

# **CR500**

## **Color Sensor**

distance independence (sensor head - target ) is a particular feature of the CR500 which is achieved by the patented CROMLADIST® technology. 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  $\Delta E$  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 μs
- 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 (ΔE < 1)</li>

#### **Applications**

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

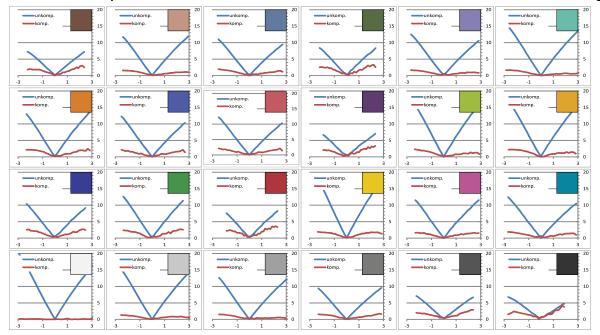
#### **Options and accessory**

- 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                     | ≥ 100 µs  |
| 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 × 70 mm × 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  $\Delta E$  due to distance changing of the fiber head from approx.  $\pm 3$  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.

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