Online data sheet



WTS16P-24161120A00

W16

SMALL PHOTOELECTRIC SENSORS

SICK
Sensor Intelligence.



Illustration may differ

Ordering information

Type	Part no.
WTS16P-24161120A00	1218663

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

Detailed technical data

Features

Sensor/ detection principle	Photoelectric proximity sensor, TwinEye technology, 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 ... 750 mm [1]
Type of light	Visible red light
Light source	PinPoint LED [2]
Light spot size (distance)	Ø 8 mm (300 mm)
Wave length	635 nm
Adjustment	BluePilot: Teach-Turn adjustment with sensing range indicator, IO-Link
Pin 2 configuration	External input, Teach-in, switching signal
Special applications	Detecting uneven, shiny objects
Special features	Factory setting: sensing range 300 mm

[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	≤ 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. VS / < 2.5 V
Output current $I_{max.}$	≤ 100 mA
Response time	≤ 1.4 ms [4]
Switching frequency	350 Hz [5]
Connection type	Male connector M12, 4-pin
Circuit protection	A, B, C, D [6] [7] [8] [9]
Protection class	III
Weight	50 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) [10]
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] A = V_S connections reverse-polarity protected.
[7] B = inputs and output reverse-polarity protected.
[8] C = interference suppression.
[9] D = outputs overcurrent and short-circuit protected.
[10] Replaces IP69K with ISO 20653: 2013-03.

Safety-related parameters

$MTTF_D$	420 years
DC_{avg}	0%

Classifications

ECl@ss 5.0	27270904
ECl@ss 5.1.4	27270904

ECl@ss 6.0	27270904
ECl@ss 6.2	27270904
ECl@ss 7.0	27270904
ECl@ss 8.0	27270904
ECl@ss 8.1	27270904
ECl@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: 350 HzSIO Logic: 300 HzIOL: 280 Hz [1) 2) 3)]
Response time	SIO Direct: 1.4 msSIO Logic: 1.65 msIOL: 1.75 ms [1) 2) 3)]
Repeatability	SIO Direct: 750 µsSIO Logic: 800 µsIOL: 900 µs [1) 2) 3)]
Switching signal Q_{L1}	Switching output
Switching signal Q_{L2}	Switching output

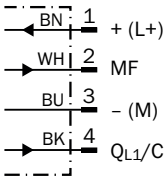
[1)] SIO Direct: sensor operation in standard I/O mode without IO-Link communication and without using internal sensor logic or time parameters (set to "direct"/"deactivated").
[2)] SIO Logic: Sensor operation in standard I/O mode without IO-Link communication. Sensor-internal logic or timing parameters 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	0x800164
DeviceID DEZ	8388964

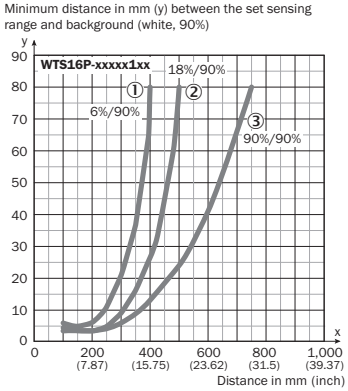
Connection diagram

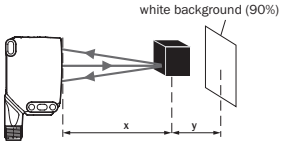
Cd-390



Characteristic curve

WTS16P-xxxxx1xx



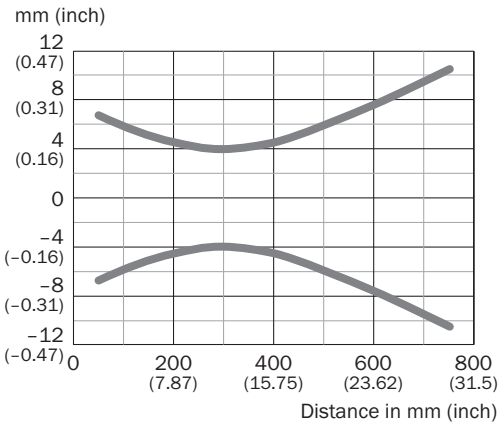


Example:
Sensing range on black, 6%,
x = 300 mm, y = 20 mm

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

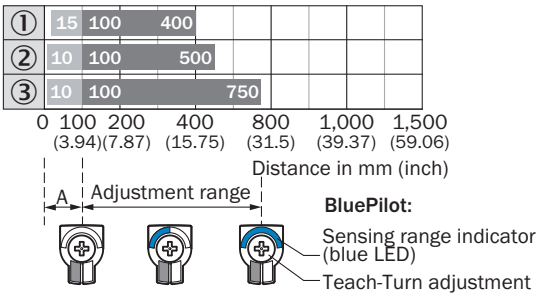
Light spot size

WTS16P-xxxxx1xx



Sensing range diagram

WTS16P-xxxxx1xx

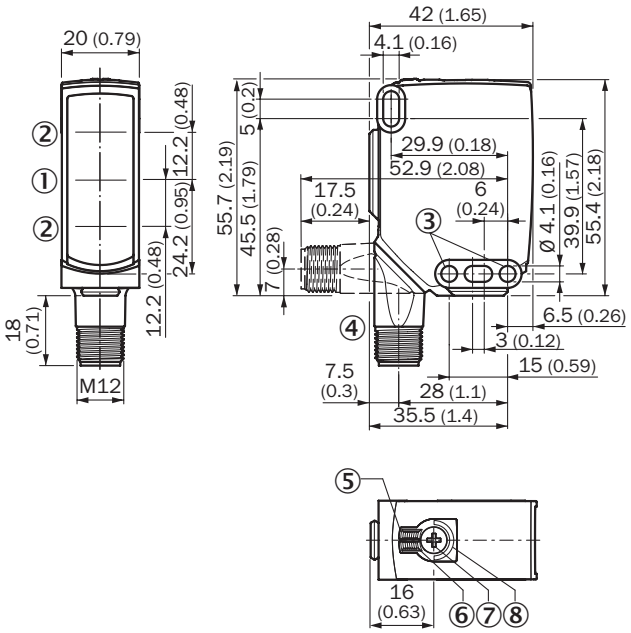


A = Detection distance (depending on object remission)

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

Dimensional drawing (Dimensions in mm (inch))

WTS16, connector



① Center of optical axis, sender
② Center of optical axis, receiver
③ Mounting hole, Ø 4.1 mm
④ Connection
⑤ LED indicator green: power
⑥ LED indicator yellow: Status of received light beam
⑦ Teach-Turn adjustment of sensing range
⑧ 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
Plug connectors and cables			
	Head A: female connector, M12, 4-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 5 m	YF2A14-050VB3XLEAX	2096235
	Head A: male connector, M12, 4-pin, straight Head B: - Cable: unshielded	STE-1204-G	6009932

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.

For us, that is “Sensor Intelligence.”

WORLDWIDE PRESENCE:

Contacts and other locations –www.sick.com