

CR500

Color Sensor

The distance independence (sensor head - target) is a particular feature of the CR500 which is achieved by the patented CROMLADIST® technology. The measurement distance is real time detected and compensated numerically through a specially shaped and with the color sensor firmly connected optical fiber. The distance dependent color error ΔE can be reduced by up to 97%, depending on the color. As with the other color sensors of the CROMLAVIEW® family the CR500 processes colors perceptually (i.e. according to human color perception) and assesses color distances with the precision of the human eye.



The CR500 can be parameterized by means of RS232 or USB interfaces. The free software CR-Tool – CR500 facilitates the parameterization of the color sensor and the visualization of color values. A distance monitor supports the adjustment of the fiber head. Besides that, the color sensor can also be operated using the buttons. Therefore the distance monitoring can be performed by means of 12 LEDs.

As all the other CROMLAVIEW® color sensors the CR500 is equipped with CROMLASTAB®-technology, which protects from temperature- and aging drifts and ensures with this method a reliable operation over the whole lifetime cycle.

The sensor contains an own white light source clocked with a frequency of up to 2 kHz. Sampling takes place in both, the light and the dark phase. Additive ambient light cannot change the difference between the light and dark phase, so that the sensor is independent from ambient light.

Key Features

- Distance compensated color recognition CROMLADIST®
- Up to 350 colors can be stored
- Quick response time from 100 μ s
- 12 channels, with binary encoding 4096 output combinations
- Long-term stability of color recognition without new teach-in by CROMLASTAB®-technology
- Finest color differences can be detected ($\Delta E < 1$)

Applications

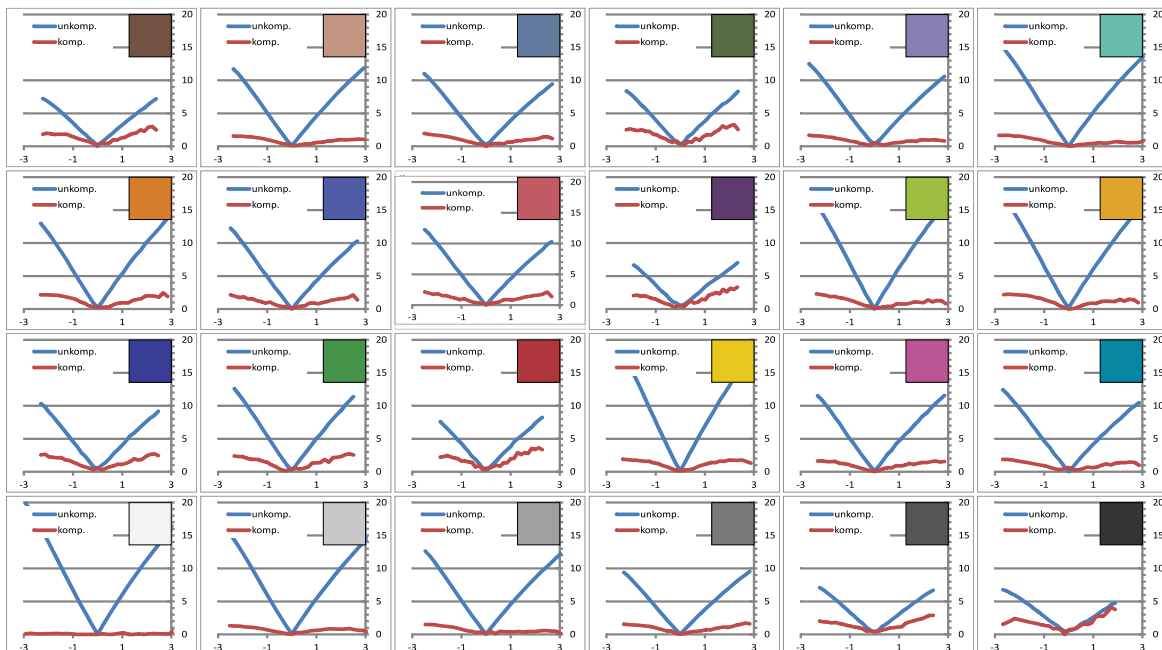
- Checking functional and color coatings
- Color inspection for quality assurance
- Sorting tasks of colored parts with different heights

Options and accessory

- CR-TBox
- CR-COMBox
- USB cable

Sensing channels	1 Sensing channel 1 Internal stabilization channel 1 Internal Distance compensation channel
Drift stabilization	CROMLASTAB®
Distance compensation	CROMLADIST®, can be switched off
Receiving detector	Three range photo diode
Sensitivity	fixed
Receiving signal resolution	3 x 4096 steps
Object illumination	High-power white light LED
Ambient light compensation	permanent
Standard interfaces	12 Switching outputs 2 Control inputs Serial (RS232) USB
Displays	19 LEDs for outputs, status and distance monitoring
Buttons	3 buttons for Teach-In
Color resolution	$\Delta E_{Lab} < 1$
Response time	$\geq 100 \mu s$
On-/Off-Delay	0 ms ... 65535 ms
Hysteresis	0 % ... 250 %
Color output channels	12, up to 350 with binary encoding
Protection standard	IP 54
Power supply	18 ... 28 VDC, max 500 mA
Case temperature during operation	-10 °C ... 55 °C
Coupling in signal path	Via optical fiber
Case material	Aluminium, anodized
Case size	100 mm x 70 mm x 30 mm
Weight	Approx. 260 g

Typical behavior of compensation for CROMLAVIEW® CR500 with CROMLADIST® on ColorChecker® test color target



Diagrams are showing color signal changing in ΔE due to distance changing of the fiber head from approx. ± 3 mm around a nominal distance of approx. 4 mm for 24 color fields of the known color target ColorChecker®. Red curves depict the signal changing with activated distance compensation CROMLADIST®. Blue curves are depicting uncompensated signals for comparison reasons.