

# Color Innovation

Analyze the Subtlest Color Gradations with wenglor Sensors





# Looking-Forward: the Entire Product Range

wenglor sensors are the perfect precision tool for the reliable analysis of colors in your industry sector. Thanks to their high-performance, extremely accurate color chips, they detect, measure and differentiate amongst the finest of color nuances and make use of the most up-to-date communication standards – today’s color sensor technology laid out for tomorrow’s requirements.

## P1XF001 6-Channel Multispectral Sensor

The latest generation of color chip technology features a color space which is subdivided into six ranges: red, orange, yellow, green, blue and violet (ROYGBV). The tolerance ranges for hue, brightness and saturation can be flexibly adjusted.



Ready for Industrie 4.0

With its radiometric measuring method, the **P1XF001 6-channel multispectral sensor** detects the **entire visible spectrum of the respective color** for the first time ever – highly accurately and in great detail. This new evaluation method in the field of color sensor technology provides the decisive advantage of measuring color values consistently, even though they look different when illuminated by various light sources (metamerism effect). Furthermore, the P1XF001 sensor is distinguished by constantly brilliant color accuracy at high measuring frequencies of up to 2 kHz.

- Fiber-optic cables for barrier or scanning mode operation
- Detailed, highly precise color analysis even for light emitting objects (LEDs) thanks to spectral measurement in ROYGBV color space
- OLED display with wizard for quick teach-in of colors
- Allocation of 12 colors via 12 separate switching outputs
- RS-232 interface with wTeach2 graphic Windows software
- Latest IO-Link version 1.1 for Industry 4.0

### Paint Inspection for Auto Body Parts



### Detection of Printed Markings



## Fiber-Optic Cables

With compatible plastic and glass fiber-optic cables, the **P1XF001** Color Sensor can be ideally integrated into any production system. The fiber-optic cables are especially well-suited for use in difficult to access locations and at **temperatures of up to 250° C**. You have the option of freely selecting the distance between the probe and the object, as well as the size of the spot, making it possible to fully exploit available space in your system.

### Barrier Mode Operation

In combination with glass fiber-optic cables for barrier mode operation, the P1XF001 Color Sensor detects colored transparent objects such as foils and jars.

Glass Fiber-Optic Cable		Through-Beam mode			
Order Number	Illustration	Fiber-Optic Cable Length	Detection Range	Aperture Angle	Fiber Bundle Diameter
FL2002		500 mm	600 mm	30°	3 mm
FL2004		1000 mm	600 mm	30°	3 mm
FL2102		500 mm	50 mm	68°   30°	1,1 mm   3 mm
FL2104		1000 mm	50 mm	68°   30°	1,1 mm   3 mm

### Scanning Mode Operation

With plastic and glass fiber-optic cables for scanning mode operation, the P1XF001 Color Sensor detects colored objects such as printed markings and sealing caps.

Glass Fiber-Optic Cable		Reflex mode				
Order Number	Illustration	Fiber-Optic Cable Length	Detection Range	Aperture Angle	Spot Diameter	Fiber Bundle Diameter
FL30/50		50 mm	0...50 mm	68°		2,3 mm
FL3302   FL3304		500 mm   1000 mm	18 mm		2 mm	1,6 mm
FL3402   FL3404		500 mm   1000 mm	100 mm		10 mm	3 mm
161-256-102   161-256-104		500 mm   1000 mm	0...25 mm	68°		1,6 mm
301-251-102   301-251-104		500 mm   1000 mm	0...50 mm	68°		3 mm
Plastic Fiber-Optic Cable						
Z96D001		1000 mm	0...10 mm	55°		0,5 mm
Z96D001 with LA27		1000 mm	0...30 mm		0,5...2 mm	0,5 mm

The order designations and technical data for all products are available at [www.wenglor.com](http://www.wenglor.com).





## True Color Sensor OFP401P0189

And the sensor reliably compensates for distance fluctuations of up to 10 mm at a maximum speed of 1.8 kHz.



The **OFP401P0189 True Color Sensor** is capable of detecting colors, contrast and gray tones **just as accurately as the human eye** (DIN5033). It has proven itself the ideal solution for applications with high processing speeds where color markings need to be detected or objects have to be sorted by color.

- Detection of and differentiation amongst the finest of color nuances even with light emitting objects (LEDs)
- 3 switching outputs for simultaneous color evaluation
- Colors can be taught in via OLED display or RS-232 interface
- Color value output in RGB or HSL color space
- Reliable evaluation even with distance fluctuations of up to 10 mm
- Measuring accuracy is not influenced by temperature or extraneous light

### Color Detection for LED Taillights

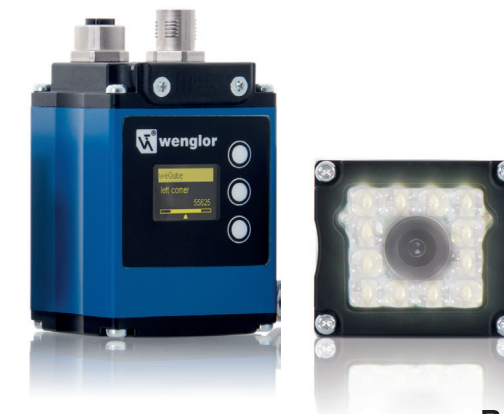


### Sorting Colored Objects



## weQube – the Smart Camera & weQubeVision – the Image Processing Package

Special optics developed by wenglor uniformly scatter the light from 12 high-power LEDs and prevent reflections, as well as brightness loss at the edge of the image.



**Ready for Industrie 4.0**

**weQube** and **weQubeVision** for digital image processing are equipped with five high-performance processors and an integrated image chip which make it possible to evaluate any number of **predefined surfaces** in a single step. In doing so, they compare the **various colors** within the respective surfaces. In this way, you can even check entire color sequences, e.g. for correct order – **regardless of the object's orientation and position**.

- Color image chip with 736 x 480 pixels
- Any number of image processing functions can be combined
- Object color can be inspected regardless of position
- Separate communication processor for Industrial Ethernet in real-time
- Ethernet TCP/IP, PROFINET, EtherNet/IP™ and RS-232 interfaces
- Automatic image storage for documentation

### Assembly Inspection for Cable Harnesses



### Inspection for Correct Positioning of O-Rings







**Discover further innovations.**



More information concerning our products is available at:  
**[www.wenglor.com](http://www.wenglor.com)**