



Contrast sensors KT5, KT5-2 Display

KT5W-2N2116D



Model Name > [KT5W-2N2116D](#)
Part No. > [1026583](#)



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:	NPN: HIGH = approx. VS / LOW ≤ 2 V
Switching mode:	NPN
Input, teach-in (ET):	NPN:., Run: U = 10 V ... < U _V , Teach: U < 2 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 I _{max} ..:	100 mA ⁶⁾
Supply voltage:	10 V DC ... 30 V DC ⁷⁾
Fieldbus interface:	-

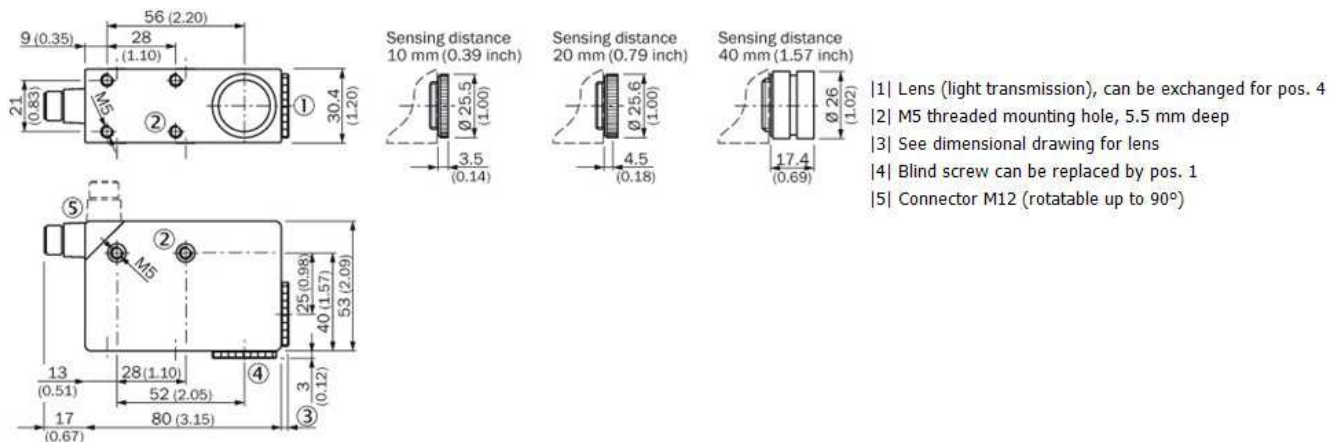
1) May not exceed or fall short of V_S tolerances 2) Without load 3) With light/dark ratio 1:1 4) Signal transit time with resistive load 5) Reference voltage DC 50 V 6)

Short-circuit protected 7) Limit values; operation in short-circuit protected network max. 8 A

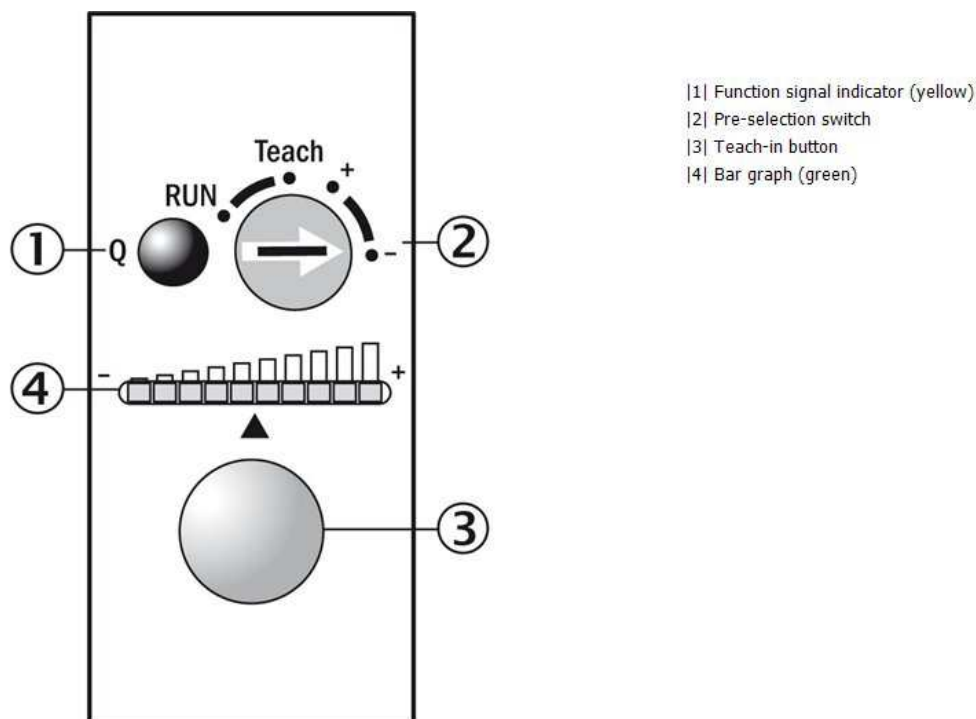
Ambient data

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

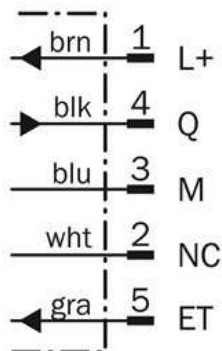
Dimensional drawing



Adjustments

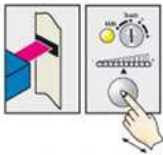


Connection type and diagram



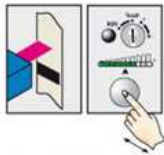
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1. Position mark

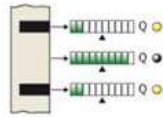


Turn rotary switch to "Teach" position. Press and hold teach-in button > 1 s. Red emitted light and yellow LED flash.

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

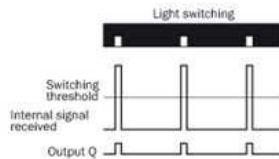
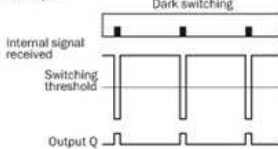
The bar display visualizes the detection reliability during teach-in. The more LEDs that illuminate, the better the teach-in:

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

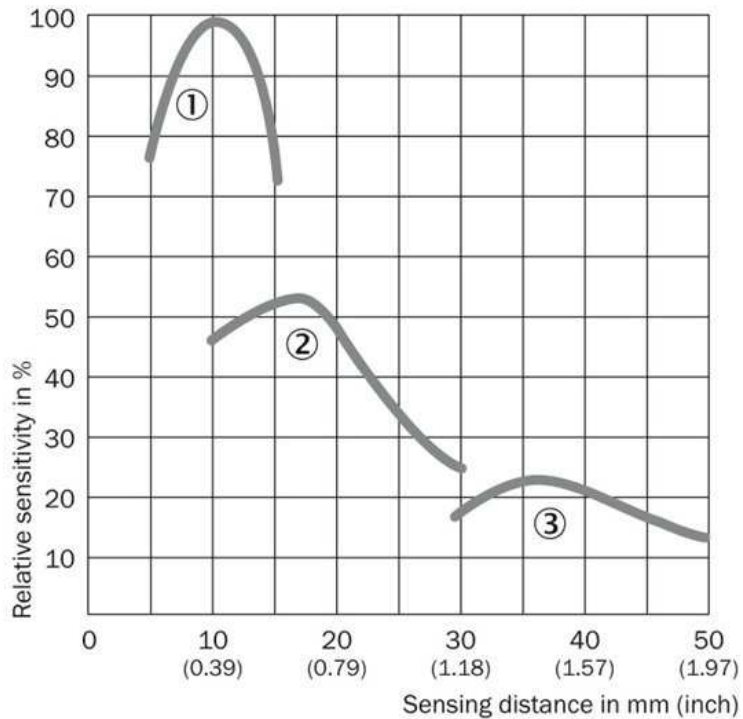
The optimum emitted light is selected automatically.

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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