



## Contrast sensors KT5, KT5-2 Display

KT5W-2P1116D



**Model Name** > [KT5W-2P1116D](#)  
**Part No.** > [1026538](#)



#### 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 <sup>1)</sup> :     | 10 mm                                                      |
| Sensing distance tolerance:          | ± 3 mm                                                     |
| Light source <sup>2)</sup> :         | 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 <sup>3)</sup> : | Vertical                                                   |
| 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        |

<sup>1)</sup> From front edge of lens    <sup>2)</sup> Average service life of 100,000 h at T<sub>A</sub> = +25 °C    <sup>3)</sup> In relation to long side of housing

#### Mechanics/electronics

|                                     |          |
|-------------------------------------|----------|
| Ripple <sup>1)</sup> :              | ≤ 5 Vpp  |
| Power consumption <sup>2)</sup> :   | < 130 mA |
| Switching frequency <sup>3)</sup> : | 10 kHz   |

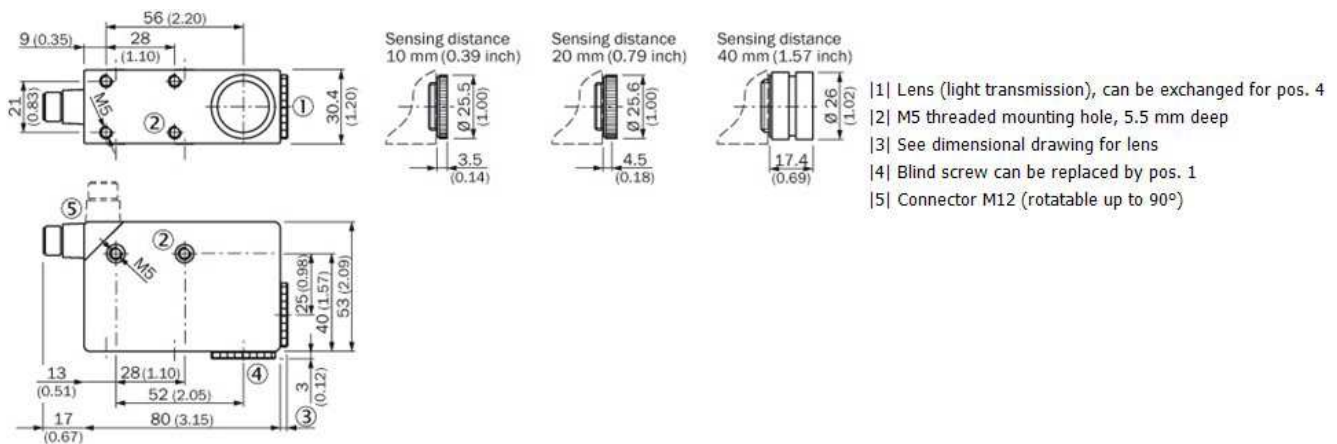
|                                     |                                                                                                       |
|-------------------------------------|-------------------------------------------------------------------------------------------------------|
| Response time <sup>4)</sup> :       | 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 <sub>V</sub>                                               |
| Retention time (ET):                | 25 ms, non-volatile memory                                                                            |
| Connection type:                    | Connector M12, 5-pin                                                                                  |
| Protection class <sup>5)</sup> :    | 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 I <sub>max</sub> ..: | 100 mA <sup>6)</sup>                                                                                  |
| Supply voltage:                     | 10 V DC ... 30 V DC <sup>7)</sup>                                                                     |
| Fieldbus interface:                 | -                                                                                                     |

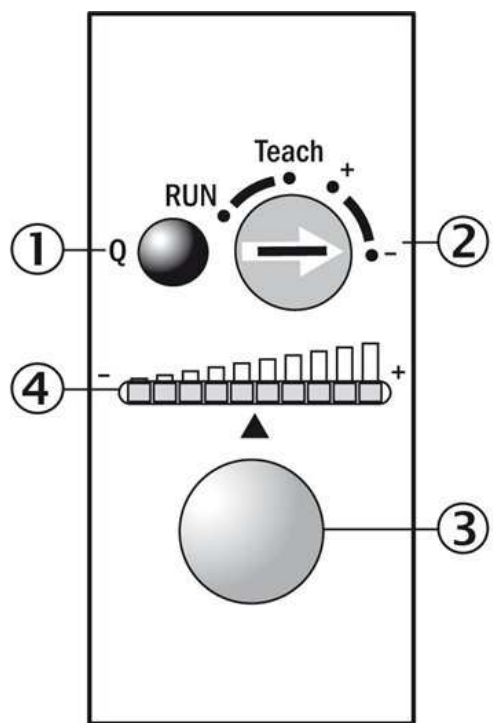
<sup>1)</sup> May not exceed or fall short of V<sub>S</sub> tolerances    <sup>2)</sup> Without load    <sup>3)</sup> With light/dark ratio 1:1    <sup>4)</sup> Signal transit time with resistive load    <sup>5)</sup> Reference voltage DC 50 V    <sup>6)</sup> Short-circuit protected    <sup>7)</sup>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

## Ambient data

|                                |                              |
|--------------------------------|------------------------------|
| Shock load:                    | According to IEC 60068       |
| UL File No.:                   | NRKH.E181493 & NRKH7.E181493 |
| Ambient operating temperature: | -10 °C ... +55 °C            |
| Ambient storage temperature:   | -25 °C ... +75 °C            |

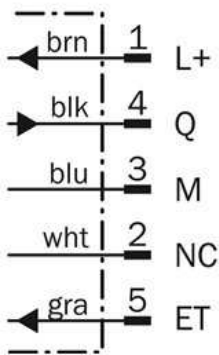
## Dimensional drawing





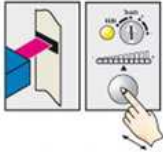
- |1| Function signal indicator (yellow)
- |2| Pre-selection switch
- |3| Teach-in button
- |4| Bar graph (green)

Connection type and diagram



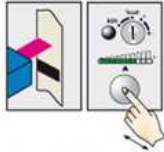
## Bedienhinweis

### 1. Position mark

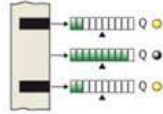


Turn rotary switch to "Teach" position. Press and hold teach-in button > 1 s. Red emitted light and yellow LED flash.

### 2. Position background



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



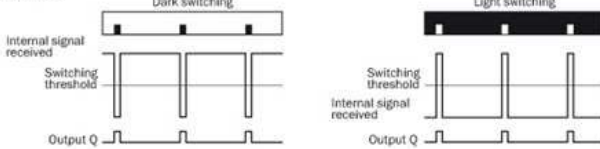
Fine adjustment possible using the "+" / "-" buttons.

### 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



### Switching characteristics

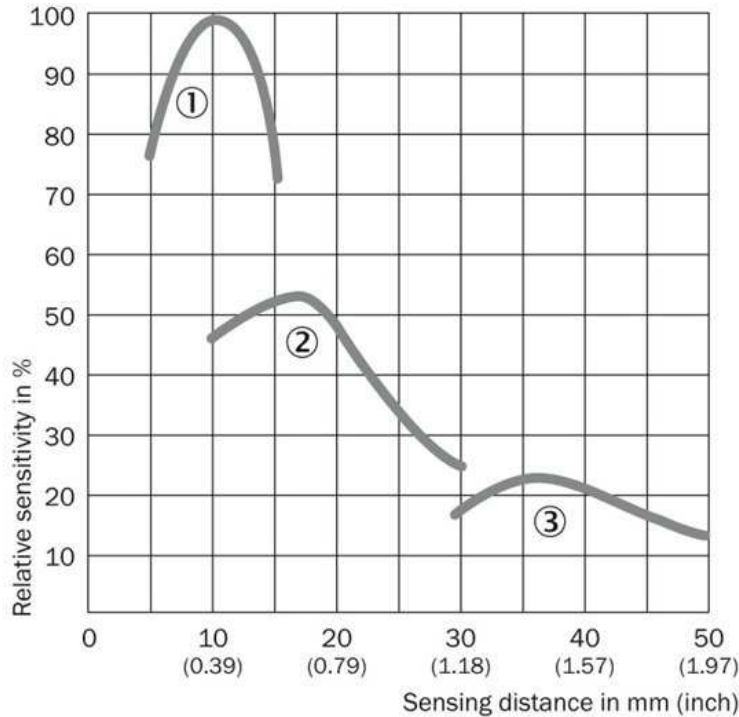
The optimum emitted light is selected automatically.

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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