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Product data sheet



WTD20EC-V2499

DeltaPac

MULTITASK PHOTOELECTRIC SENSORS

SICK
Sensor Intelligence.

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MULTITASK PHOTOELECTRIC SENSORS



Illustration may differ

Ordering information

Type	Part no.
WTD20EC-V2499	1073668

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

Detailed technical data

Features

Functional principle	Photoelectric proximity sensor
Dimensions (W x H x D)	42 mm x 42 mm x 45 mm
Housing design (light emission)	Rectangular
Type of light	Visible red light
Light source	PinPoint LED [1]
Wave length	635 nm
Adjustment	IO-Link
Special applications	Zero gap detection
Key feature of the object	Edges, Smoothed edges, rounded out body and prism shaped, shiny and prismatic edges, edges in uneven surfaces
Operating mode	Packaging [2] Packaging "Oversize Fit" Folded boxes Folded boxes "Slim Fit"
Packaging operating mode	Key feature of the object: rounded edges Background suppression: ≥ 80 mm Object height min.: ≥ 50 mm Object width min.: ≥ 20 mm Radius of the object contour: 2 mm ... 5 mm Sensing range: 30 mm ... 35 mm – Key feature of the object: rounded out body and prism shaped Background suppression: ≥ 80 mm Object height min.: ≥ 50 mm Object width min.: ≥ 30 mm

[1] Average service life: 100,000 h at T_U = +25 °C.

[2] See "technical information" in the tap "Downloads" "Literature".

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	Radius of the object contour: 5 mm ... 20 mm Sensing range: 30 mm ... 40 mm
Packaging “Oversize Fit” operating mode	Key feature of the object: shiny and prismatic edges Background suppression: ≥ 60 mm Object height min.: ≥ 30 mm Object width min.: ≥ 30 mm Radius of the object contour: 5 mm ... 20 mm Sensing range: 30 mm ... 40 mm
Folded Box operating mode	Key feature of the object: edges Background suppression: ≥ 60 mm Object height min.: ≥ 30 mm Object width min.: ≥ 10 mm Radius of the object contour: 1 mm ... 2 mm Sensing range: 30 mm ± 2 mm
Folded Box “Slim Fit” operating mode	Key feature of the object: edges in uneven surfaces Background suppression: ≥ 60 mm Object height min.: ≥ 30 mm Object width min.: ≥ 10 mm Radius of the object contour: 1 mm ... 2 mm Sensing range: 30 mm ± 2 mm

[1] Average service life: 100,000 h at T_U = +25 °C.

[2] See "technical information" in the tap "Downloads" "Literature".

Mechanics/electronics

Supply voltage	10 V DC ... 30 V DC [1]
Ripple	< 5 V_{pp} [2]
Current consumption	70 mA [3]
Switching output	PNP
Output current $I_{max.}$	≤ 100 mA [4]
Connection type	Male connector M12, 4-pin
Circuit protection	A [5] B [6] C [7]
Protection class	III
Weight	130 g
Housing material	Plastic, Novodur
Enclosure rating	IP67
Ambient operating temperature	–40 °C ... +55 °C
Ambient temperature, storage	–40 °C ... +75 °C
Productivity max.	200,000 pcs./h
Object speed max.	0.6 m/s ... 3 m/s [8]
Recommended object speed	0.05 m/s ... 0.25 m/s

[1] Limit values, reverse-polarity protected, operation in short-circuit protected network: max. 8 A.

[2] May not exceed or fall below U_V tolerances.

[3] At 24 V.

[4] 2 switching outputs with Imax = 100 mA.

[5] A = V_S connections reverse-polarity protected.

[6] B = inputs and output reverse-polarity protected.

[7] C = interference suppression.

[8] Details see in the characteristic curves speed.

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Switching accuracy	≤ 2 x radius
Repeatability (T_a not constant)	typ. < 1 mm
Switch on delay Q_1 & Q_2	0 ms ... 255 ms
Time delay off Q_1	0 ms ... 255 ms

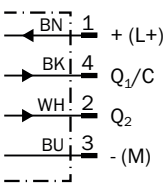
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[8] Details see in the characteristic curves speed.

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
eCl@ss 10.0	27270904
eCl@ss 11.0	27270904
eCl@ss 12.0	27270903
ETIM 5.0	EC002719
ETIM 6.0	EC002719
ETIM 7.0	EC002719
ETIM 8.0	EC002719
UNSPSC 16.0901	39121528

Connection diagram

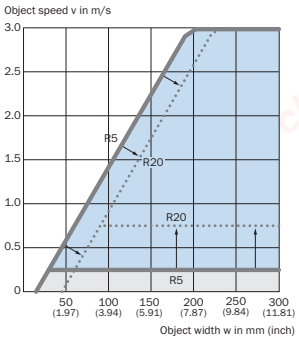
Cd-244



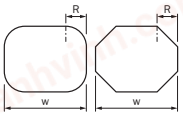
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Characteristic curve

Characteristic curve, rounded out body and prism shaped, rounded edges, speed



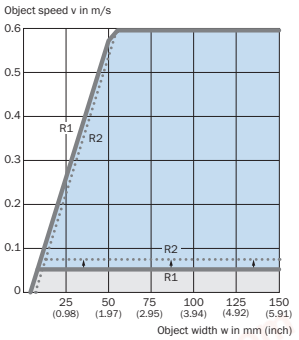
= R5, Radii of 5 mm
= R20, Radii of 20 mm
= Working range
= Maximal working range



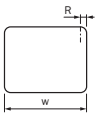
Parameter example, dimensions in mm (inch)

Object width	Object radii	Object speed min.	Object speed max.
200 (7.87)	5 (0.20)	0.25 m/s	3.0 m/s
250 (9.84)	20 (0.79)	0.75 m/s	3.0 m/s

Characteristic curve, edge, rounded edges, speed



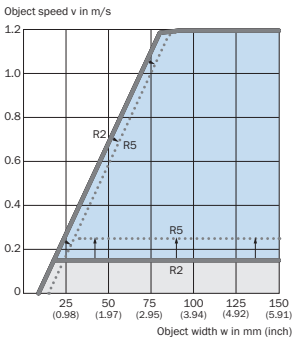
= R1, Radii of 1 mm
= R2, Radii of 2 mm
= Working range
= Maximal working range



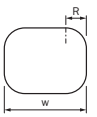
Parameter example, dimensions in mm (inch)

Object width	Object radii	Object speed min.	Object speed max.
25 (0.98)	1 (0.04)	0.05 m/s	0.26 m/s
75 (2.95)	2 (0.08)	0.08 m/s	0.6 m/s

Characteristic curve, rounded edges, object speed



= R2, Radii of 2 mm
= R5, Radii of 5 mm
= Working range
= Maximal working range



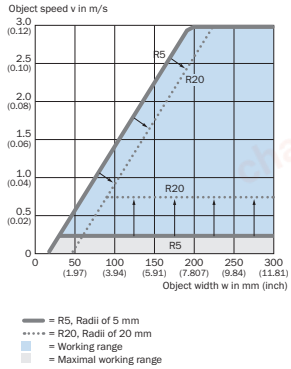
Parameter example, dimensions in mm (inch)

Object width	Object radii	Object speed min.	Object speed max.
75 (2.95)	2 (0.08)	0.15 m/s	1.1 m/s
125 (4.92)	5 (0.20)	0.25 m/s	1.2 m/s

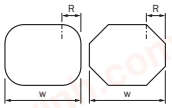
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Characteristic curve, shiny and prismatic edges, speed



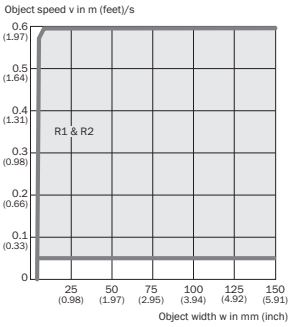
= R5, Radii of 5 mm
= R20, Radii of 20 mm
= Working range
= Maximal working range



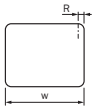
Object width	Object radii	Productivity min.	Productivity max.
60 (2.36)	5 (0.20)	0.26 m/s (0.85 feet/s)	0.77 m/s (2.53 feet/s)
60 (2.36)	20 (0.79)	0.25 m/s* (0.82 feet/s*)	0.25 m/s* (0.82 feet/s*)

* Thanks to optimized sensor logic, the sensor can be operated with a switch-on and switch-off delay of 1 ms in the case of the "Slim Fit" Folded Box format for edges on uneven surfaces. The operating range equates to the maximum operating range in this case.
Note: In applications, shiny embossing must be avoided by installing the sensors as appropriate. Embossing and shiny surfaces themselves do not restrict how the sensor operates.

Characteristic curve, edges in uneven surfaces, speed



= R1, Radii of 1 mm
R2, Radii of 2 mm
= Maximal working range



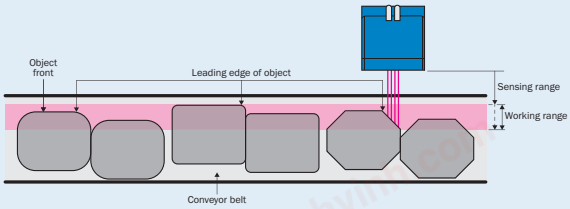
Parameter example, dimensions in mm (inch)

Object width	Object radii	Productivity min.	Productivity max.
10 (0.39)	1 (0.04)	0.05 m/s* (0.16 feet/s*)	0.6 m/s* (1.97 feet/s*)

* Thanks to optimized sensor logic, it is possible to make use of the maximum operating range in the case of "Oversize Fit" Packaging format for glossy, round, and prism-shaped edges.
Note: Object speeds must be adhered to with precision. A tolerance of just +/- 0.03 m/s is permitted.

Functional principle

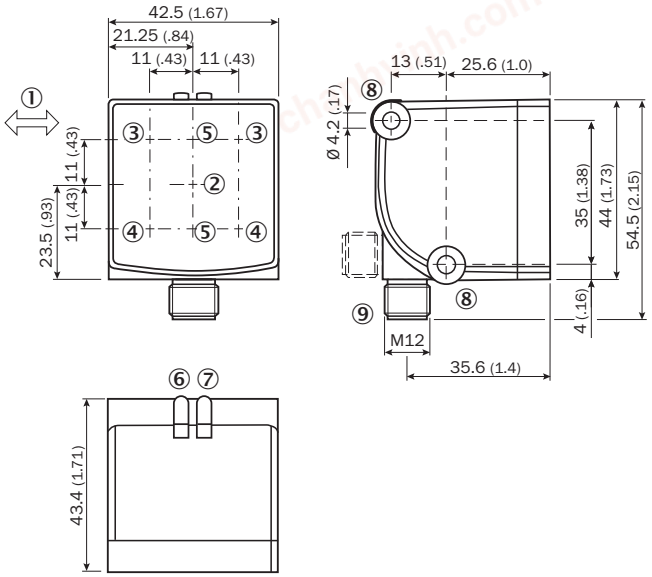
Sensing range in detail



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Dimensional drawing (Dimensions in mm (inch))

WTD20E-V/W24xx, connector



① Standard direction
② Center of optical axis, sender
③ Center of optical axis, receiver (first energy scale)
④ Center of optical axis, receiver (second energy scale)
⑤ Optical axis, receiver
⑥ LED indicator orange: status of received light beam, presence signal Q1
⑦ LED indicator green: Supply voltage active
⑧ Fixing hole
⑨ Connection (rotatable)

Recommended accessories

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

	Brief description	Type	Part no.
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 Cable: unshielded	STE-1204-G	6009932

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Recommended services

Additional services ➜ www.sick.com/DeltaPac

	Type	Part no.
Function Block Factory		
• **Description:** The Function Block Factory supports common programmable logic controllers (PLCs) from various manufacturers, such as Siemens, Beckhoff, Rockwell Automation and B&R. More information on the FBF can be found here.	Function Block Factory	On request

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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."

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