PRODUCT INFORMATION

DeltaPac

BRIDGING THE GAP

MultiTask photoelectric sensors

SICK
Sensor Intelligence.

RELIABLE GAP-LESS SENSING: DeltaPac FROM SICK PERFECTS PRODUCTION

ON ITS QUEST TO INCREASE EFFICIENCY, SICK IS PROVIDING SOLUTIONS THAT IMPROVE PRODUCT FLOW BY CLOSING THE GAPS ON THE CONVEYOR

Now products can be counted and detected on the conveyor in a way that was not possible before. Without gaps. Without delays. The DeltaPac accurately detects and differentiates between successive packaging items on the fly. This ensures faster, smarter and more economical production.
In other words: The DeltaPac is a patented technological world first, implemented in a unique way.

The DeltaPac closes every gap. It eliminates product separation on the conveyor and reduces downtime caused by collision. The DeltaPac is an energy-efficient solution that increases production and requires less hardware, opening up new applications for systems engineering! Deterministic product positioning opens up a new world of automation.

DeltaPac: the new, uniquely efficient photoelectric sensor from SICK.

Packaging industry

Consecutive rows of apple juice packaging

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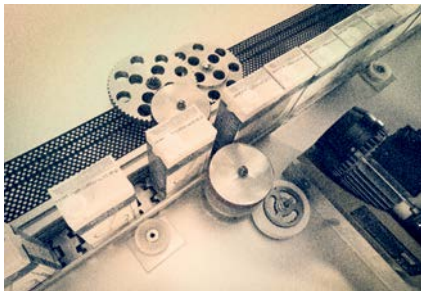
Click here for the
application video
www.sick.com/DeltaPac

A SEAMLESS LINE OF BENEFITS: HOW DeltaPac SOLVES THE PACKAGING PROBLEM

The MultiTask photoelectric sensor DeltaPac solves fundamental problems in the packaging industry. Whether it is inefficient idle running or machine downtime and loss of quality due to crashes, the DeltaPac ensures faster and more reliable production with maximum quality.

A prime example of clean production

Industry learns to count



A lean production line

Optimum product flow:

No collisions due to falling packages mean less machine downtime. Time is saved if packaging items are grouped correctly and labels are accurately positioned. Plus, steady production ensures energy efficiency.

Production that can be monitored:

You always know how many packaging items are in the process. Revolutionary for optimizing production. As a result of this new information, new measures can be implemented that increase efficiency.

Resources saved:

No more product jams and packages queues. And, no need to separate items before grouping them. This saves on mechanical costs and reduces hardware, which ultimately saves space.

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Can be individually adapted to production requirements

Automation creates simplicity

High flexibility:

Smart Sensor communication via SOPAS-ET opens up new possibilities such as enhanced diagnostics and automatic sensor optimization. There are four different operating modes available. The DeltaPac adapts to the system and the optimization criteria and enables the production system to be clearly differentiated.

Simple operation:

All you have to do is connect and start it up. Pre-configured, automated devices guarantee fast and simple installation and fault-free operation.

PRODUCTION AT A GLANCE: DeltaPac KNOWS EXACTLY WHAT TYPE OF PACKAGE IS CONVEYED

The unique DeltaPac MultiTask photoelectric sensor is able to detect the widest range of contours. It enables products to be counted without gaps. It is ideal for detecting items typically found in today‘s packaging industry. Pre-configured, automated sensors detect rounded, rounded out, prism-shaped packaging items, and folded boxes. In addition, the DeltaPac is an IO-Link-compatible sensor, which unlocks further features to maximize application flexibility.

Save time with the quick installation and fault-free operation of the DeltaPac.

Rounded, round out and prism-shaped packages:

This range of packaging includes the typical kinds of primary packaging used for beverages, finished products, and health and beauty products, for example. The DeltaPac can reliably detect these objects without any additional sensor settings.

Folded boxes:

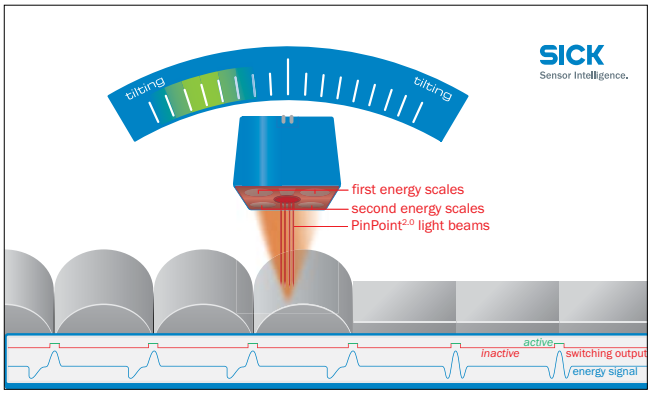
Due to various DeltaPac versions that have been specifically adjusted at the factory, even transitions that are barely visible can be detected. This includes small edges on secondary packaging: usually folding boxes for items such as medicinal products, cosmetics, and luxury goods with almost rectangular radii.

Multiple products:

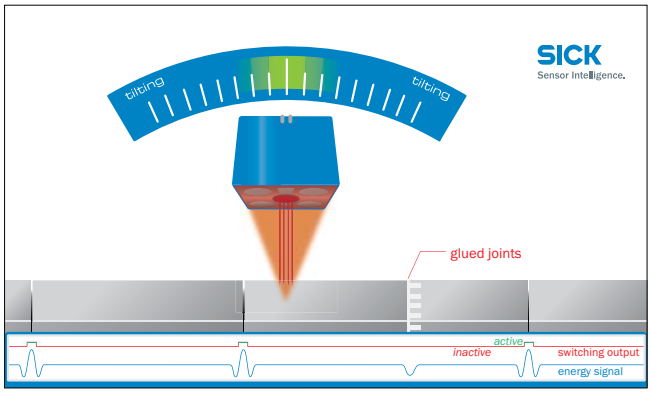
Different packaging items need to be detected. With maximum sensor performance. The IO-Link-compatible DeltaPac variant is the ideal choice in such cases. Four operating modes are available. All it takes is a click to select the right sensor setting for any type of object. For example, you may need to process highly reflective, prism-shaped beverage packaging during the morning shift. When the night shift comes around, all you then need to do is click the option for rectangular folding boxes on the HMI. It's a system that provides maximum flexibility for machinery designed to give a seamless performance. For more detailed information about the options that the four operating modes offer, refer to the "Technical information" available for download at www.sick.de/DeltaPac.

With Delta-S-Technology®, the DeltaPac can detect items better than the human eye. Although similar in terms of speed, accuracy, and flexibility. Just more reliable. It is a technological world first with unimaginable application possibilities.

AN OVERVIEW OF Delta-S-TECHNOLOGY®: THE NEW PERSPECTIVES IN USE



Energy is balanced



Detecting different object contours

Simple yet effective technology:

From side to side, the DeltaPac uses the light beams of four PinPoint 2.0 LEDs to track the contours of packaging edges. If the edge of packaging item is detected by a beam, it reflects the light. Two energy scales each with two receivers re-absorb the light. They identify the changed direction from which the light is reflected. And send corresponding switching signals. From the smallest changes in angles to the tiniest corners and edges to extremely flat angles and transitions with the smallest radii – everything is reliably detected.

The unique technology:

The DeltaPac contains the patented Delta-S-Technology®: two high-resolution energy scales with the light beams of four PinPoint 2.0 LEDs and SICK's specific SIRIC® ASIC technology. And range measurement. It is ideal for gap-free detection of corners, folds, and grooves - irrespective of color, object size, surface, and background.

Why technology fusion?

The multiple use of technology principles to prevent all types of glare, changes in contrast, unevenness, and reflective interference guarantees reliable detection of all popular types of packaging and folded boxes.

PinPoint 2.0 by SICK

SIRIC®
optical ASIC
invented by SICK

More information at
www.sick.com/siric

BRIDGING THE GAP

Product description

For higher efficiency and quality in the packaging industry, the DeltaPac MultiTask photoelectric sensor utilizes Delta-S technology®, which combines four PinPoint emitters and two receivers with SIRIC® and distance measurement technology. Thanks to the four operating modes available to select with just a click, the sensor is able to detect object contours with radii of up to 20 mm – from any direction. From rectangular, dark-colored folded boxes to white, glossy, prism-shaped packaging, objects are detected reliably with a sensing range of 30 to 40 mm. This means that the packaging does not have to be manually separated. Collisions are avoided. For better space and time utilization. The DeltaPac provides information about how many packages are present in the process for full production monitoring. The sensor is also available as a pre-configured device for fast and error-free commissioning.

At a glance

- Delta-S technology®, four PinPoint 2.0 LEDs and two energy scales, combined with SIRIC® and distance measurement technology
- Able to detect object contours with radii of up to 20 mm in any direction
- For belt speeds up to 3.0 m/s or production rates of up to 200,000 packages per hour
- Preconfigured sensors or custom setting of four operating modes via IO-Link
- Compact housing (42 mm x 42 mm x 45 mm) with an IP 67 enclosure rating

Your benefits

- Selective process optimization: information about the number of packages in the process enables better production monitoring
- Better space utilization: no mechanical devices are required to isolate packages, reducing the width of packaging systems and saving space
- Better time management: packages run in push-push mode, which prevents collisions and toppling, and reduces machine downtime
- Stable production for reduced energy consumption
- Fast and intuitive commissioning due to pre-configuration
- Maximum flexibility in the types of objects used thanks to the option of custom-setting four operating modes via IO-Link
- Space-saving mounting due to compact housing

SIRIC optical ASIC invented by SICK

PinPoint 2.0 by SICK

IO-Link

Additional information

Detailed technical data 11
Ordering information 12
Dimensional drawings 14
Connection diagram..... 15
Sensing range in detail 15
Object speed in detail 16

→ www.mysick.com/en/DeltaPac

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

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Detailed technical data

Features

Sensor principle	Delta-S-Technology
Dimensions (W x H x D)	42 mm x 42 mm x 45 mm
Housing design (light emission)	Rectangular
Sensing range max.	30 mm ... 40 mm [1] (depending on type)
Type of light	Visible red light
Light source [2]	PinPoint LED
Light spot size (distance)	4 x Ø 1 mm (30 mm)
Wave length	635 nm
Operating modes for the following objects	Packaging (e.g. beverages and finished products as well as health and beauty products) / Packaging „Oversize Fit“ (e.g. primary packaging for beverages) / Folded Box (e.g. medicinal products, cosmetics and luxury goods) / Folded Box „Slim Fit“ (e.g. folding boxes for cigarette packaging) (depending on type)

[1] The sensing range max. refers to the object leading edge. The individual object leading edges must be within the operating range.

[2] Average service life of 100,000 h at T_A = +25 °C .

Mechanics/electronics

Supply voltage [1]	10 V DC ... 30 V DC
Power consumption	≤ 70 mA [2] ≤ 160 mA [2] (depending on type)
Output current $I_{max.}$	≤ 2 x 100 mA
Connection type	Connector, M12 Cable, 2 m [3] (depending on type)
Circuit protection	A [4] B [5] C [6]
Protection class	III
Weight	130 g
IO-Link	✔ (COM2) (depending on type)
Housing material	Novodur
Enclosure rating	IP 67
Ambient operating temperature	–40 °C ... +55 °C
Ambient storage temperature	–40 °C ... +75 °C
Switching accuracy	≤ 2 x radius
Repeatability	Typ. < 1 mm

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

[2] 70 mA at 24 V; 160 mA at 10 V.

[3] Do not bend below 0 °C.

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

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

[6] C = interference suppression.

Ordering information

Other models available at www.mysick.com/en/DeltaPac

WTD20E, for folding boxes

- **Object speed max.:** 0.6 m/s [2)]
- **Switch on delay Q_1 & Q_2:** 80 ms
- **Time delay off Q_1:** 80 ms
- **Pulse length (Q2):** 20 ms
- **Background suppression:** ≥ 60 mm
- **Object height min.:** ≥ 30 mm [1)]

Object width min.	Radius of the object contour	Key feature of the object	Sensing range	Output type	Connection	Connection diagram	Model name	Part no.
≥ 10 mm	1 mm ... 2 mm	edges	30 +/- 2 mm	PNP	Connector M12, 4-pin	Cd-243	WTD20E-V2445	1065772
				NPN	Cable, 4-wire, 2 m, PVC	Cd-242	WTD20E-W1145	1065773

[1)] The minimum object height is relevant only for mounting the DeltaPac above the belt.

[2)] See “Object speed in detail”.

WTD20E, rounded, rounded out and prism shaped packaging

- **Object speed max.:** 1.2 m/s [2)]
- **Switch on delay Q_1 & Q_2:** 60 ms
- **Time delay off Q_1:** 60 ms
- **Pulse length (Q2):** 20 ms
- **Background suppression:** ≥ 80 mm
- **Object height min.:** ≥ 50 mm [1)]

Object width min.	Radius of the object contour	Key feature of the object	Sensing range	Output type	Connection	Connection diagram	Model name	Part no.
≥ 20 mm	2 mm ... 5 mm	rounded edges	30 mm ... 35 mm	PNP	Connector M12, 4-pin	Cd-243	WTD20E-V2414	1064778
≥ 30 mm	5 mm ... 20 mm	rounded out body and prism shaped	30 mm ... 40 mm					
≥ 20 mm	2 mm ... 5 mm	rounded edges	30 mm ... 35 mm	NPN	Cable, 4-wire, 2 m, PVC	Cd-242	WTD20E-W1114	1064779
≥ 30 mm	5 mm ... 20 mm	rounded out body and prism shaped	30 mm ... 40 mm					

[1)] The minimum object height is relevant only for mounting the DeltaPac above the belt.

[2)] See “Object speed in detail”.

8016294/2015-11-20
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WTD20E, IO-Link for folded boxes, rounded, rounded out and prism shaped packaging [1)]

- **Object speed min.:** 0.05 m/s ... 0.25 m/s [2)]
- **Object speed max.:** 0.6 m/s ... 3 m/s [2)]
- **Switch on delay Q_1 & Q_2:** 0 ms ... 255 ms
- **Time delay off Q_1:** 0 ms ... 255 ms
- **Pulse length (Q2):** 0 ms ... 63 ms
- **Output type:** PNP, IO-Link
- **Connection:** Connector M12, 4-pin
- **Connection diagram:** Cd-244

Operating mode [3)]	Key feature of the object	Background suppression	Object height min.	Object width min.	Radius of the object contour	Sensing range	Model name	Part no.
Packaging	rounded edges	≥ 80 mm	≥ 50 mm	≥ 20 mm	2 mm ... 5 mm	30 mm ... 35 mm	WTD20EC-V2499	1073668
	rounded out body and prism shaped			≥ 30 mm	5 mm ... 20 mm	30 mm ... 40 mm		
Packaging „Oversize Fit“	shiny, prismatic edges	≥ 60 mm	≥ 30 mm					
Folded Box	edges			≥ 10 mm	1 mm ... 2 mm	30 +/- 2 mm		
Folded Box „Slim Fit“	edges in un-even surfaces							

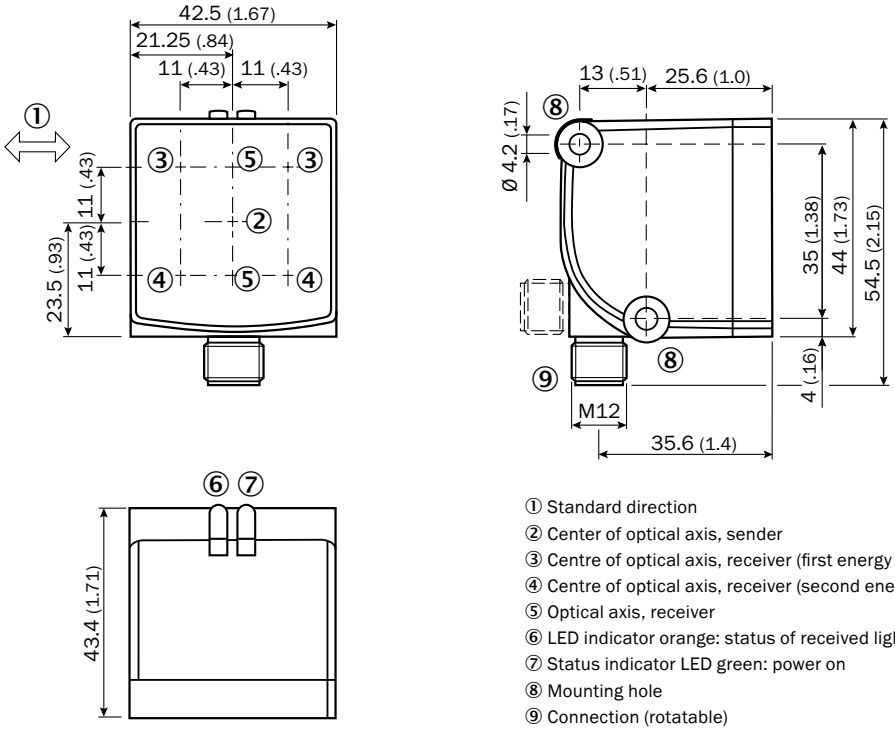
[1)] The SOPAS-ET software makes it possible to customize the DeltaPac product properties. For more information about this software, go to www.sick.de/DeltaPac.

[2)] See “Object speed in detail”.

[2)] See “Technical information” online on the product detail page at “Downloads” in the section “Literature”.

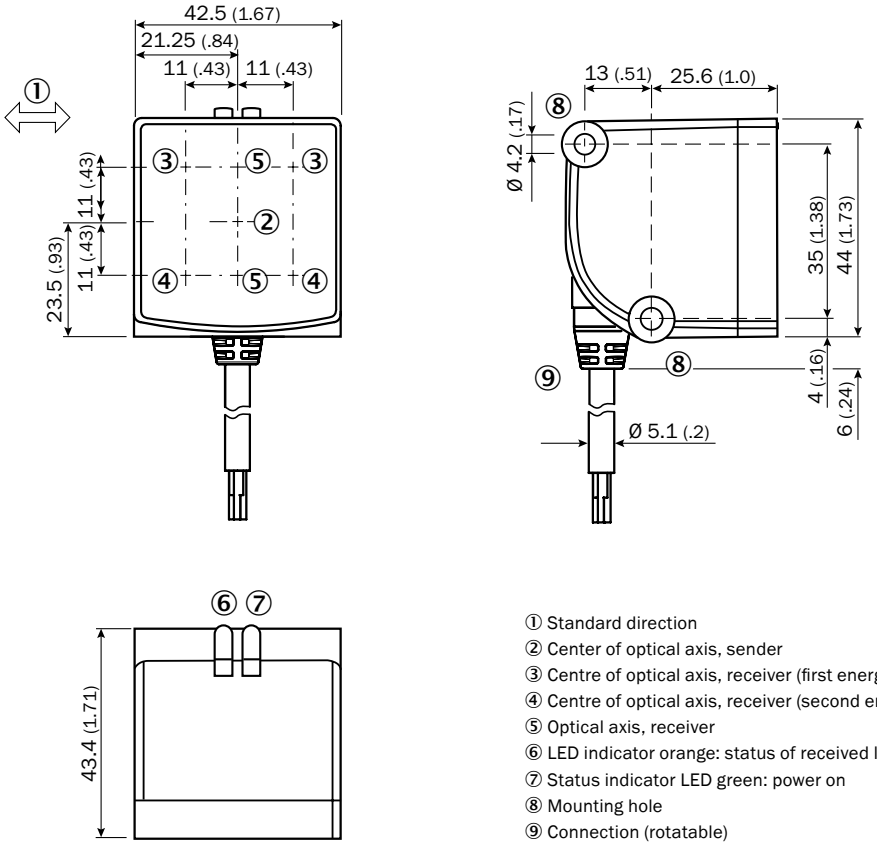
Dimensional drawings (Dimensions in mm (inch))

WTD20E-V/W24xx, connector



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

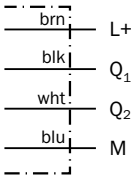
WTD20E-V/W11xx, cable



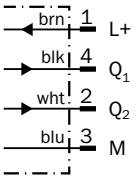
① Standard direction
② Center of optical axis, sender
③ Centre of optical axis, receiver (first energy scale)
④ Centre of optical axis, receiver (second energy scale)
⑤ Optical axis, receiver
⑥ LED indicator orange: status of received light beam, presence signal Q1
⑦ Status indicator LED green: power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

Connection diagram

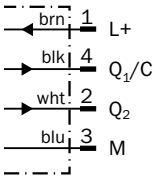
Cd-242



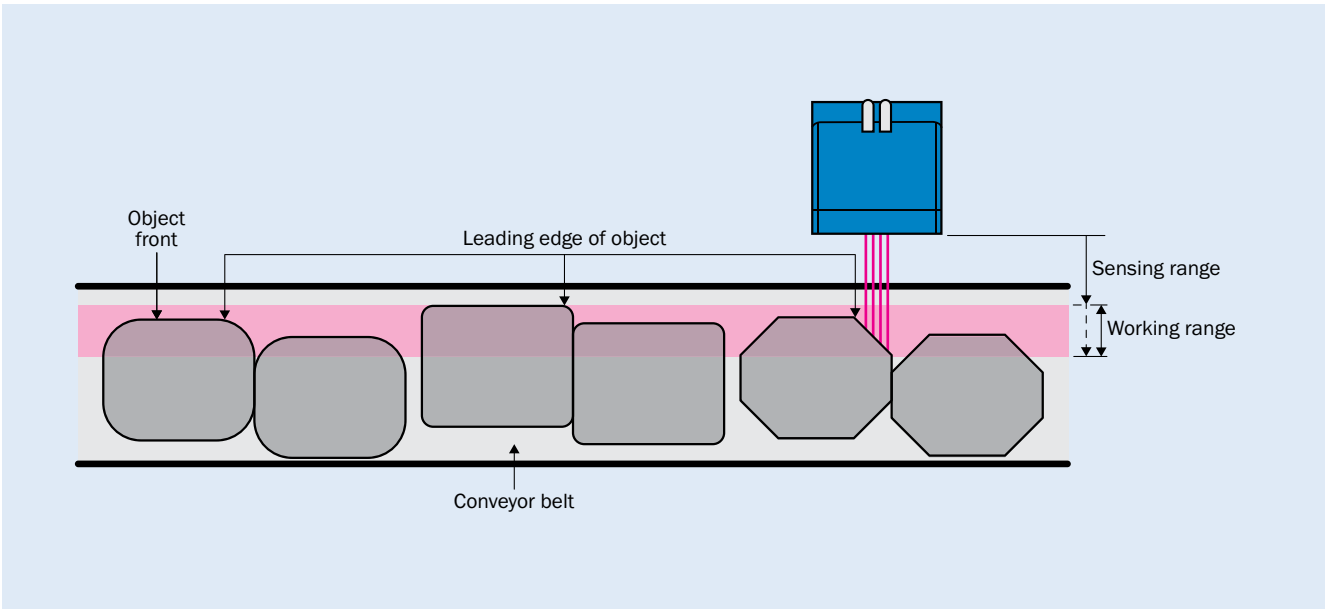
Cd-243



Cd-244

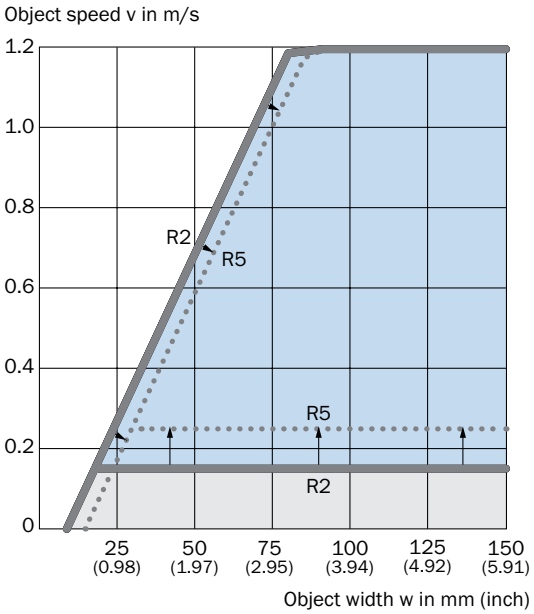


Sensing range in detail

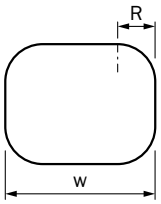


Object speed in detail

WTD20E, rounded edges



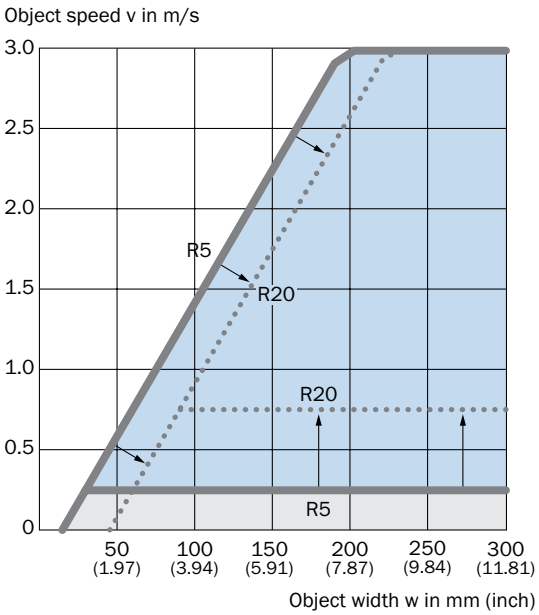
= R2, Radii of 2 mm
= R5, Radii of 5 mm
= Working range
= Maximal working range



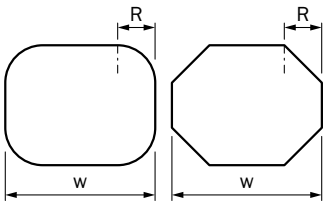
Parameter example, dimensions in mm (inch)

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

WTD20E, rounded out body and prism shaped



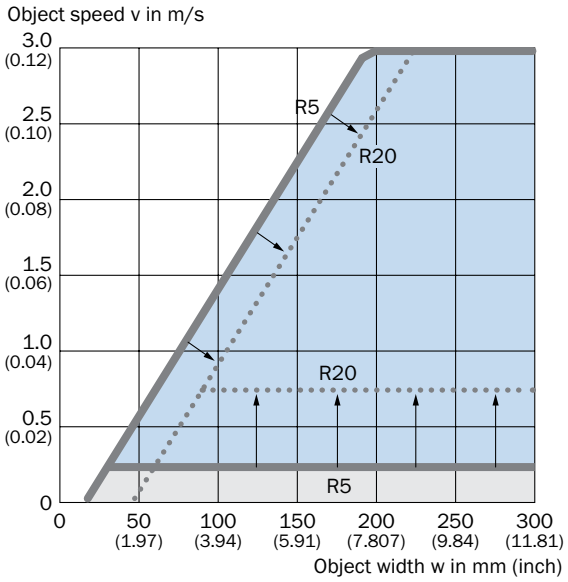
= R5, Radii of 5 mm
= R20, Radii of 20 mm
= Working range
= Maximal working range



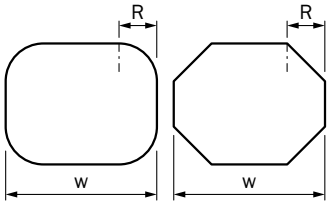
Parameter example, dimensions in mm (inch)

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

WTD20E, shiny and prismatic edges



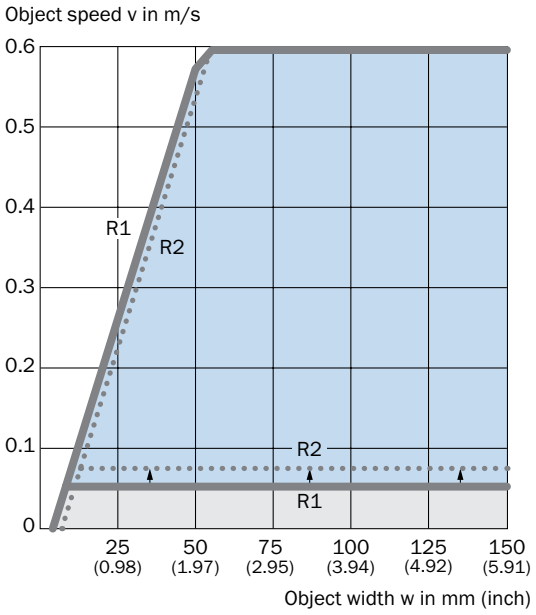
= R5, Radii of 5 mm
= R20, Radii of 20 mm
= Working range
= Maximal working range



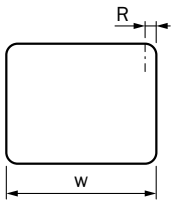
Object width	Object radii	Productivity min.	Productivity max.
60 (2.36)	5 (0.20)	0.26 m/s (0.85 feet/s)	0.77 m/s (2.53 feet/s)
60 (2.36)	20 (0.79)	0.25 m/s* (0.82 feet/s*)	0.25 m/s* (0.82 feet/s*)

* Thanks to optimized sensor logic, 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.

WTD20E, edges



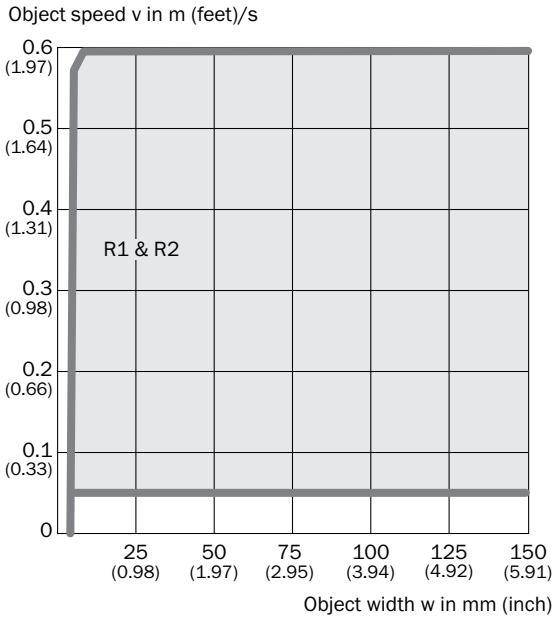
= R1, Radii of 1 mm
= R2, Radii of 2 mm
= Working range
= Maximal working range



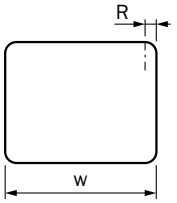
Parameter example, dimensions in mm (inch)

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

WTD20E, edges in uneven surfaces



= 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, 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.

Accessories DeltaPac

Plug connectors and cables

Connecting cable (female connector-open) M12, 4-pin, PVC

- **Enclosure rating:** IP 67

Figure	Connection type head A	Connection type head B	Cable length	Model name	Part no.
	Female connector, M12, 4-pin, straight	Cable	2 m	DOL-1204-G02M	6009382
			5 m	DOL-1204-G05M	6009866
			10 m	DOL-1204-G10M	6010543
			15 m	DOL-1204-G15M	6010753
	Female connector, M12, 4-pin, angled	Cable	2 m	DOL-1204-W02M	6009383
			5 m	DOL-1204-W05M	6009867
			10 m	DOL-1204-W10M	6010541
			15 m	DOL-1204-W15M	6036474

Connection cable (male-female connector) M12, 4-pin, PVC

- **Enclosure rating:** IP 67

Figure	Connection type head A	Connection type head B	Cable length	Model name	Part no.
	Female connector, M12, 4-pin, straight	Connector, M12, 4-pin, straight	2 m	DSL-1204-G02M	6022567
			5 m	DSL-1204-G05M	6022569
			0.6 m	DSL-1204-G0M6	6022565
			10 m	DSL-1204-G10M	6034406
			1.5 m	DSL-1204-G1M5	6034822
			20 m	DSL-1204-G20M	6034407

Universal bar clamp systems

Figure	Description	Material	Model name	Part no.
	Universal bar clamp for mounting bars with 12 mm diameter	Zinc diecast	BEF-KHS-KH3	5322626
	Plate N10 for universal clamp bracket	Zinc plated steel (sheet), Diecast zinc (clamp)	BEF-KHS-N11N	2071081
	Mounting bar, straight, 200 mm	Steel, zinc coated	BEF-MS12G-A	4056054
	Mounting bar, straight, 300 mm	Steel, zinc coated	BEF-MS12G-B	4056055
	Mounting bar, L-shaped, 150 mm x 150 mm	Steel, zinc coated	BEF-MS12L-A	4056052
	Mounting bar, L-shaped, 250 x 250 mm	Steel, zinc coated	BEF-MS12L-B	4056053
	Mounting bar, Z-shaped, 150 mm x 70 mm x 150 mm	Steel, zinc coated	BEF-MS12Z-A	4056056
	Mounting bar, Z-shaped, 150 mm x 70 mm x 250 mm	Steel, zinc coated	BEF-MS12Z-B	4056057
	Bar clamp for bar diameter of 12 mm (fixing the mounting rod)	Aluminum	BEF-RMC-D12	5321878

Cleaning agent

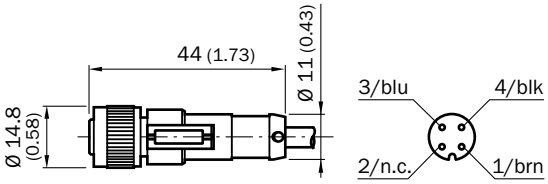
Figure	Description	Model name	Part no.
	Plastic cleaner and care product, anti-static	Plastic cleaner	5600006
	35 cm x 35 cm	Lens cloth	4003553

Other accessories

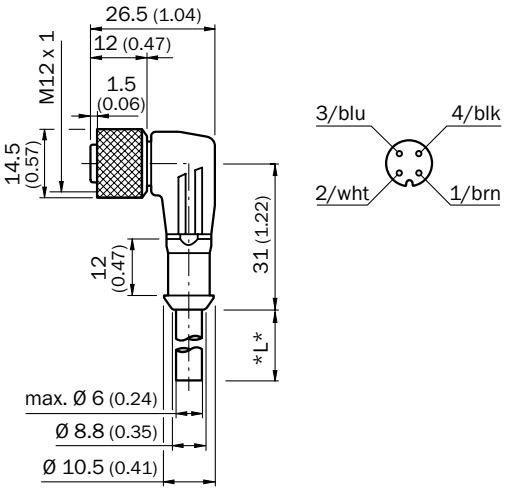
Figure	Model	Model name	Part no.
	1.0 - 7.0 mm	Radius gauge	5328155
	7.0 - 15.0 mm	Radius gauge	5328157
	15.5 - 25.0 mm	Radius gauge	5328158

Dimensional drawings plug connectors and cables

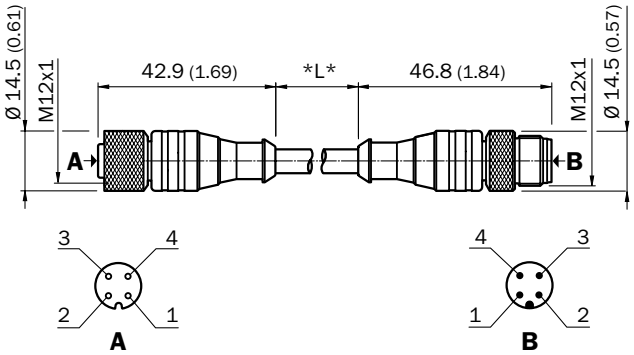
DOL-1204-GxxM



DOL-1204-WxxM



DSL-1204-GxxM, DSL-1204-GxMx



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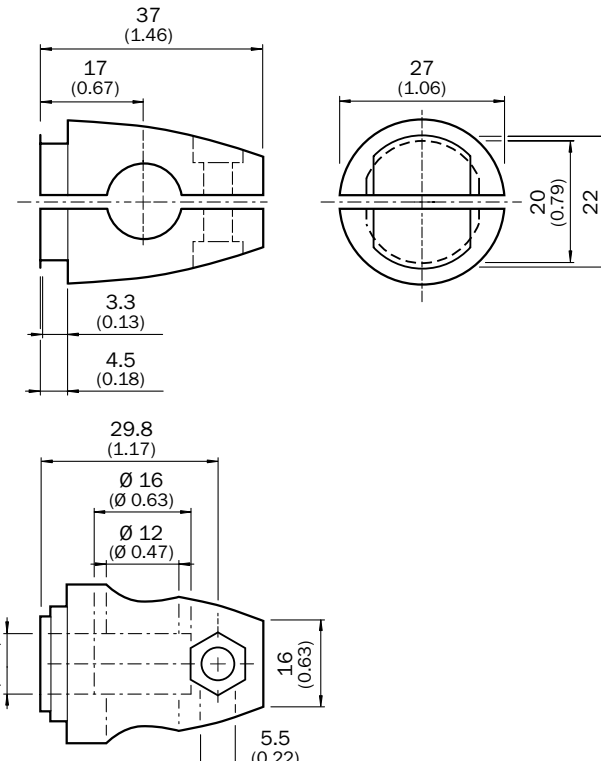
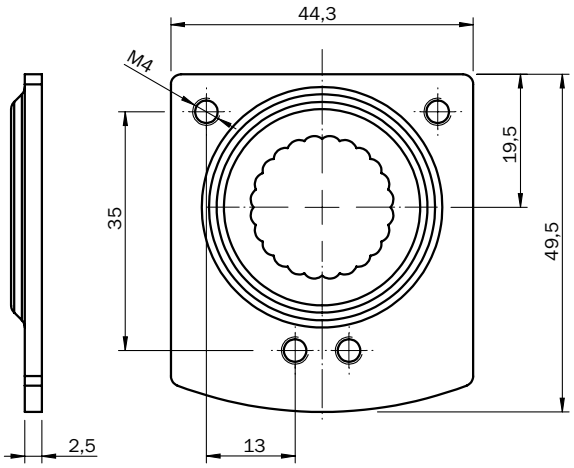
Dimensional drawings universal bar clamp systems

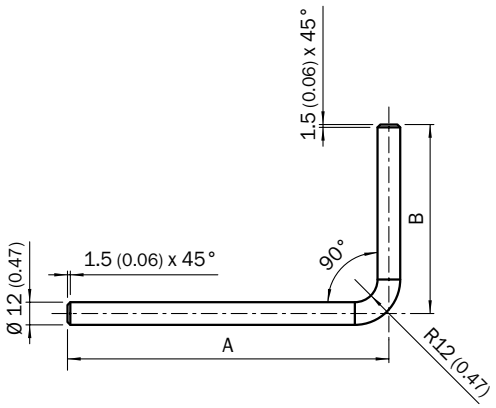
BEF-KHS-KH3



BEF-KHS-N11N

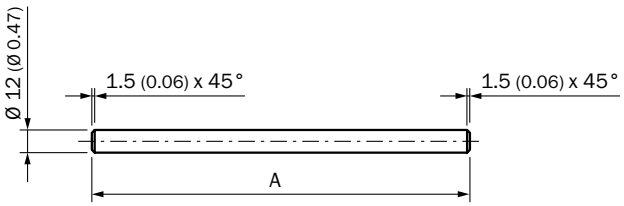


BEF-MS12L-A
BEF-MS12L-B



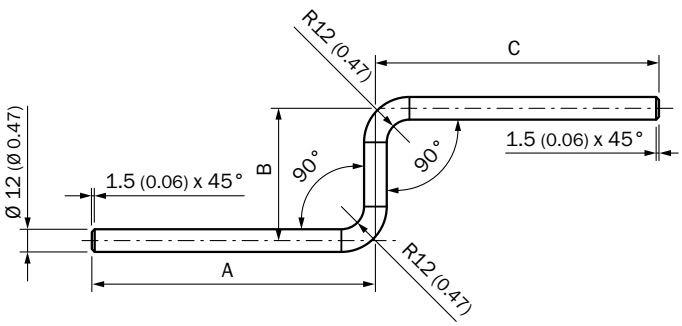
BEF-MS12L-(N)A: A = 200 mm, B = 150 mm
BEF-MS12L-(N)B: A = 250 mm, B = 250 mm

BEF-MS12G-A
BEF-MS12G-B



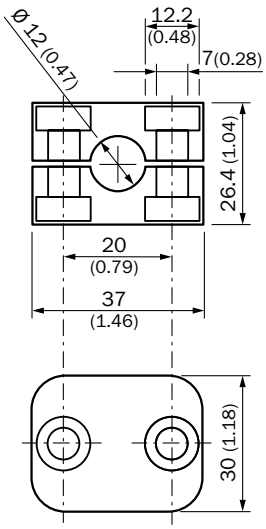
BEF-MS12G-(N)A: A = 200 mm
BEF-MS12G-(N)B: A = 300 mm

BEF-MS12Z-A
BEF-MS12Z-B



BEF-MS12Z-(N)A: A = 150 mm, B = 70 mm, C = 150 mm
BEF-MS12Z-(N)B: A = 150 mm, B = 70 mm, C = 250 mm

BEF-RMC-D12



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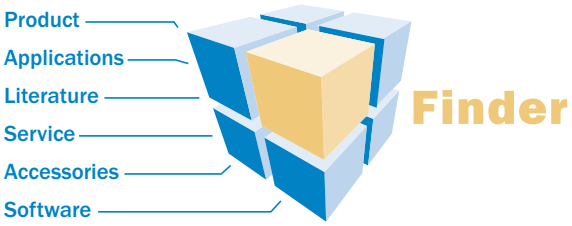

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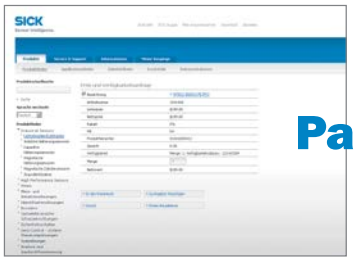

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