



## High Speed White Light Contrast Sensor

### Series KS 30

- Response time 25  $\mu$ s
- Switching frequency 40 kHz
- Sensing distance 28 mm
- Broad spectrum white LED

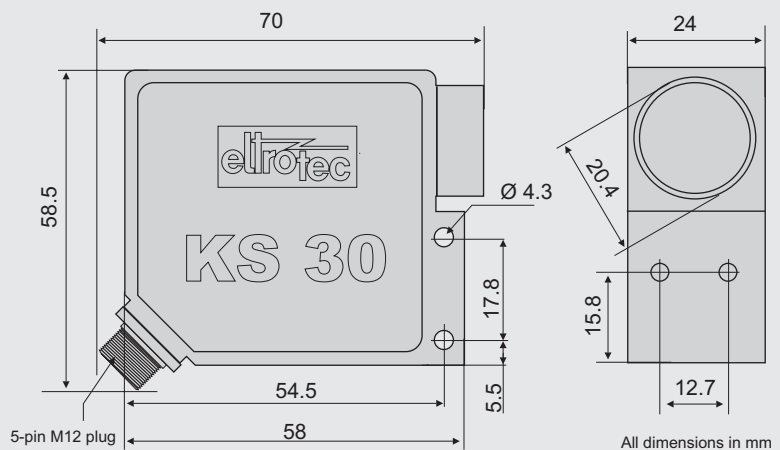
#### Advantages:

- High color contrast sensitivity and resolution.
- High detection speed, 25  $\mu$ s discrete output response.
- Broad-spectrum white LED light source allows detection of all colors.
- Two gain settings and three light source intensity settings allow a wide range of adjustment capability.
- Easy-to-use operator adjustable threshold.
- Fast and convenient integration. In one sensor you get both analog and discrete output, auto-detect for PNP/NPN configuration.
- Unique numerical display indicates measured levels making process setup easy.
- Circular spot allows for any orientation of sensor to marks

#### Applications

- Contrast and color mark detection
- Sort products by color
- Detect registration marks
- Confirm presence of date codes
- Detection of glossy surfaces
- Detects cap inserts
- Detect Laser marks
- Detect color marks on different surfaces
- **Printing, packaging and converting applications**

#### Dimensions



- The sensor should be fixed at 15° to 20° angle from directly perpendicular to target surface, to prevent directly reflected signal from glossy surfaces

#### Wiring connections

M12 Connector	Wire color	Description
1	brown	Supply (+) 10 -24 VDC
2	white	Switching output (PNP/NPN)
3	blue	GND
4	black	Analogue output 0-5 VDC
5	yellow	Remote lock

#### Display elements

Numeric display of 50 grey scale levels

##### Indicator LED

Green: Threshold Mode while in UNDETECT

Red: DETECT

Yellow: Threshold Mode while in DETECT

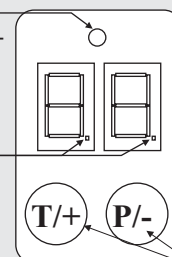
##### Display decimal points

None illuminated: LED low intensity

One illuminated: LED medium intensity

Two illuminated: LED high intensity

Display range 00-50



Threshold setting  
Local lock  
Hysteresis level  
Teach function

## Technical data

<b>Electrical data</b>	Supply Voltage	10 to 24 VDC
	Current consumption	~ 60 mA
	Data retention	non-volatile EE-Prom memory
	Response time $t_{on}$ or $t_{off}$	25 $\mu$ s
	Switching frequency	40 kHz
<b>Optical data</b>	Sensing distance	28 mm
	Spot size	3 mm $\varnothing$
	Distance Variation Sensitivity	<5% @ +/- 2mm from focal point
<b>Light source</b>	LED	Broad spectrum white
	Life cycle	100.000 h
	LED intensity	3 levels
<b>Output</b>	Switching output current	max. 100 mA, short circuit protected NO/NC selectable, auto-detect PNP/NPN
	Analog output	0...5 V (% of full scale, 20 mV resolution)
<b>Temperature</b>	Operating	-20 to 55 °C
	Storage	-20 to 70 °C
<b>Protection</b>	Supply	inverse polarity protected
	Output	permanent short-circuit protected
	Degree of protection	IP 67
<b>Housing</b>	Material	Metal alloy
	Weight	approx. 95 g

## Ordering information

<b>Product</b>		
<b>KS 30</b>	with M12 connector	10423569
<b>Mounting bracket KS-300</b>		11303680
<b>Connection cable, M12 straight 5pin, length 2 m</b>		11231168
<b>Connection cable, M12 straight 5pin, length 5 m</b>		11232536

## Quickstart guide

1. The display range is 00 through 50. The decimal points indicate the LED intensity level. The RED LED above the display indicates that the intensity level drops below the threshold setting.
2. Connect cable to power supply observing correct polarity. Reference wiring diagram.
3. Apply power; sensor will initialize and perform its power up sequence.
4. To obtain maximum tolerance to distance variation, place the target at the greatest distance it is likely to be in the application, for example, flat against a guide surface. Select the target area for the presence or non-presence, depending on which condition yields the higher signal level. Carefully adjust the sensor distance to obtain the highest reading in this pre-determined area and note the reading. Now move the sensor slightly further away, to get approximately 5% lower reading and fix sensor at that distance. This will allow the target to move closer, back to the highest reading, then closer still down to 5% lower. The result should be a minimum of 2mm of allowable flutter with <5% change in reading.
5. Place a sample (or use the back cover of this manual) with background into the sensor spot and note the reading, move the sample 2<sup>nd</sup> area or condition that the sensor will encounter and note the reading. Set the threshold between these 2 values.
6. Various adjustments may be made to increase or decrease sensitivity; refer to the Sections Calibration Adjustment and LED Intensity Level. Refer to Section: Threshold, to alter threshold setting.