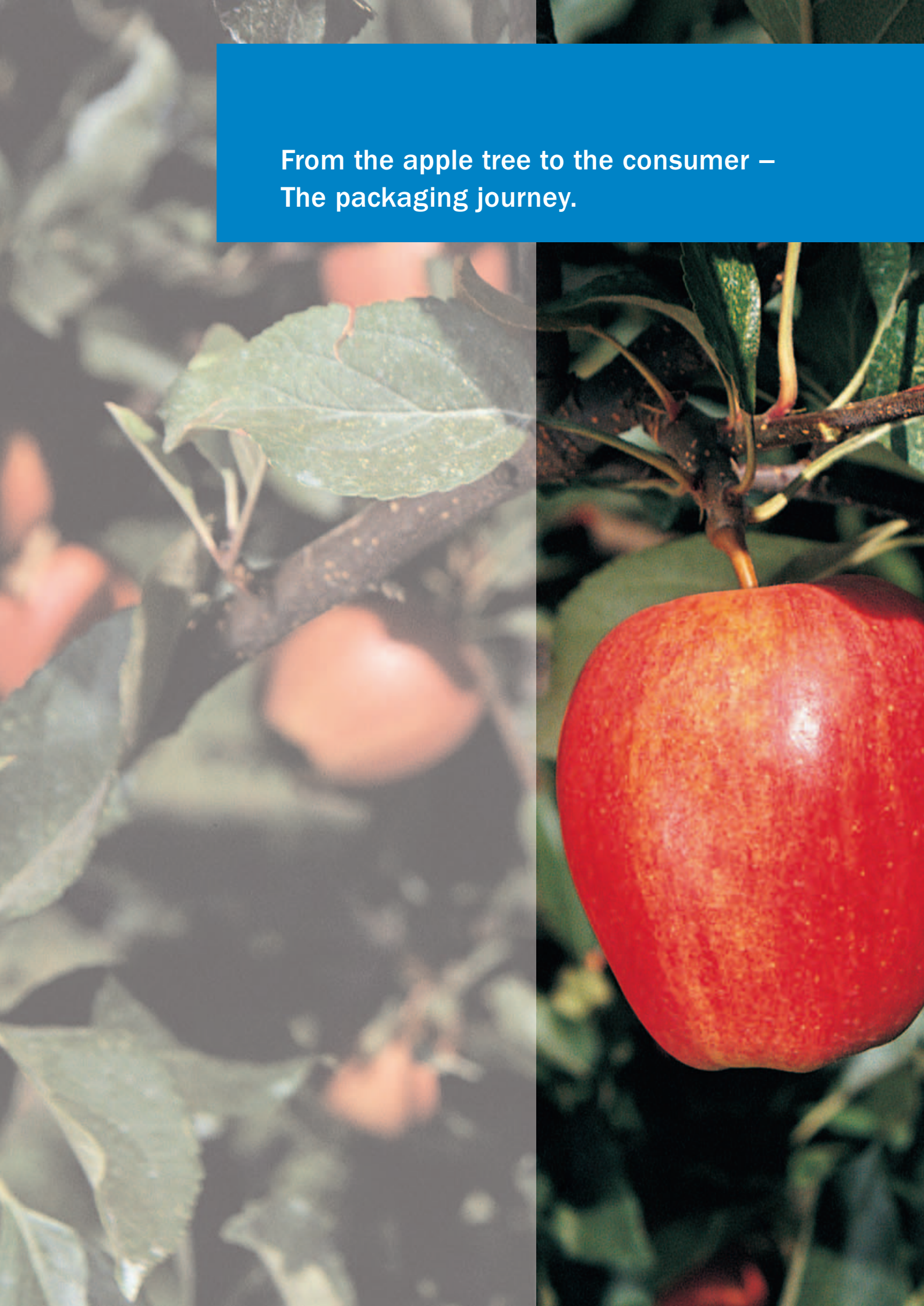
PRODUCT INFORMATION

Non-stop control

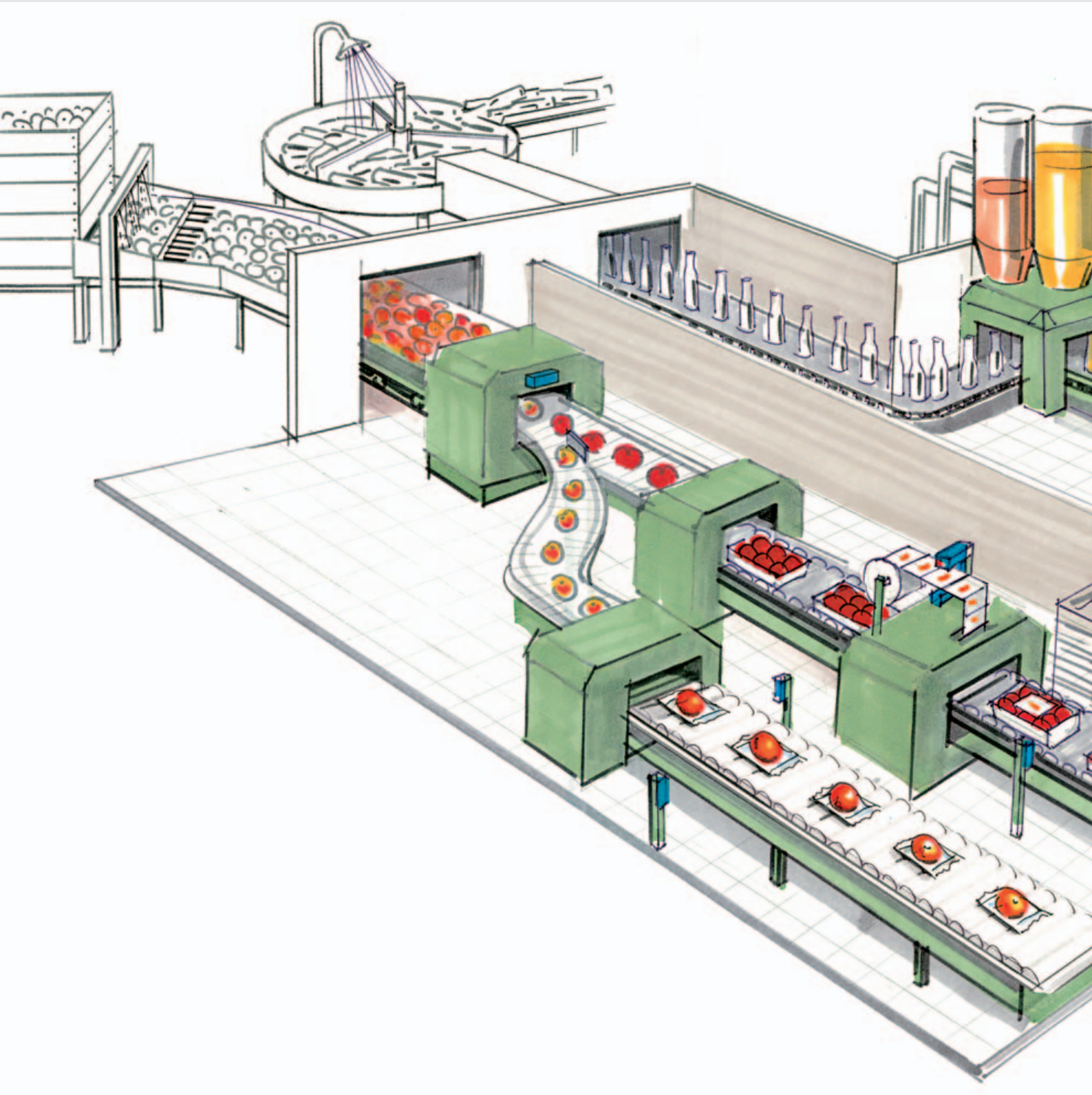
Contrasts, colours or transmission:
Sensors for a wide range of applications.

SICK
Sensor Intelligence.

From the apple tree to the consumer – The packaging journey.



Processes in the manufacturing and packaging industry offer countless possibilities for automation with sensors.



As an example, the illustration shows SICK contrast and luminescence scanners, colour sensors and fork sensors in use.

The possible applications are as varied as the shades of an apple. The requirements have one thing in common: high speed, accuracy and reliability must be guaranteed.

Different principles of operation – matched to your application.

Small grey scale contrasts, different colours or low transmission attenuation can be used to differentiate between objects.

CONTRAST SCANNERS

Detecting contrasts: grey scale differences are sufficient – whether weak or clear.

KT contrast scanners operate on the reflection principle. Large or small grey scale differences between a mark and background can be detected, even on matt, shiny or transparent materials. A large selection of contrast scanner types is available for many different or variable requirements, enabling nearly all goods and products to be counted, sorted and controlled.

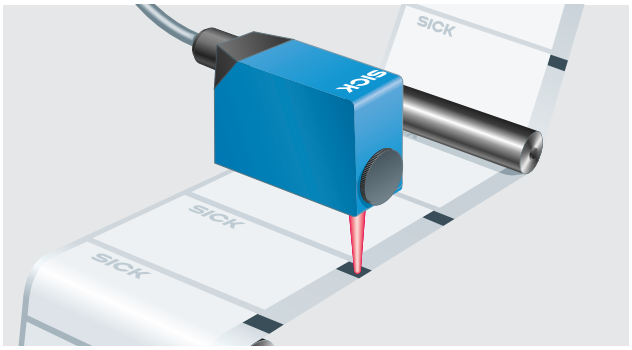
Contrast scanners have become an essential part of automated production processes, such as in the packaging or printing industry. They are used for the reliable detection of all types of differences in contrast, e.g. printing marks on foils or packaging materials.

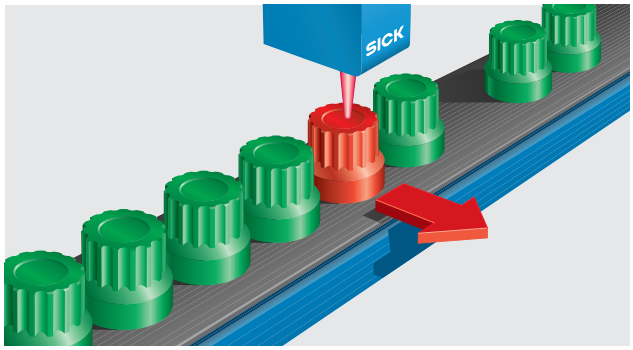
COLOR SENSORS

Online colour detection – fast and non-contact in incidental or transmitted light.

CS and CVS color sensors help automate industrial operations in which the colour of an object or a mark represents a detection or sorting criterion. They emit light onto the object to be checked, calculate the colour remission characteristics from the reflected light and compare these with reference colour values previously stored. A switching output is activated accordingly.

The sensors can be matched to fulfil a variety of specific application requirements, whether they might be high speed, long scanning ranges or changes in colour.





The principles of operation cover a multitude of possible applications, with user-friendly commissioning always being a key consideration.

LUMINESCENCE SCANNERS

Seeing fluorescence – irrespective of the carrier material.

LUT luminescence scanners detect fluorescent materials or marks, irrespective of patterns, colours or surface finish, and on almost any carrier material.

Luminescence scanners are used where conventional scanners do not ensure a guaranteed solution: e.g. the control of glue application or the lubrication of ball bearings.

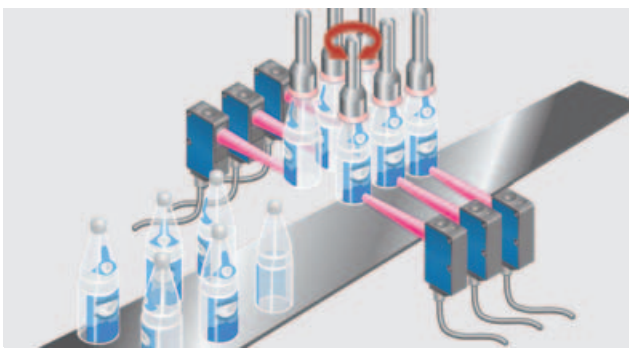
Fluorescent marks can be specifically applied to the product using chalk or special labels. Additionally, fluorescent additives can be used in printing inks and lacquers. The marks, which are often invisible to the eye (a requirement for certain applications), can then be used for authenticity checks.

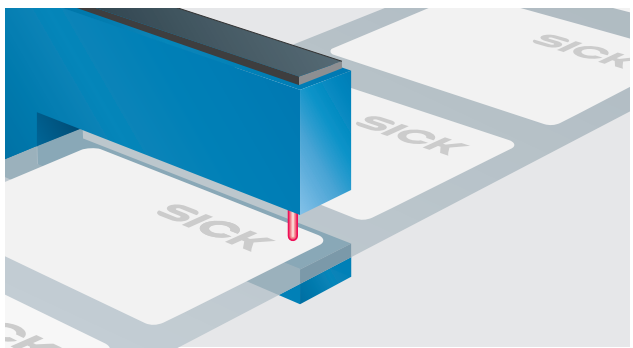
FORK SENSORS

Online transmission detection – detecting small differences in light attenuation.

WF next fork sensors are used for label detection, detection of marks or double sheets as well as holes and edges. Due to the design principle, no adjustment is required. Simply choose a fixed fork width (from 2 to 120 mm) and corresponding fork depth (40, 60 or 95 mm), mount the sensor, and you are ready.

Their high switching frequency and fine resolution ensure that small or flat objects, which move at high speed, can be detected. Multiple stations offer the possibility of mounting several WF next with different fork depths, side by side.





Where the contrast is critical for accurate differentiation.

Detecting large or small grey scale differences on matt, shiny or transparent objects: Different types of contrast sensor series are available for a variety of different applications.

KT 10-2 CONTRAST SCANNERS

Flexible for use in the packaging and printing industry – high speed and high resolution.

High speeds, reflecting or transparent objects and changing contrasts create demanding detection tasks in the packaging industry and in print finishing. Typical examples: repeats, print or fold marks are accurately detected.

The tricolour emitted light source – red, green and blue – ensures maximum reliability of detection: for each teach operation the sensor independently checks which of the three sender diodes to choose.

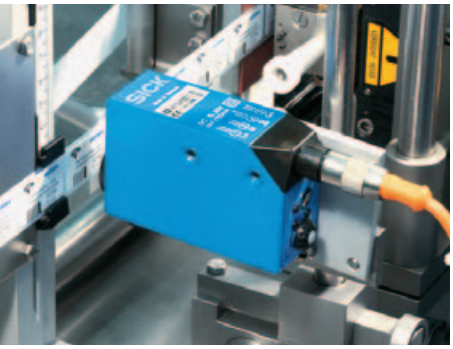
- Automatic drift correction for optimum reliability of detection
- Easy teach-in on the unit, or remotely via control wire
- 30 kHz for high throughput
- High geometric resolution through precise light spot
- High reproducibility
- The unit can store 5 contrasts

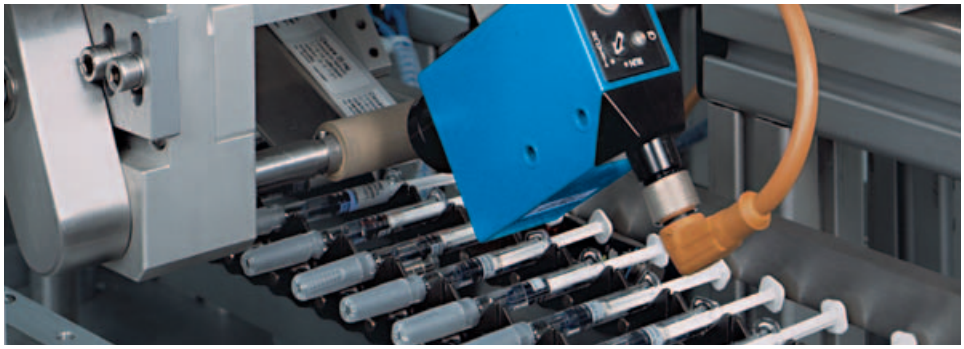
KT 8 CAN CONTRAST SCANNERS

CAN-Bus – interface with CANopen functionality.

The CAN-Bus interface of the KT 8 CAN contrast scanner increases its functionality up to the CANopen level. In particular, this enables central maintenance of the parameters via a machine panel, with the diagnostic functions and online access being of particular importance. The process documentation (acc. to CFR21 part 11) makes controlling easier, as does the data capture of the red, green and blue components.

- CANopen interface
- Pre-failure signaling output
- Automatic drift correction
- High-speed enabled 30 kHz switching frequency
- 3 light senders: red, blue, green





KT 5-2 CONTRAST SCANNERS

Highly integrative: Adjustable switching thresholds, a choice of teach-in methods and transmission LED colours.

The KT 5-2 series offers the most comprehensive variants within the KT series … ranging from the display type with the convenient bar graph display of the reliability of detection, to the fibre-optic cable version for use where mounting space is restricted.

KT 5 Display RGB

With the KT 5 “Display”, the segments of the bar graph show the quality of the contrast learned: the more LEDs which are lit, the more secure the mark detection. All combination of contrasts can be detected via RGB diode.

KT 5

In the KT 5 basic version, the switching threshold is adjusted manually via an adjustment aid on the sensor. It easily detects over 30 different contrast levels. For difficult scanning tasks, there is the KT 5W with RGB diode, which ensure that all colour combinations can be detected. The KT 5RG is recommended for simpler detection tasks. The KT 5G is used where an analogue output is required.

Teach-in

In the versions with static 2-point teach-in (mark and background) the sensor is set up via the teach-in button directly on the sensor or remotely via the control wire.

Where access to the sensor for adjustment purposes is limited, or when the machine is running, a variant with dynamic teach-in is available.

A variant for dynamic operation and which requires no teach-in is also available. In this version, the switching threshold dynamically follows the existing contrast.

KT 5 Laser

The KT 5L – the laser variant – is specifically designed for the accurate detection of very small marks at long great scanning distances.

KTL 5 fibre-optic cable

The KTL fibre-optic version is suitable where space is particularly restricted. The detection is based on the scanning or reflection principle, depending on the fibre-optic cable chosen and matched to the KTL.

- Switching frequency 10 kHz
- Red, green, blue emitted light
- Automatic gloss adjustment
- Special, different teach-in for many different applications
- Metal housing for harsh environments
- Selectable light emission

Contrasts or colours – send, detect, decide.

Variations in contrast, colour and shade: There is a variant of the KT, CS and CVS to meet the requirements of all applications.

KT 3 CONTRAST SCANNERS

Small design – great for detection in standard applications.

The KT 3 miniature contrast scanner is especially suited to applications in compact packaging machinery where limited mounting space is available. Depending on the tasks, units with static 2-point teach-in or with dynamic teach-in are available. The sensors are parametrised via the teach-in button on the unit or remotely via the control wire.

KT 3W

The tricolour emitted light source – red, green and blue – means maximum reliability of detection: for each teach operation, the sensor independently checks which of the three sender diodes to use.

KT 3G

KT 3, the “ready-steady-go” contrast scanner: the economic model for simpler applications.

KT 3 Laser

The KT 3L laser model is ideal for accurate detection of smallest marks or objects at a great scanning distance and good depth of focus.

- Automatic selection of the most suitable emitted colour of LED
- Switching frequency up to 10 kHz
- Teach-in on the unit or remotely via control wire
- Automatic gloss adjustment
- Scanning distance up to 60 mm

KT 2 CONTRAST SCANNERS

Quick and easy adjustment.

High flexibility and high reliability of detection, with fast and easy manual adjustment, are the hallmarks of the KT 2. A choice between types with red or green light is available, depending on the application requirements.

The compact design is the cost-effective alternative for standard applications with good differences in contrast between mark and background. The robust metal housing with the dovetail fixing option and additional fixing holes ensure easy and flexible integration into many different environments.

- Switching frequency of 10 kHz
- Adjustable switching threshold via potentiometer
- Red or green sender LED
- Robust metal housing
- PNP and NPN in one unit

CS COLOR SENSORS

For the detection of up to four colours.

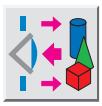
In automation technology, the CS sensor series provides a solution for the detection, checking and sorting of objects by their colour. High speed processes and applications handling up to 4 different colors, are ideal for these sensors.

With the CS 8-4, four reference colours can be learned conveniently, at the touch of a button on the sensor, or remotely via the control wire. The colour selectivity can be separately and individually adjusted for each channel.

The CS 8-1 is used for fast production processes and for the detection of one colour.

The compact design of the CSM is ideal where space is restricted: even in restricted conditions, it can still be mounted comfortably. It is also very easy to operate.

- Adjustable colour selectivity
- Switching frequency up to 10 kHz
- Blanking input
- Teach-in
- Selectable light emission
- Bar graph display



CVS COLOR SENSORS

CVS – Color Vision Sensors: where long scanning distance and spot size is important.

A colour display, similar to a digital camera, is the key feature of the CVS series: the objects are “seen” by the user thus greatly simplifying alignment and monitoring of the measured values.

In addition, the CVS offers a long scanning distance and depth of focus as well as a very large light spot. Simple operation of the CVS by means of an integrated keyboard, as well as teach and parameter menus, provide the solution for many different applications.

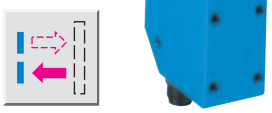
Fast and reliable colour detection through pixel sum evaluation of up to twelve colours are the domain of the CVS 1.

The CVS 2 has 15 memory addresses for the taught-in colours. Moreover, it can identify simple patterns, i.e. 2-colour objects, and offers an additional colour sorting function.

- Learning and detecting large areas of colour
- LED lighting ring, white
- LCD colour display and keyboard
- Programming via teach-in procedure: manually or via control wire
- 1-point, 2-point or upper/lower limit teach-in
- Switching frequency up to 1.6 kHz (CVS 1)/200 Hz (CVS 2)
- Serial interface (CVS 2 only)

Detecting fluorescent marks or using the specialism of the fork sensors for even clearer detection.

Detection of fluorescence on nearly any carrier material is the function of the luminescence scanner. Fork sensors fullfill similar functions to a through beam sensor, but in a convenient single housing.



LUT 3 LUMINESCENCE SCANNERS

High system sensitivity and adaptable to a wide range of applications.

The LUT 3 series luminescence scanners are robust, multi-talented and come with a comprehensive range of accessories. Scanning distances to suit specific applications can be selected via interchangeable lenses, whilst fibre-optic cables and optical filters are also available.

The LUT 3-9 is used wherever higher system sensitivity is required.

The LUT 3-8 and the LUT 3-6 are used for standard applications.

- UV diodes
- Additional optical filters
- Analogue output
- Time delays
- Fibre-optic cable variants

LUT 1 LUMINESCENCE SCANNERS

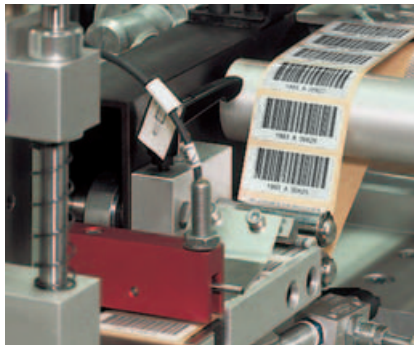
For long scanning distances, extremely easily operated.

LUT 1 series luminescence scanners feature the longest ranges within this series. The infinitely variable switching threshold can be (re)adjusted via a “+”/“–” button, greatly simplifying commissioning for changeable applications or unstable conditions.

The LUT 1U emits a UV wavelength of 370 nm.

The LUT 1B emits blue light with a wavelength of 480 nm.

- High switching frequency up to 6 kHz
- UV/blue diodes
- Large scanning distance
- Large light spot



LUT 2 LUMINESCENCE SCANNER

Weak luminescence and compact housing – small and yet BIG.

The possibility of adjusting the switching threshold makes the LUT 2 ideal for detecting low levels of fluorescence. Set up and adjustment can be made via the controls on the sensor, or remotely via the control wire. The static teach-in procedure is simply set by teaching the mark or the background.

The miniature design makes it ideal for use in compact labelling machines or for positioning of bottles during automatic placement.

- Teach-in
- Miniature housing

WF NEXT FORK SENSORS

Different fork widths for a wide range of different applications.

Ensuring that each label is cleanly cut and later fits onto each package: this is a typical job for the WF next fork sensors. Further specialist applications are double sheet detection and the feed control on automatic machines.

Fork sensors are easily integrated into applications due to their design, and the “+” and “–” buttons further simplify the adjustment of the switching threshold. Alternatively, the switching threshold can be set via teach-in. The adjustment is accurate in each and every case.

- High switching frequency 10 kHz
- Fast response time
- Stable aluminium housing
- Adjustment: manual or via 2-point teach-in

RANGE OF EXPERTISE

INDUSTRIAL SENSORS

Our complete range of sensors provides answers to suit any application in the field of automation. Even under rugged ambient conditions objects are reliably detected, counted and positioned in respect of their form, location and surface finish, as well as their distances established with pin-point accuracy.

INDUSTRIAL SAFETY SYSTEMS

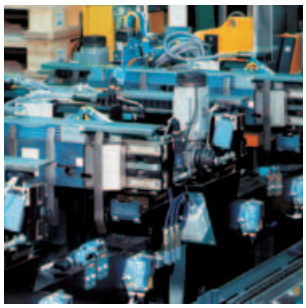
Comprehensive safeguarding of both personnel and machinery! As specialists in Sensor Technology, SICK develops and manufactures pioneering products for providing protection in hazardous zones, dangerous locations and for safeguarding access points. By providing services, which encompass all aspects of machine safety and security, SICK is setting new standards in Safety Technology.

AUTO IDENT

Whether the tasks involve identification, handling, classification or volume measurement, innovative Auto Ident systems and laser measuring systems function extremely reliably, even under rapid cycle times. They conform to the latest Standards and can be simply and speedily integrated in all industrial environments and external applications.

ANALYZERS AND PROCESS INSTRUMENTATION

System control, maintaining setpoints, optimising process control and monitoring the flow of materials – the instruments and services for Analysis and Process Measurement, supplied by SICK MAIHAK, are setting the standards for these applications in terms of Technology and Quality.



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