see colors like a human does –
but a thousand times faster

color sensor „True Color“

www.ipf-electronic.com

our sensors ensure your success

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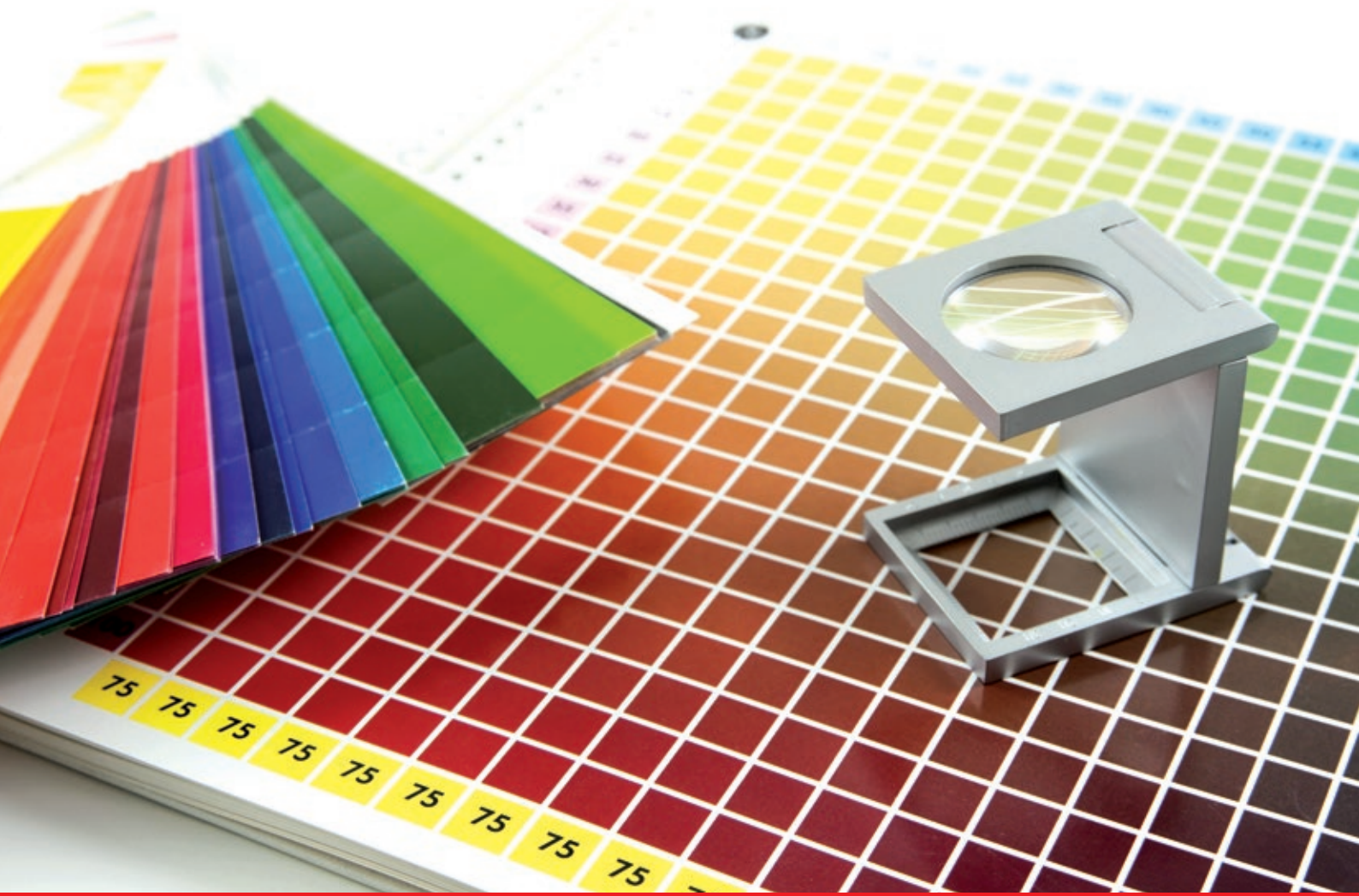
see colors like a human does – but a thousand times faster

With the color sensor series there now is a family of color sensors that has been specifically designed for „True-Color“ detection („human color reception“) and high switching frequency.
The sensor can be operated both in AC and in DC mode, with integrated or external light source. With the included software, illumination can also be turned off with a simple mouse-click, which then also allows the color and brightness inspection of self-luminous objects such as LEDs, automobile tail lights, halogen lamps, or fluorescent lamps. Up to 31 colors can be provided through the 5 digital outputs, the maximum switching frequency is 35kHz. Apart from a super-bright white-light source, a high-performance UV light source also is available, which allows a color and brightness differentiation of fluorescent colors without any problems. Different optical frontends make it possible to implement operating distances of almost Ø 0.5mm to approx. Ø 100mm. The use of a fiber optic version allows applications in Ex areas.



different versions with polarizing filter, focused optics, diffuse optics or UV light source

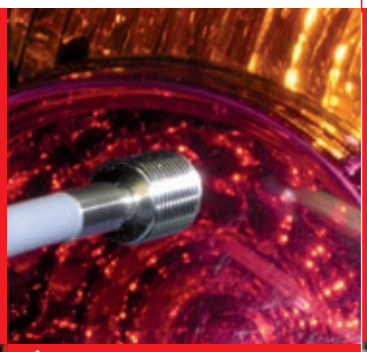
round design with connection for different fiber optics, optional with attachment lens

cuboid devices with connection for different fiber optics, optional with attachment lens

compact design with M8-connector

advantages and highlights

- color-, contrast and grayscale detection
- print mark detection
- color / brightness inspection of self-luminous objects (LED, halogen lamps, displays, ...)
- differentiation of similar colors
- fluorescence evaluation
- insensitive to ambient light
- up to 35kHz sampling frequency
- True Color technology (see colors like a human does)
- compact aluminum housing with integrated transmitting and receiving optics
- several TEACH options (via PC, PLC or button)
- control of up to 31 colors
- status display via 5 yellow LEDs
- recording of measured data is possible
- external triggering is possible
- working distances up to 1,000mm
- fiber optic version for constricted room and explosion-hazardous areas

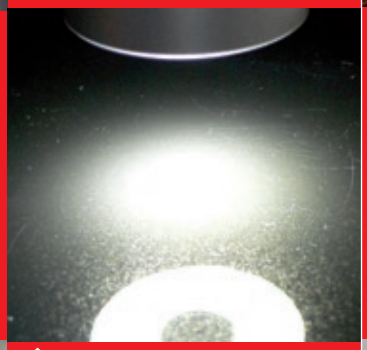


color checking of primary light sources

color controlling of components in car interiors

monitoring the shade color on painted covers

paintwork color check



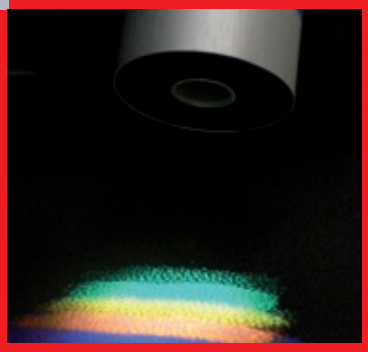
color inspection of glossy objects

color inspection of structured and inhomogeneous surfaces

color controlling of components in car interiors

color differentiation of different surfaces

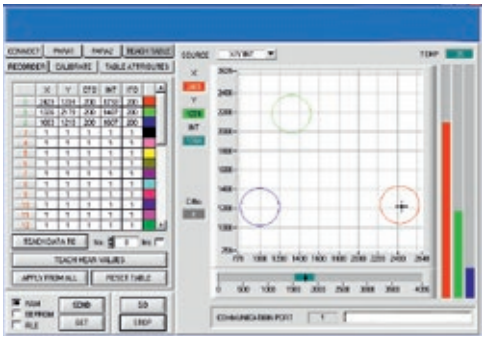
color inspection of control elements in car interiors



fast evaluation of fluorescent objects

more safety for your production

our sensors ensure your success



Color evaluation in the field of production is influenced by different product characteristics. Among other things, problems can arise as a result of inhomogeneous object surfaces.

For example, surface structure contributes to variations in the gloss which give conventional color sensors difficulties when it comes to evaluating colors. This is due to the direct reflection which, in turn, depends on the respective level of gloss that the surface produces. This is where color sensors are applied, that have a diffuse, widespread light which significantly reduces variation in terms of the gloss effect. So-called confocal sensors are suitable for very small test objects. These generate a white light spot with a diameter starting with approx. 1mm.

This can be projected onto small test objects (e.g. litz wires or strands) via a transmitting lens which is attached in a central position with respect to the receiver lens.

The practical evaluation of the glossy surfaces of objects is exceptionally difficult. This is because the actual color information mixes with the direct reflection as a consequence of the gloss effect. ‘Soft’ colors are created from intense colors. Color sensors with an integrated polarizing filter suppress the direct reflection and allow for a reliable statement to be made of the color.

Devices with an integrated UV light source can evaluate the colored brilliancy of fluorescent objects. In so doing, the object-dependent characteristic brilliancy of the color is evoked through irradiation with UV light. Apart from the high switching frequency of 35kHz max, the ‘True Color’ detector (see colors like a human does) and the evaluation software (evaluate colors like a human does) ensures that the smallest of color differences can be securely identified even for moving objects.

individual requirements constructive solutions

applications for custom-made devices

type based selection of glass bottles

An efficient sensor solution for reliable and accurate selection of bottles (according to type) was requested. The aim of this was not just to identify obvious bottle colors such as brown, blue and transparent, but also to securely differentiate the three shades of green (which are close to one another). The particular challenges relating to this application: Burrs in the glass, different glass thickness as well as bottles which (to a greater or lesser extent) have drops of water on them. These variations ensure light refraction effects and as such, make the task of detecting bottle colors significantly harder.
As a sensor solution, ipf electronic recommended a device from the OF34 series (fiber optic version) to the bottle cleaning company.

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paint marks on stainless steel

As a general rule, stainless steel strip tubing is formed of steel sheeting. It features a welded longitudinal seam. Now and again, this longitudinal seam is color coded before being cut according to the wishes of the end customer. For example, this is important for the post-processing of the tubes at a later stage. For this reason, it is necessary to guarantee a continuous checking of the coat of paint on the welded seam. It is proposed that a sensor system is to be used for this.
The engineers from ipf electronic recommended an OF34 series “True-Color sensor” for the special application used by the strip tubing manufacturer. These sensors are especially suited to the recognition of colors in the case of objects with a very non-homogenous or glossy surface.

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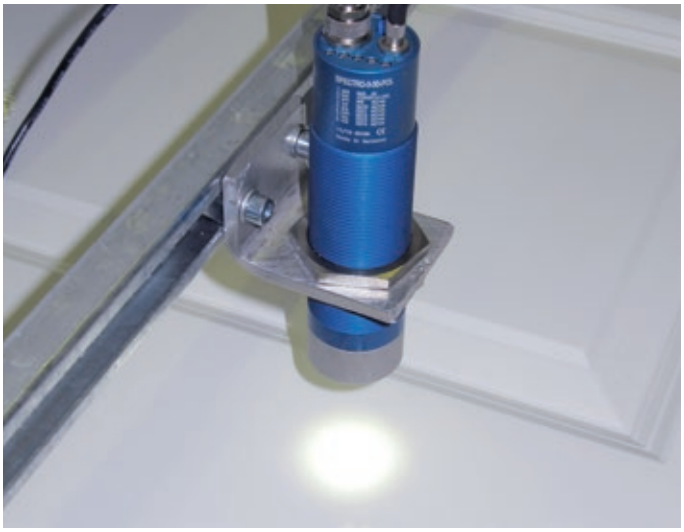
convincing practical examples

color evaluation in spite of glossy surfaces



automated paint shade recognition

In order to manage the consistent automated checking of the paint over the entire day's production of around 2,000 vehicles, the manufacturer has to ensure reliable color recognition (of around 17 varieties of paint and their color characteristics) among high gloss surfaces and in part, similar shades. This has to be done with a high level of repeat accuracy and at high sampling rate (in terms of the way the color shades are measured).
As a solution for the ambitious task, ipf electronic recommended a color sensor from the OF35 series to the car manufacturer. The sensor integrates a polarizing filter. This eliminates the effect of the shine that is generated by the vehicle bodywork. As such, the measurement of the color scheme can only then take place.

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painted doors check

A real challenge is the quality control of apartment doors with glossy painted surfaces. The task was to implement a non-contact system capable of carrying out a permanent and continuously automated test – both for a uniform paint application as well as the correct shine factor.
For this task, ipf electronic developed a very special solution. An OF34 series color sensor is used to check the correct color shade of the paint applied to the doors.
A revolution in the way the door manufacturer checks paintwork using automated equipment: a brilliance sensor developed by ipf electronic which works without contact / fully autonomously from the color sensor and, at the same time, establishes the brilliance factor of the paint.

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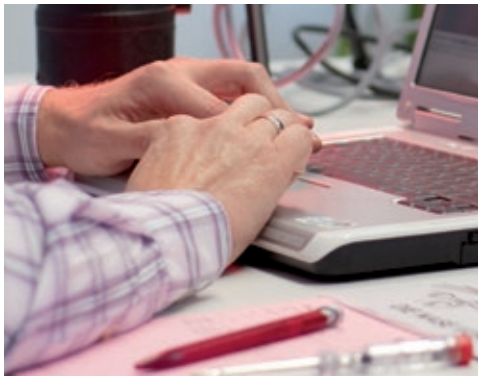
efficient support for all questions

on site personal service and solutions for problems



CONTACT

All calls are important! At the end of our technical hotline you will find experienced staff that will be able to answer your question reliably and with expertise. The aim is to provide you with efficient, effective advice which is free of charge – including telephone support.
Our hotline team is made up of five adept and specially trained staff. We are happy to call you back!
In addition, we have personal application consultants in the sales department who are on hand to answer any questions you may have. Internally, we coordinate each other.
This way we can react and provide an answer to each call. Fast and competent. Problems are becoming more complex in nearly all industrial applications. Often, the skills of an outside expert are needed.
At ipf electronic, our high level of expertise / ability to solve problems is made available to you. We are happy to discuss tasks which may seem small with you. For us, this is a matter of course!
You will recognize us as a well-known supplier of industrial sensors. No customer enquiry is left unattended and no on site appointment with the customer is missed. Our extensive range of products is unrivalled.
Variety, expertise, consultancy, flexibility:

This is ipf electronic's formula for success.

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