undreamt of freedoms

# opti-check OC53
# camera sensors


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our sensors ensure your success

ipf electronic

# OC53 camera sensors

## a focus on your application

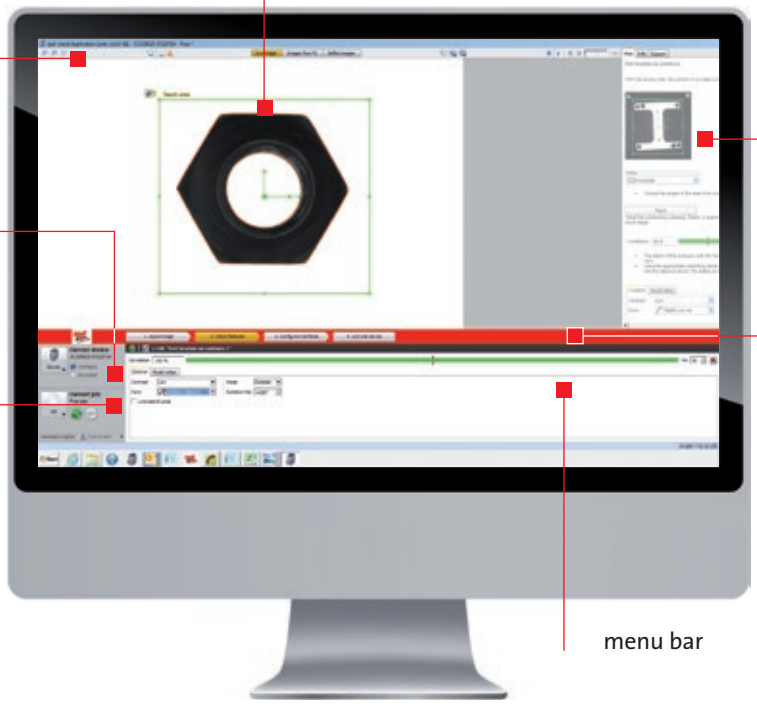
In many cases, the scope of applications for camera sensors is still being underestimated. Do you think otherwise? If so, maybe you should take a closer look at the new OC53 series of camera sensors from ipf electronic.

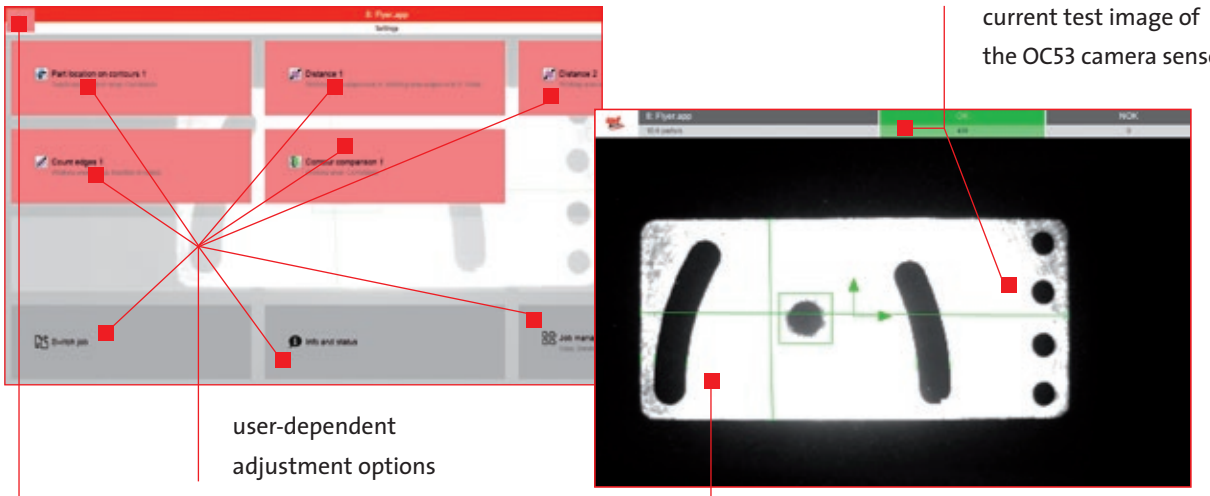
Are you looking for a camera sensor that can do nothing more and nothing less than your specific application requires? You will certainly find your 'specialist' cameras in our range. This is because the OC53 series consists of a range of variable camera sensors in five different embodiments with focal distances of 10mm (working distance: from 50mm to ...) or 16mm (working distance: from 70mm to 300mm). As a result of their wide range of graduated inspection features, these devices offer a range of functions which are especially orientated towards one thing – your specific needs.

Do you have a complex application for which you want to employ a solution which is both flexible and comprehensive? If so, we recommend that you take a look at our 'multitalent' from the OC53 series. With a C-mount connection and an integrated flash controller, with this device, you have a whole range of freedoms when selecting lenses and controlling external illumination via the sensor without any problems. But this is not all:  All camera sensors in the OC53 series offer certain interesting features with plenty of practical advantages. Curious to find out more? You will find out more on the next couple of pages!

# software – web interface

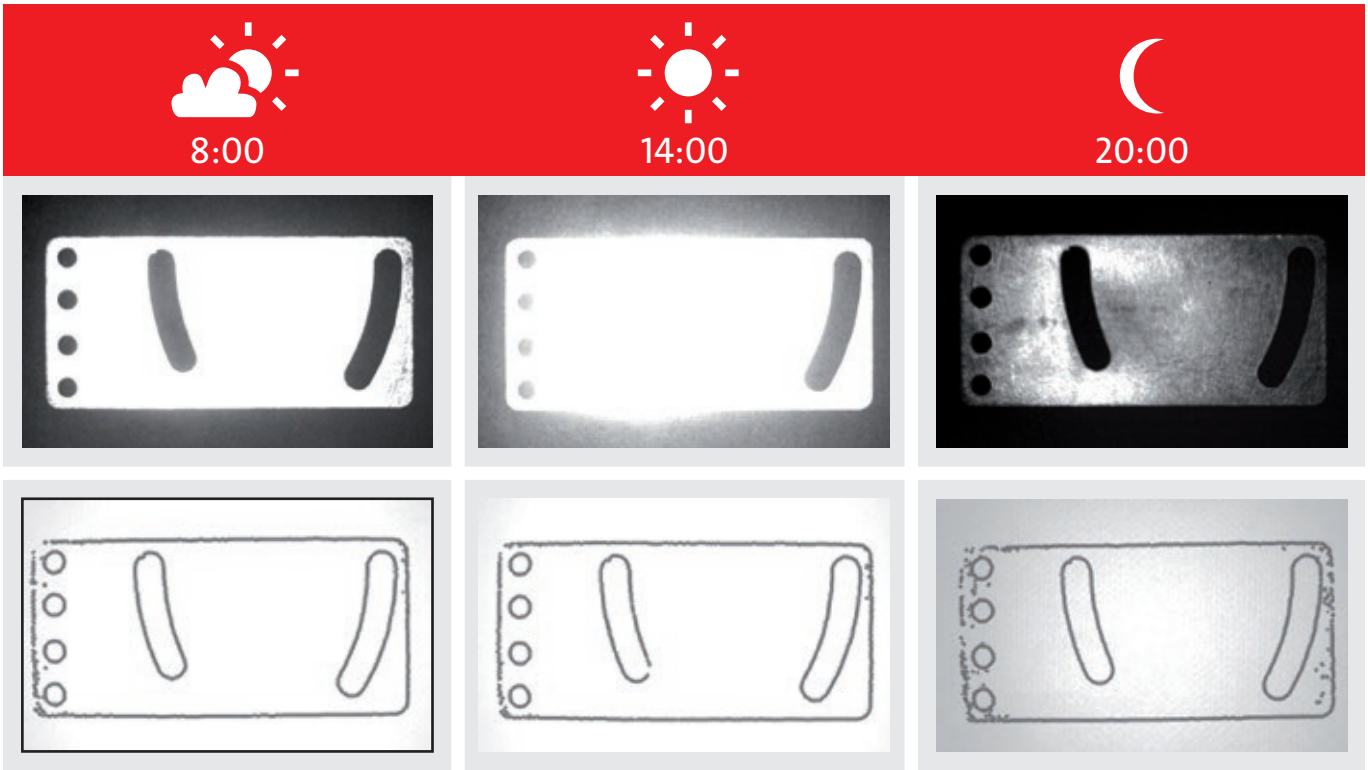
As is generally known, the 'intelligence' of a camera sensor lies in its software. And in the OC53, the software is complex, but not complicated. In only a few steps, the clear parameterization interface guides the user to a readily configured camera sensor which, in most cases, is ready to use within a few minutes. If required, specific access rights can be awarded to the operator on site during the production process. This operator does not even need the software in order to be able to access the sensor. This is possible by means of a suitable web interface for each standard browser which is available when the IP address of the respective sensor is entered into the browser line.



# special feature –

## from pixel to contour




- contour-based, instead of pixel-based recognition – as far as possible, independent of the influence of external light
- combining is a good idea: wide range functionality for the examination of components regardless of position, with the option of combining several tracking operations, however independently from one another
- free selection of lenses by devices with a C-mount thread
- integrated flash controller in the case of sensors with a C-mount thread (external illumination is supplied with electricity, the controller ensures a flash pulse for multiplying the brightness of the illumination)
- higher image resolution, if required: sensors with a C-mount thread offer resolutions of up to 2 megapixels, e.g. in order to recognize the smallest of details on a large surface
- the unit is quickly put into service as a result of a uniform user interface for all devices: a ready-configured camera sensor in only four steps
- less work involved in recognizing text: sensors with an OCR function (text recognition) do not require any previous learning of text
- user friendly interface: simply configure your sensor via any standard web browser by entering the IP address of the device
- powerful processing of data through the evaluation of images alongside the recording of images

# multifaceted

**” all in one ”**
a compact camera sensor with integrated illumination, lens, image recorder and image processing



**”one for all”**
camera sensor with a C-mount objective thread for maximum flexibility and an integrated flash controller for controlling the illumination

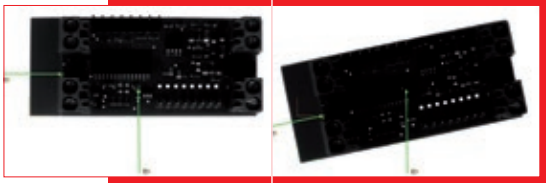
- robust industrial design in a metal housing (protection system IP67)
- multifaceted options for part location (on contours, on edges, on a circle or a line of text)
- a wide, device-specific range of tools for examining product features
- multifaceted combination options: 19 different tools for carrying out up to 32 feature checks per examination task – and all this with up to 255 test programs which can be stored on the sensor
- multifaceted examinations of features with a single sensor
    - examinations of geometric aspects (distance, circle, angle, counting of edges or the position of a point)
    - comparisons (counting contour points, comparing contours, brightness, contrast, area size, counting areas, pattern comparison)
    - identification (bar codes, matrix codes, texts, letters, numbers)
- reliable simulation: using product simulators for each device, all of the feature checks in a test program can be tested, evaluated and optimized
- rapid program optimization: using the integrated test function, it is possible to carry out a sort in only a few minutes e.g. the shots collected in a test run can be sorted into good and bad parts in order to evaluate the reliability of the test program that has been created

# drawing on a wealth of experience –

## feature checks & characteristics


## part location

part location on contours
Establish the position and pivot position of a part on the basis of its contours. All subsequent feature checks can be aligned towards the found object position.



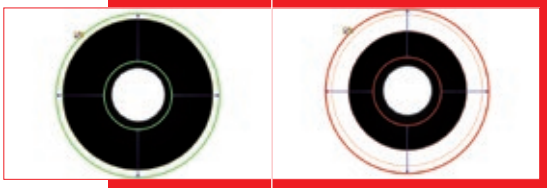
part location on edges
Establish the position and pivot position of a part on the basis of an edge or two edges at right angles to one another.
All subsequent feature checks can be aligned towards the found object position.

part location on circle
Establish the position and pivot position of circular parts.
All subsequent feature checks can be aligned towards the found object position.

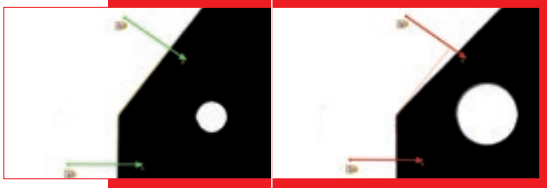

part location on text line
Establish the position and pivot position of text within the working range, even if, at the same time, the text changes. All subsequent feature checks can be aligned towards the found object position.

## geometry

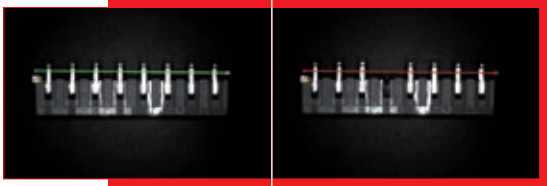
distance
Determine the distance between two edges, to a reference point, between an edge and a circle or between two circles.



circle
Determine the diameter, position and circularity compared to a reference circle.



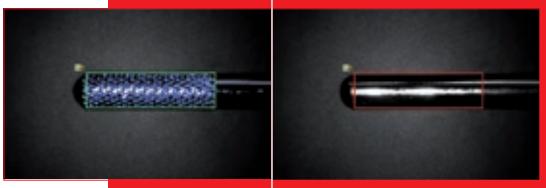
angle
Determine the angle between two edges or to a reference point.



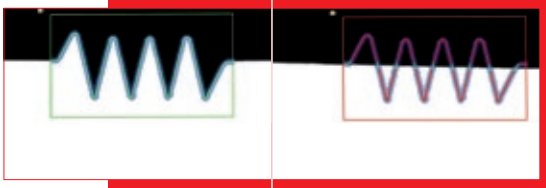
count edges
Determine the number of edges along a search beam.

point position
Determine the absolute position / pivot position of a point in an image or relative to a reference point (pick and place).

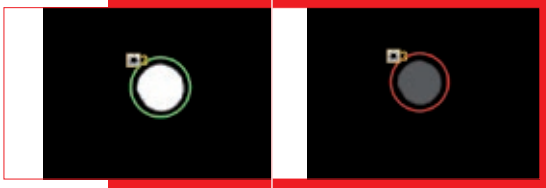
## feature comparison



count the contour points
Determine the number of contour points within a working area.

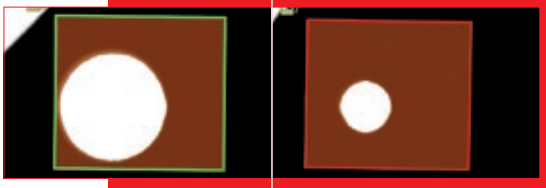


comparison of contours
Compare the contour of a learned part with the contour of the current test piece.

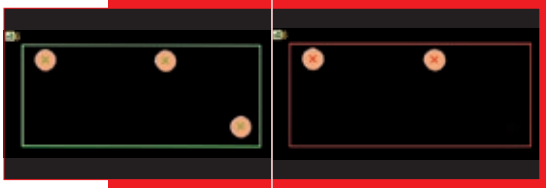


brightness
Determine the medium brightness in a working area.


contrast
Calculate the contrast in a working area.



area size
Determine the area of light and dark regions in an image. Establish the total area or the largest connected area.



count areas
Count connected light and dark regions that are visible in the detailed section of the image.

pattern comparison
Check the presence of a taught pattern in the working area.


## identification


barcode

Read barcodes and determine their quality in accordance with ISO/IEC 15416. The results can be displayed via the process interface. There is the option of carrying out a comparison of target values.

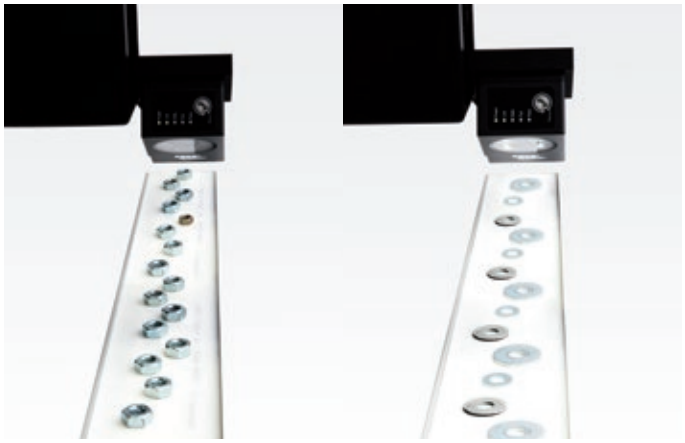
matrix code

Read any rotated matrix codes (ECC 200, GS1, QR, PDF417) and determine their quality in accordance with ISO/IEC 15415 or AIM DPM-1-2006. The results can be displayed via the process interface. There is the option of carrying out a comparison of target values.


text

Read date information, numbers and letters. In the case of texts, the print quality can be checked. Characters that are read can be displayed via the process interface. There is the option of carrying out a comparison of target values.

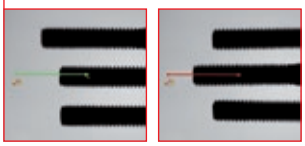
# individual requirements targeted solutions

## whether short or long – correctly identified

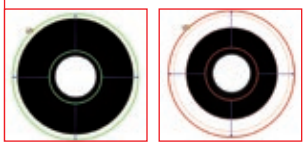
A classic application for sensors in the metal industry: The aim is to identify the correct length of metric screws with a standard thread. In connection with this, the screws are transported in suspension on a rail and the parts which are not OK, i.e. screws that are too short or too long, are eliminated after the check. With an OC53, this task can be handled quickly and reliably.

At the same time, the camera sensor shows its strengths, even when it comes to flexibility. If, for example, the product type changes and as a result, screws have to be evaluated with a different length, this conversion is possible without a lot of work. Simply select the program that is prepared for the current product type and activate it in the camera sensor – and you're done. At the same time, other product features (such as the thread length) can, in a manner of speaking, be checked in 'one go', i.e. with one photo shot. In any event, for each program, up to 32 product features can be queried without an OC53, i.e. the hardware, having to be adjusted to it.

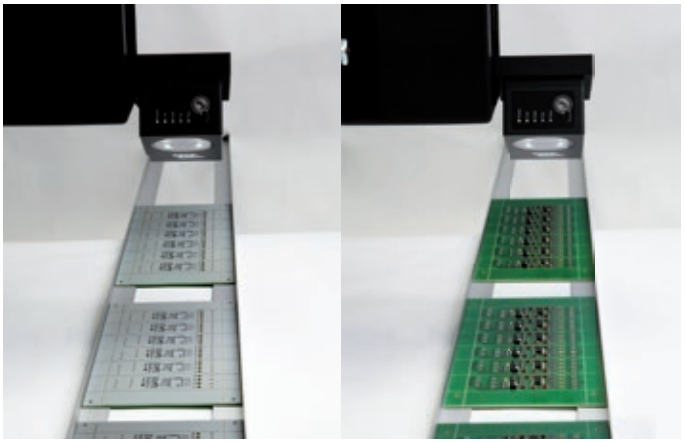


## large quantities of correctly sorted articles

Screws and flat washers are mass articles, however continuous quality can hardly be guaranteed by carrying out manual checks on them. Added to this is the fact that often, a multitude of products with different features has to be produced. This is something that does not make quality testing, in terms of a high level of correctly sorted items, any easier. This application relates to the packing of nuts which are correctly sorted and have to be transported via a conveyor belt. In the case of conventional sensors, in order to securely separate parts which are not OK, it would be necessary to have a pre-defined position of the product on the belt when checking the features. With an OC53, this is not necessary. For the assessment, the nuts do not have to be positioned (in terms of their position on the transportation belt). As such, they only have to be located 'somewhere' in the detection range of the camera lens. If a change to the product (e.g. flat washer) or the product type is pending, all it takes is to activate the program that was correspondingly prepared. Here as well, a mechanical adjustment of the OC53 (e.g. in order to adjust the operating distance) is not necessary. As such, production can take place at full speed, without any annoying disruptions.

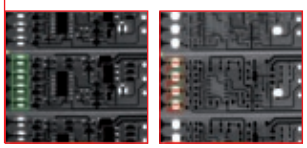


# convincing practical examples



## always economical, despite ever greater demands

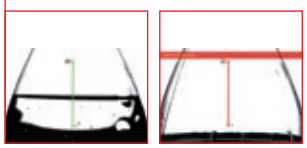
The electronics industry has extremely high demands when it comes to the manufacturing quality of its suppliers. In this application, several imprinted circuit boards are located on a larger printed circuit board (panel). In this case, an OC53 is not only able to reliably check the quality of the print but upon request, it is also able to simultaneously check the labeling of each circuit board, e.g. for an incorrect or correct article number. For this comparison, the user only has to teach in the reference.
By the way, the recognition of text (text, date or a combination of numbers) takes place any time without intensive teaching. In a second case, the task was to check the reverse side of circuit boards 'in panels' in order to ensure that electronic components were complete. Regardless of whether, in the worst scenario, a circuit board is not fitted at all, or alternatively, it is only a component that is missing from the circuit board, an OC53 can securely spot the problem without complex parameterization. Accordingly, with the versatility of the OC53, it is possible to realize the production of electronic components in a way which is always able to meet high, and in addition, increasing demands.



## get a perspective, even under tough conditions

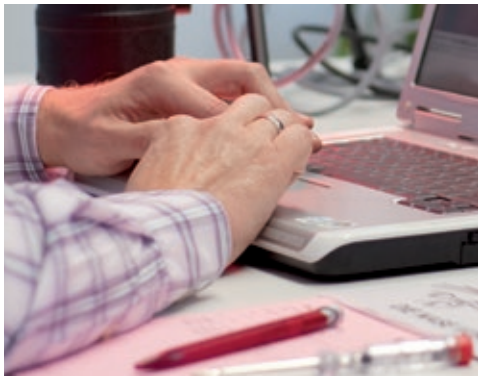
The task here was to check the fill level of PET bottles. For conventional sensors, this is not an easy task for a variety of reasons: Structures on the material surface, drips or wet refraction anomalies inside the bottle, welds in the material, and many other things besides. Furthermore, when checking fill levels, a very limited distance is often necessary between the detection range and the conventional sensor – with the potential hazard of collisions in the transport system. These are all problems and challenges which can be comfortably forgotten with the OC53.

In the desired area of the bottle, the fill level is simply taught in. The verification program is activated and the camera sensor can start its work. Where necessary, it takes on other checking tasks in an application of this type, e.g. to see whether there is a top on the bottle and/or in addition, to check whether it is sitting correctly. The large range of tools and their application-orientated combination make this possible, and much more besides.



# 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 adept and specially trained staff members. We are happy to call you back! In addition, we have personal application consultants in our 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 and multifaceted in nearly all industrial applications. Often, the skills of an outside expert are needed to find a suitable solution. 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 simple 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. Our extensive range of products is unrivalled. Variety, expertise, consultancy, flexibility:

**This is ipf electronic's formula for success.**

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