GUARDIAN TEST SYSTEM Item no. 21295

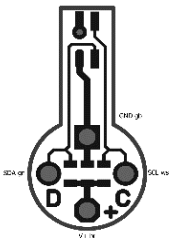
CSM

Features

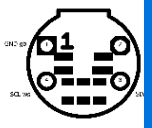
- RGBW sensor with I2C interface
- High light sensitivity, 16-bit resolution
- Direct measurements without light guide
- Closely matches the spectrum of the human eye

VEML6040 colour sensor
from Vishay Semiconduc-

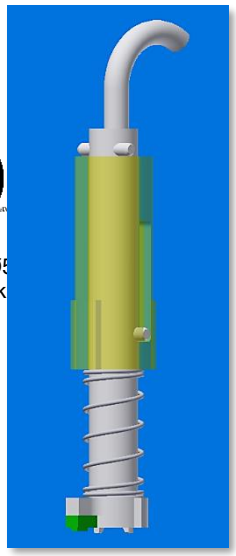
Coloured LEDs often also need to be tested when conducting tests on PCBs or devices. CSM stands for Colour Sensor Model. The VEML6040 colour sensor we use features an integrated matrix of photodiodes, and measures red, green, blue and white light across 4 channels. All required analog and digital circuits are integrated into the 2.0 x 1.25 mm single chip.



Carrier board Ø5mm
with bracket



Carrier board Ø5
without brack



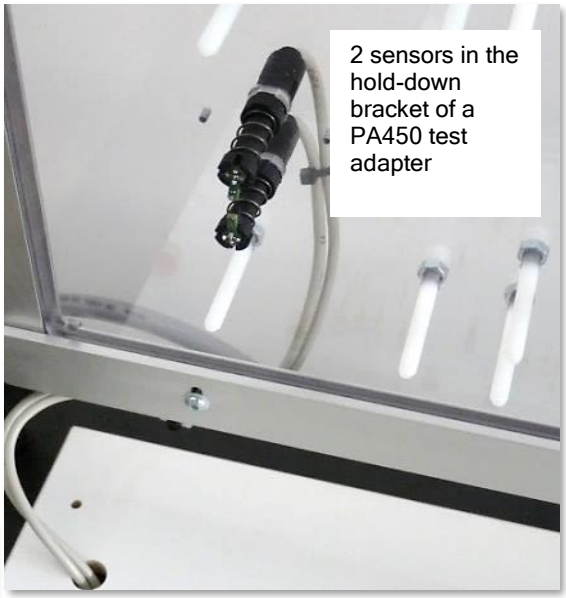
The chip is soldered onto a round carrier board, which is inserted into the cylindrical sensor housing. The lower part of the housing is spring-loaded to ensure that the sensor does not sustain any damage if it hits an obstacle when the test adapter is closed. In the variant that features a bracket, the sensors can also be placed above the LEDs with a short distance in between.

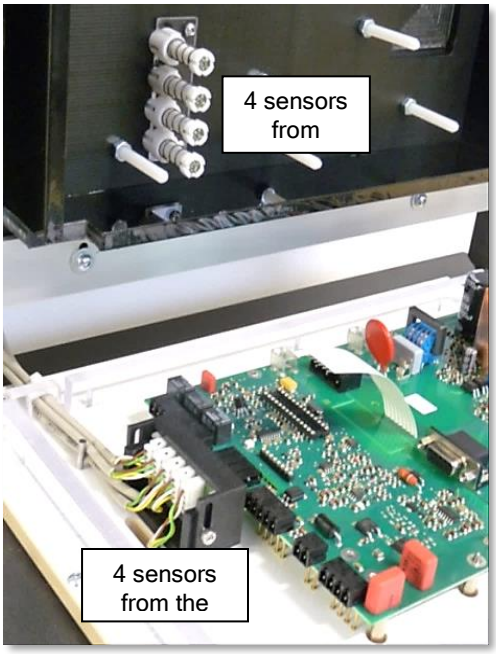
Order reference

Sensor without bracket	CSM-R
Sensor with bracket	CSM-A

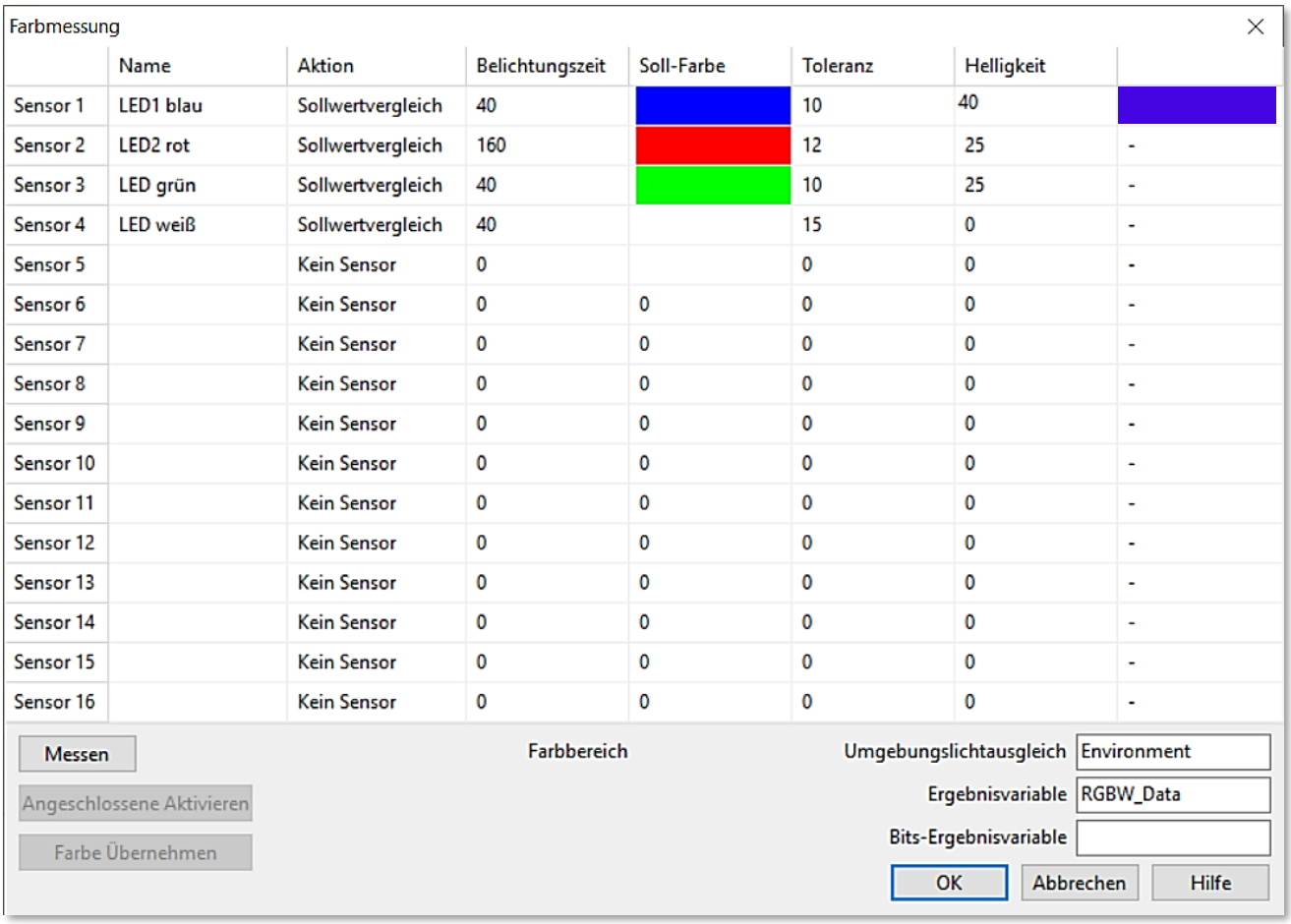
Application

- Testing coloured LEDs or light sources
- Brightness measurement
- Reflectance measurements





Application example



This dialog box is used to analyse up to 16 colour sensors that are connected to the I²C interface of a UMB2 card.

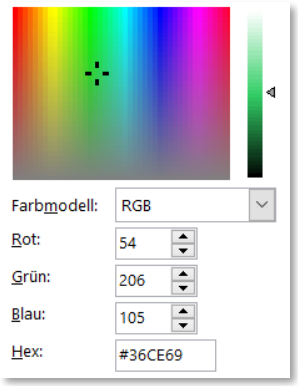
Three operations are possible

- Read only
  This action can be used to measure the brightness of the red, green, and blue percentages of the connected sensors. The colours are displayed in the right column. If further processing of the raw data by the WinGuard script is required, a data array can be specified in the ‘Result Variable’ field.

- Darkness comparison
  For this measurement, the light sources under test need to be switched off and the test adapter must be adequately shielded from ambient light. WinGuard then checks whether the readings are below the limit values specified in the ‘Brightness’ column. If these limit values are exceeded, a corresponding error message is shown. If the limit values are set to zero, they will not be compared to the readings. If necessary, the readings are temporarily stored in a data array specified in the ‘Ambient Light Compensation’ field. In order to ensure that ambient light is not included in the evaluation, these values are subtracted as offset values in the subsequent light measurement (setpoint comparison).

- Setpoint comparison
  This action first requires the brightness to exceed the minimum value specified in the ‘Brightness’ column. Once this has occurred, a colour value is calculated from the RGB components and checked to see whether it lies within the percentage tolerance range for the set colour. In this case, the test has been deemed to PASS, in other cases it may FAIL. If a variable is entered in the ‘Bits Result Variable’ field, all channel statuses will be stored as a 16-bit value.

  The set colour may be learned from an object pattern or entered in the hex format as a numerical value, as illustrated in the graphic.



More information on this process can be found in the WinGuard manual.

Pinout

4-pin female connector
or open cable ends

Pin	Signal	Cable colour
1	3.3 V	br
2	SDA	gn
3	SCL	ws
4	GND	gb