Color sensors
colorSENSOR

Color measurement of car attachments

In the automotive industry, attachments are usually manufactured by different suppliers. However, the car color and the painted attachments must have exactly the same color shade. This is why during production, the individual components must be painted with the car color. Different component surfaces and reflections with shiny metallic paints are a challenge for this measurement task. Often, colors must be distinguished that are very close to each other in the color spectrum. This is the case, for example, with parking sensors, where nuances of blue, silver and silver-yellow must be differentiated.

colorSENSOR CFO sensors from Micro-Epsilon are ideally suited to this kind of precise color comparison measurement as they reliably recognize different colors while enabling 100% quality control. The sensors are calibrated once to the prevailing measurement conditions such as ambient light and measurement distance. Therefore, it is necessary to calibrate the illuminating LED. The sensor is calibrated to the target with the brightest color shade.

In order to achieve optimal measurement results for shiny surfaces too, a reflex sensor is used in addition to the colorSENSOR CFO controller. It is arranged at an angle of 25 degrees to the measurement object. This ensures that the distances and angles remain constant. The working distance between the reflex sensor and the parking sensor is 10 mm with a measurement spot diameter of approx. 8 mm. Subsequently, the sensor can output an OK/NOK evaluation via a digital output signal of 0V or 24V to a control system.

The colorSENSOR CFO100 and CFO200 color sensors from Micro-Epsilon impress with their high color accuracy and repeatability. The integrated multi-teach function enables increased process reliability by teaching several individual colors in a color group.

In total, up to 320 colors can be taught in 254 color groups. The colorSENSOR CFO enables the reliable detection of colors and increased processing rates. The web-based interface enables intuitive operation.

Requirements for the measurement system
- Measuring rate: 1 kHz
- Color distance: $\Delta E \leq 0.5$
- Measurement spot diameter: approx. 8 mm
- Color inspection of normal and metallic lacquers

Ambient conditions
- Constant ambient light
- Room temperature 20 to 23 °C

System design
- Controller: colorSENSOR CFO100
- Reflex sensor: CFS4-C20

Advantages
- Multi-teach function and color grouping
- Modern, user-friendly web interface
- High color accuracy and repeatability $\Delta E < 0.5$
- Currently brightest illumination in this class
- Recognition of differences between shiny and metallic paints

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