



WTB16I-1H161120A00

W16

SMALL PHOTOELECTRIC SENSORS

SICK
Sensor Intelligence.



Ordering information

Type	Part no.
WTB16I-1H161120A00	1218818

Other models and accessories → www.sick.com/W16

Illustration may differ



Detailed technical data

Features

Sensor/ detection principle	Photoelectric proximity sensor, Background suppression
Dimensions (W x H x D)	20 mm x 55.7 mm x 42 mm
Housing design (light emission)	Rectangular
Sensing range max.	10 mm ... 1,500 mm ¹⁾
Type of light	Infrared light
Light source	LED ²⁾
Light spot size (distance)	Ø 12 mm (800 mm)
Wave length	850 nm
Adjustment	BluePilot: Teach-Turn adjustment with sensing range indicator, IO-Link
Pin 2 configuration	External input, Teach-in, switching signal

¹⁾ Object with 90 % reflectance (referred to standard white, DIN 5033).

²⁾ Average service life: 100,000 h at T_U = +25 °C.

Mechanics/electronics

Supply voltage	10 V DC ... 30 V DC ¹⁾
Ripple	$\leq 5 V_{pp}$
Power consumption	30 mA, 50 mA ^{2) 3)}
Switching output	PUSH/PULL, PNP, NPN
Output: Q_{L1} / C	Switching output or IO-Link mode
Output function	Factory setting: Pin 2 / white (MF): NPN normally open (light switching), PNP normally closed (dark switching), Pin 4 / black (QL1 / C): NPN normally closed (dark switching), PNP normally open (light switching), IO-Link
Switching mode	Light/dark switching
Signal voltage PNP HIGH/LOW	Approx. $V_S - 2.5 V / 0 V$
Signal voltage NPN HIGH/LOW	Approx. $V_S / < 2.5 V$
Output current I_{max}	$\leq 100 mA$
Response time	$\leq 500 \mu s$ ⁴⁾
Switching frequency	1,000 Hz ⁵⁾
Connection type	Cable, 2 m ⁶⁾
Cable material	PVC
Circuit protection	A, B, C, D ^{10) 7) 8) 9)}
Protection class	III
Weight	100 g
IO-Link	✓
Housing material	Plastic, VISTAL®
Optics material	Plastic, PMMA
Enclosure rating	IP66 (According to EN 60529) IP67 (According to EN 60529) IP69 (According to EN 60529) ¹¹⁾
Ambient operating temperature	-40 °C ... +60 °C
Ambient storage temperature	-40 °C ... +75 °C
UL File No.	NRKH.E181493 & NRKH7.E181493

¹⁾ Limit values.

²⁾ 16 V DC ... 30 V DC, without load.

³⁾ 10 V DC ... 16 V DC, without load.

⁴⁾ Signal transit time with resistive load in switching mode. Different values possible in COM2 mode.

⁵⁾ With light/dark ratio 1:1 in switching mode. Different values possible in IO-Link mode.

⁶⁾ Do not bend below 0 °C.

⁷⁾ A = V_S connections reverse-polarity protected.

⁸⁾ B = inputs and output reverse-polarity protected.

⁹⁾ C = interference suppression.

¹⁰⁾ D = outputs overcurrent and short-circuit protected.

¹¹⁾ Replaces IP69K with ISO 20653: 2013-03.

Safety-related parameters

MTTF_D	629 years
DC_{avg}	0%

Classifications

ECI@ss 5.0	27270904
ECI@ss 5.1.4	27270904
ECI@ss 6.0	27270904
ECI@ss 6.2	27270904
ECI@ss 7.0	27270904
ECI@ss 8.0	27270904
ECI@ss 8.1	27270904
ECI@ss 9.0	27270904
ETIM 5.0	EC002719
ETIM 6.0	EC002719
UNSPSC 16.0901	39121528

Smart Task

Smart Task name	Base logics
Logic function	Direct AND OR Window Hysteresis
Timer function	Deactivated On delay Off delay ON and OFF delay Impulse (one shot)
Inverter	Yes
Switching frequency	SIO Direct: 1000 HzSIO Logic: 800 HzIOL: 650 Hz ^{1) 2) 3)}
Response time	SIO Direct: 500 µsSIO Logic: 600 µsIOL: 750 µs ^{1) 2) 3)}
Repeatability	SIO Direct: 150 µsSIO Logic: 300 µsIOL: 400 µs ^{1) 2) 3)}
Switching signal Q_{L1}	Switching output
Switching signal Q_{L2}	Switching output

¹⁾ SIO Direct: sensor operation in standard I/O mode without IO-Link communication and without using internal sensor logic or time parameters (set to "direct"/"deactivated").

²⁾ SIO Logic: Sensor operation in standard I/O mode without IO-Link communication. Sensor-internal logic or timing parameters plus Automation Functions used.

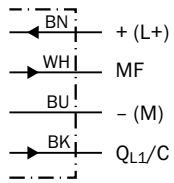
³⁾ IOL: Sensor operation with full IO-Link communication and usage of logic, timing and Automation Function parameters.

Communication interface

Communication interface	IO-Link V1.1
Communication Interface detail	COM2 (38,4 kBaud)
Cycle time	2.3 ms
Process data length	16 Bit
Process data structure	Bit 0 = switching signal Q _{L1} Bit 1 = switching signal Q _{L2} Bit 2 ... 15 = empty
VendorID	26
DeviceID HEX	0x800193
DeviceID DEZ	8389011

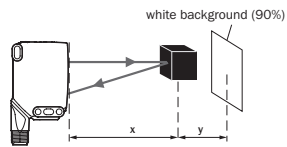
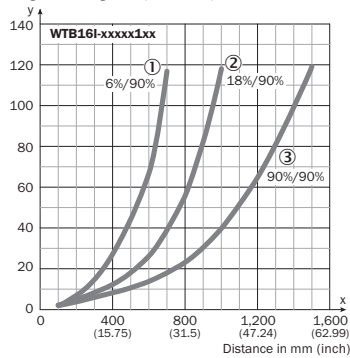
Connection diagram

Cd-389



Characteristic curve

Minimum distance in mm (y) between the set sensing range and background (white, 90%)

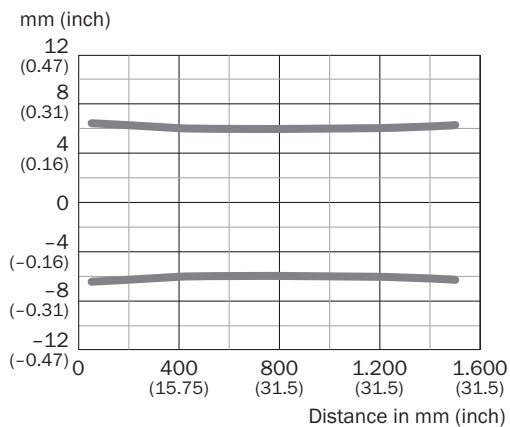


Example:
Sensing range on black, 6%,
x = 600 mm, y = 70 mm

- ① Sensing range on black, 6% remission
- ② Sensing range on gray, 18 % remission
- ③ Sensing range on white, 90% remission

Light spot size

WTB16I-xxxxx1xx



①	50/100	700					
②	25/100	1,000					
③	10/100					1,500	

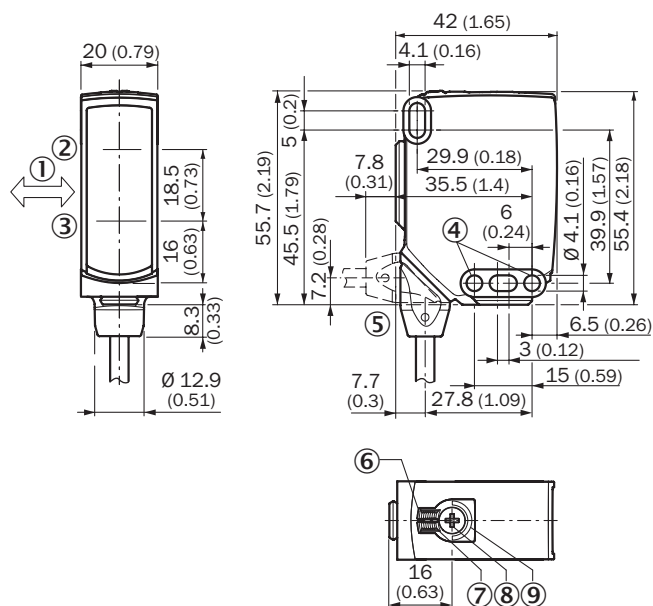
0 100 500 1,000 1,500
(3.94) (19.69) (39.37) (59.06)
Distance in mm (inch)

Adjustment range

BluePilot:
Sensing range indicator (blue LED)
Teach-Turn adjustment

- ① Sensing range on black, 6% remission
- ② Sensing range on gray, 18 % remission
- ③ Sensing range on white, 90% remission


WTB16, WTL16, cable



- ① Standard direction of the material being detected
- ② Center of optical axis, sender
- ③ Center of optical axis, receiver
- ④ Mounting hole, $\varnothing 4.1$ mm
- ⑤ Connection
- ⑥ LED indicator green: power
- ⑦ LED indicator yellow: Status of received light beam
- ⑧ Teach-Turn adjustment of sensing range
- ⑨ BluePilot blue: sensing range indicator

Recommended accessories

Other models and accessories → www.sick.com/W16

	Brief description	Type	Part no.
Universal bar clamp systems			
	Plate N02 for universal clamp bracket, Zinc plated steel (sheet), Zinc die cast (clamping bracket), Universal clamp (5322626), mounting hardware	BEF-KHS-N02	2051608

SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

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