Contrast sensors
KT5, KT5-2 Display

KT5W-2P2116D

SICK
Sensor Intelligence.

| Model Name | > KT5W-2P2116D |
| Part No. | > 1026584 |

At a glance

- Intuitive 10-segment bar graph display indicates detection status
- Static 2-point teach-in of mark and background via the control cable
- Maximum detection reliability due to 3-color RGB LED technology
- Switching frequency of 10 kHz
- Automatic gloss adjustment for highly reflective materials
- A range of sensing distances and light spots for numerous applications
- M12 plug can be rotated 90°

Your benefits

- All print marks and color combinations are detected, ensuring high throughput
- Reliable operation, even with high-gloss materials
- Detects difficult marks, such as jittering and shiny materials
- High positioning accuracy improves packaging quality
- Application-specific teach-in processes reduce setup times
- Various sensing distances, light spot directions and light emissions make individual configuration and simple integration into the production system possible

Features

Sensing distance [1]:	10 mm
Sensing distance tolerance:	± 3 mm
Light source [2]:	LED
Wave length:	470 nm, 525 nm, 640 nm
Light emission:	Long and short side of housing, exchangeable
Light spot size:	1.2 mm x 4.2 mm
Light spot direction [3]:	Horizontal
Type of light:	Visible blue light, Visible green light, Visible red light
Dimensions (W x H x D):	30.4 mm x 53 mm x 80 mm
Housing design (light emission):	Rectangular
Teach-in mode:	Static 2-point teach-in with manual fine adjustment

[1] From front edge of lens   [2] Average service life of 100,000 h at T_A = +25 °C   [3] In relation to long side of housing

Mechanics/electronics

Ripple [1]:	≤ 5 Vpp
Power consumption [2]:	< 130 mA
Switching frequency [3]:	10 kHz

Response time [4]:	50 µs
Output type:	PNP: HIGH = VS- ≤ 2 V / LOW approx. 0 V
Switching mode:	PNP
Input, teach-in (ET):	PNP:, Run: U < 2 V, Teach: U = 10 V ... < U_V
Retention time (ET):	25 ms, non-volatile memory
Connection type:	Connector M12, 5-pin
Protection class [5]:	II
Circuit protection:	Output Q short-circuit protected, Interference suppression, VS connections reverse-polarity protected
Enclosure rating:	IP 67
Weight:	400 g
Housing material:	Metal, Zinc diecast
Output current Imax.:	100 mA [6]
Supply voltage:	10 V DC ... 30 V DC [7]
Fieldbus interface:	-

[1] May not exceed or fall short of V_S tolerances [2] Without load [3] With light/dark ratio 1:1 [4] Signal transit time with resistive load [5] Reference voltage DC 50 V [6] Short-circuit protected [7] Limit values; operation in short-circuit protected network max. 8 A
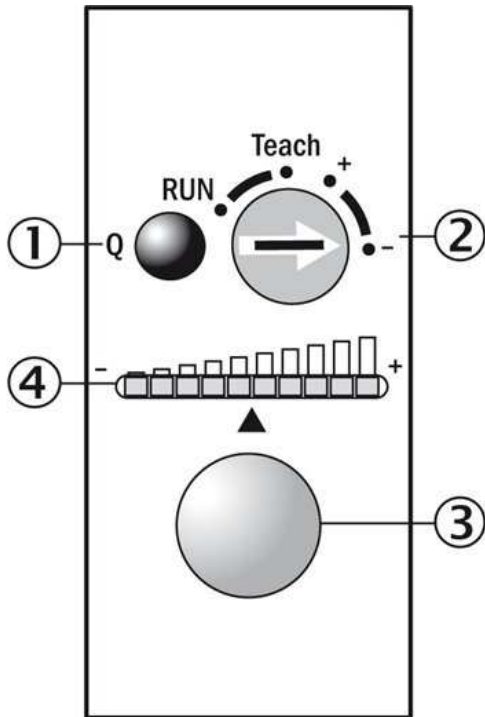
Ambient data

Shock load:	According to IEC 60068
Ambient operating temperature:	-10 °C ... +55 °C
Ambient storage temperature:	-25 °C ... +75 °C

Dimensional drawing

Sensing distance 10 mm (0.39 inch)
Sensing distance 20 mm (0.79 inch)
Sensing distance 40 mm (1.57 inch)

|1| Lens (light transmission), can be exchanged for pos. 4
|2| M5 threaded mounting hole, 5.5 mm deep
|3| See dimensional drawing for lens
|4| Blind screw can be replaced by pos. 1
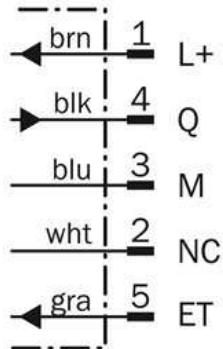|5| Connector M12 (rotatable up to 90°)
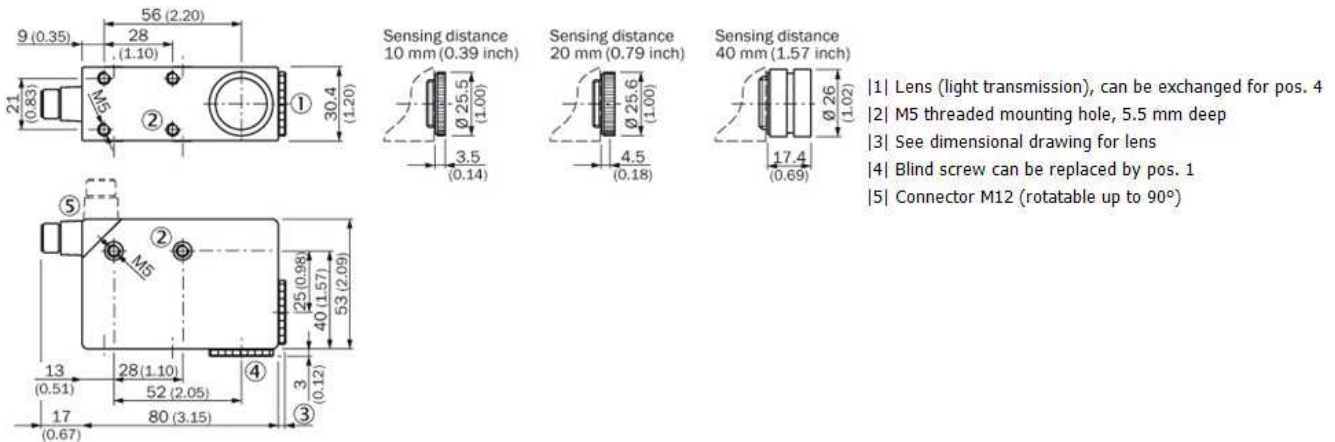
Adjustments
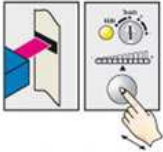

|1| Function signal indicator (yellow)
|2| Pre-selection switch
|3| Teach-in button
|4| Bar graph (green)

Connection type and diagram

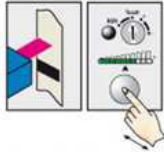|		
brn	1	L+
blk	4	Q
blu	3	M
wht	2	NC
gra	5	ET

Bedienhinweis

1. Position mark

Turn rotary switch to "Teach" position. Press and hold teach-in button > 1 s. Red emitted light and yellow LED flash.

2. Position background

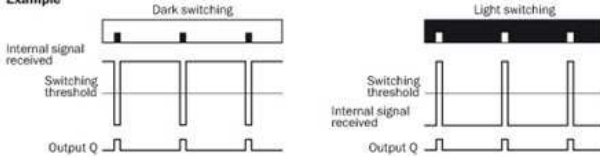Press and hold teach-in button > 1 s. Yellow LED goes out. Optimum emitted light is selected.

Fine adjustment possible using the "+"/"−" buttons.

Dark mark, small deflection

Light background, large deflection

Note

The bar display visualizes the detection reliability during teach-in. The more LEDs that illuminate, the better the teach-in:
1 LED illuminates = operation not reliable – contrast difference too low
≤ 4 LEDs illuminate = operation OK – sufficient contrast difference
> 4 LEDs illuminate = reliable operation – high contrast difference

Example

Dark switching

Internal signal received
Switching threshold
Output Q

Light switching

Switching threshold
Internal signal received
Output Q

Switching characteristics

The optimum emitted light is selected automatically.
Light/dark setting is defined using teach-in sequence.
The switching threshold is set in the center between the background and the mark.
Teach-in can also be performed using an external control signal.

Sensing distance
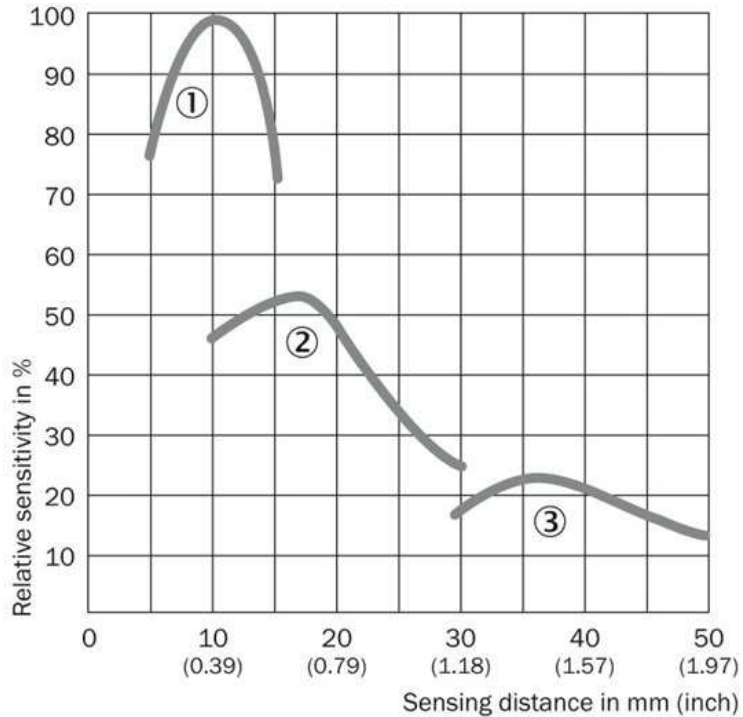
|1| Sensing distance 10 mm
|2| Sensing distance 20 mm
|3| Sensing distance 40 mm

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