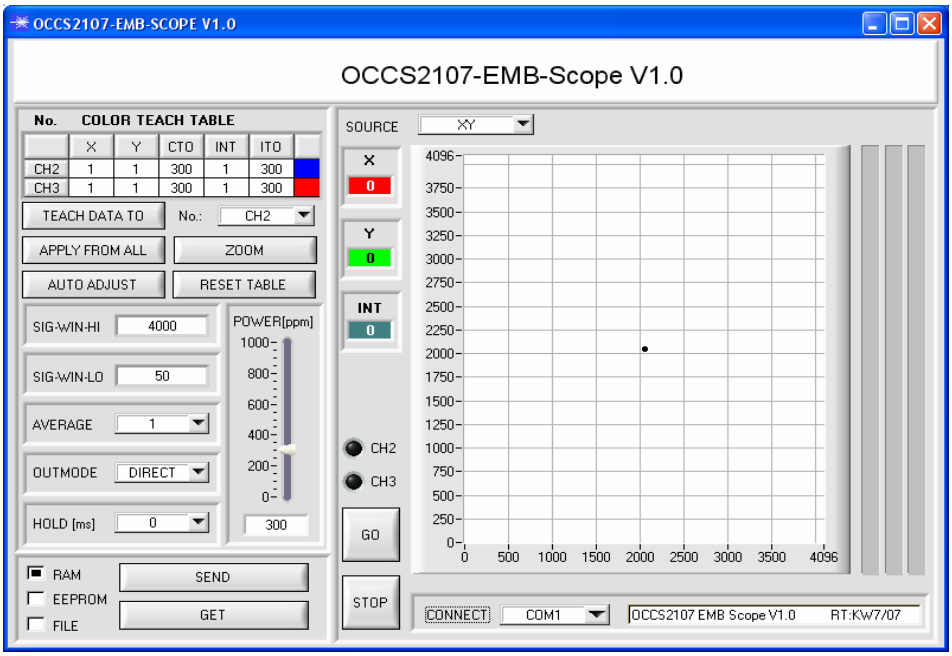
Parameterisation

Parametrisierung unter Windows® mit Software OCCS2107-Scope:

The color sensor is parameterised under Windows® with the OCCS2107-Scope software.

The RS232 interface is used for setting parameters such as:

- Averaging over a maximum of 32768 values
- Exposure time of the internal integrator
- Pulse lengthening up to max. 100 ms
- Polarity of output
- Dynamic window



For details regarding parameter setting please see software manual OCCS2107-EMB-Scope V1.0.

Accessories

External lighting unit OEMB2107

(please order separately)

(Description cf. separate data sheet OEMB2107)