

## High-speed color detection of small objects at a great distance

The confocal sensors of the **SPECTRO-3-COF series** project white-light spots with a diameter of approx. 1 mm to 5 mm or with dimensions of 4 mm x 0.7 mm onto the object to be detected. The transmitter optics unit is located at the centre of the receiver optics unit, which results in a highly compact design. This allows a reliable, high-precision, and high-speed detection of small objects such as e.g. color markings or wires at a great distance.

The color sensor features 5 digital outputs; teaching of up to 31 colors can be performed with the included SPECTRO3-Scope Windows® software, with a Teach-button at the sensor housing or with a Teach-input for external teaching. With a scanning frequency of 40 kHz and a switching frequency of 30 kHz the color mark detector definitely ranks among the faster systems. Reliable color differentiation on the one hand is guaranteed by the so-called true-color detector (human color perception), and on the other hand by a special evaluation algorithm. The color that is currently placed under the sensor is compared with the color references (up to 31) that are stored in the color memory. Similar to human evaluation the color sensor software first performs a pre-selection of references (possible candidates) whose tolerance range includes the current color. From the possible reference colors it then selects the one color that is closest to the current color (direct comparison). Only this process allows the detection even of smallest color differences (to  $\Delta E=0.3$ ).

