



PSS

PRINT DETECTOR:
THE EASY WAY TO VERIFY THE QUALITY OF PRINTS

Pattern sensors

SICK
Sensor Intelligence.

PRINT DETECTOR: THE EASY WAY TO VERIFY THE QUALITY OF PRINTS

Best-before dates on food packaging and serial and batch numbers on devices are both examples of prints that are read by camera systems during production, facilitating the track and trace process. At the early stages of production, however, an approximate quality control system is all that is required in many cases. That's where the Print Detector comes in.

What makes this sensor so unique is its ability to be operated easily without the need for visualization, and adapt to a variety of different applications at the same time. The sensitivity adjustment feature makes it possible to align the sensor with the various requirements presented by applications. On a low sensitivity setting, the sensor will simply check that the required print is present, while on a higher setting, it can also check whether the print is too faint or incomplete.



QR code



Best-before date



Pharmaceutical registration/ID number

Universal use

Applications:

- Verifying the presence of prints; e.g., serial numbers, best-before dates, and 2D codes
- Yes/no evaluation for prints quality control, based on sensitivity setting

Industries:

- Packaging industry
- Electronics industry



VERSATILE WITH UNPARALLELED EASE OF USE

Evaluation of print quality by means of sensor sensitivity adjustment

- | | |
|-------------------------------|---|
| 10 – 30 (approximate): | Presence detection only; taught-in print is present |
| 40 – 60 (medium): | Print is present, but the quality is poor |
| 70 – 90 (fine): | Print quality is good, but some details are missing |



100 % quality:
Print corresponds to
taught-in pattern



50 % quality:
Print contrast is lower
than that of taught-in
pattern



0 % quality:
Print not present



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Product description

The Print Detector is a sensing opto-electronic pattern sensor for verifying the presence and quality of prints such as serial numbers and best-before dates. A reference print is taught in, then compared with the printing result later on in the process. The sensor uses

the sensitivity setting to detect whether an print is missing or has only been partially printed. This allows defective products to be rejected automatically at an early stage.

At a glance

- Straightforward pattern detection
- Print pattern and background teach-in
- Flexibly adjustable sensitivity levels
- Response time: 10 ms
- Trigger required
- Print pattern quality shown on sensor display
- Configuration via IO-Link

Your benefits

- Quick and easy commissioning thanks to pattern detection
- The sensor is able to recognize prints reliably, even in poorly lit conditions and at speeds of up to 4 m/s
- Adaptation to different application requirements: With various sensitivity levels available, the sensor can simply detect whether prints are present or distinguish between good and bad printing quality levels; for example, blurry serial numbers
- Cost-effective solution for automated print quality control

→ www.sick.com/PSS

For more information, simply 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.



Detailed technical data

Features

Dimensions (W x H x D)	26 mm x 62 mm x 47.5 mm
Sensing distance	27.5 mm
Sensing distance tolerance	± 2.5 mm (presence detection) ± 1 mm (quality check)
Housing design (light emission)	Rectangular
Light source ¹⁾	LED, White
Wave length	400 nm ... 750 nm
Light emission	Long side of housing
Light spot size	0.8 mm x 8 mm
Light spot direction ²⁾	Vertical
Tolerance lateral movement ³⁾	± 1 mm ... 3 mm
Adjustment	
Teach-in Control panel or ET	1. Teach-in: background / 2. Teach-in: print
Sensitivity (%)	Sensitivity
IO-Link	10 % ... 90 % (Increment = 10; determines the quality level)
	Logic switching output
	Pin 2 configuration
	Key lock
	Delay switching output
	Teach-in print
	Teach-in background
	Sensitivity
	Trigger input delay
	Impuls length Q
Special features	Teach-in background and print (background structured) Teach-in print without background (background homogeneous / same color)

¹⁾ Average service life: 100,000 h at T₀ = +25 °C.

²⁾ In relation to long side of housing.

³⁾ Depending on the set quality level.

Communication interface

Communication interface	IO-Link V1.1
Mode	COM2 (38,4 kBaud)
Cycle time	4.3 ms
Process data length	16 Bit
Process data structure	Bit 0 = switching signal Q Bit 2 = switching signal Q valid Bit 8 ... 15 = quality of print

Mechanics/electronics

Supply voltage ¹⁾	10.8 V DC ... 28.8 V DC
Ripple ²⁾	≤ 5 V _{pp}
Power consumption ³⁾	< 100 mA
Switch output delay after falling flank (trigger)	Max. 10 ms
Output type	PUSH/PULL
Switching output (voltage)	Push/Pull: HIGH = V _S - 3 V / LOW ≤ 3 V
Output current I_{max.} ⁴⁾	100 mA
Input, teach-in (ET)	Teach: U = 10 V ... < V _S ; Run: U < 2 V
Input, trigger	Recording: U = 10 V ... < U _v Evaluation: U < 2 V
Retention time (ET)	65 ms, non-volatile memory

Connection type	Male connector M12, 5-pin
Protection class	III
Circuit protection	U _V connections, reverse polarity protected, Output Q short-circuit protected, Interference pulse suppression
Enclosure rating	IP67
Weight	68 g
Housing material	VISTAL®

¹⁾ Limit values: DC 12 V (–10 %) ... DC 24 V (+20 %). Operation in short-circuit protected network max. 8 A.

²⁾ May not exceed or fall below U_n tolerances.

³⁾ Without load.

⁴⁾ Total current of all Outputs.

Ambient data

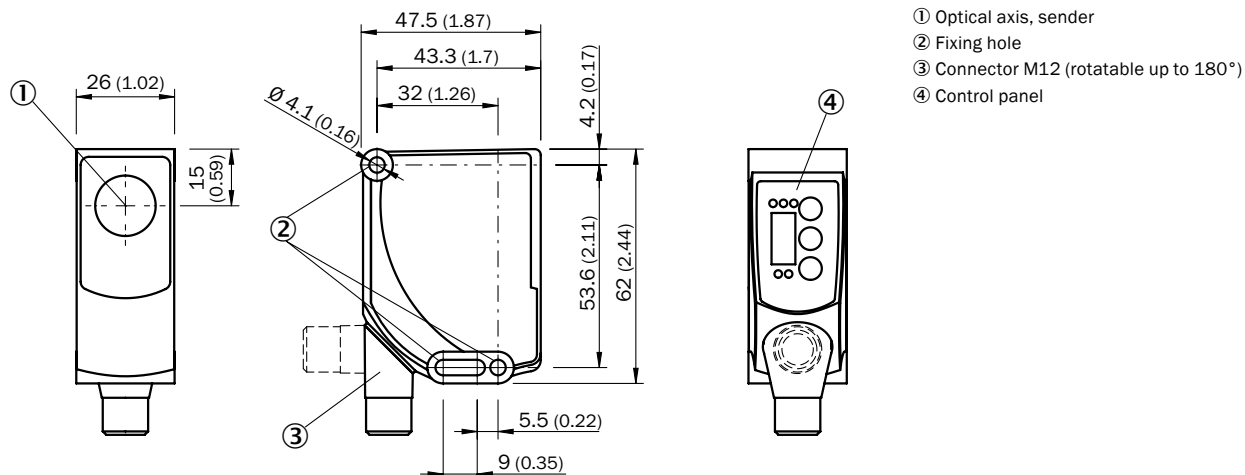
Ambient operating temperature	–20 °C ... +60 °C
Ambient storage temperature	–25 °C ... +75 °C
Shock load	According to IEC 60068-2-27 (30 g/11 ms)

Ordering information

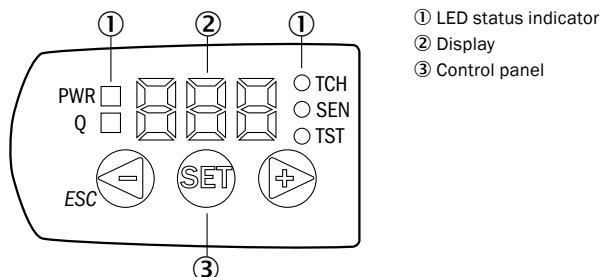
Other models → www.sick.com/PSS

Sensing distance	Light spot size	Special features	Type	Part no.
27.5 mm	0.8 mm x 8 mm	Teach-in background and print	PSS-MBP124115AZZZZ	1219863
		Teach-in print without background	PSS-MBB124115AZZZZ	1220058

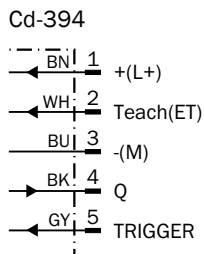
Dimensional drawing (Dimensions in mm (inch))



Adjustments

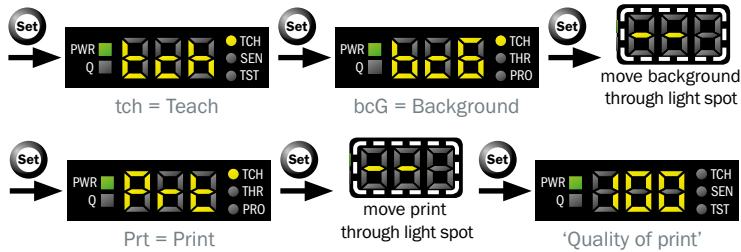


Connection diagram



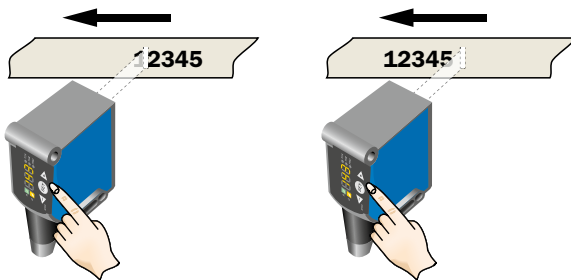
Functions

Teach-in



Teach-in print (background homogeneous / same color)

Place the light spot
before the print and move
it through the light spot

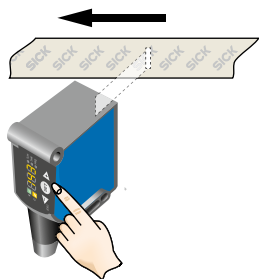


Menu level „Prt“
Press the “Set” pushbutton
to start the teach-in operation.
The display lights up during
detection (---).

Press the “Set” pushbutton
to end the teach-in operation.
The quality of teach is displayed.

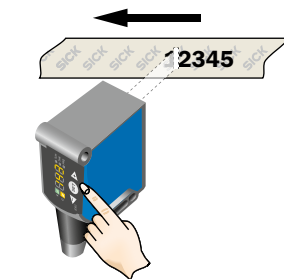
Teach-in background and print (background structured)

1. Position background
and move it through
the light spot

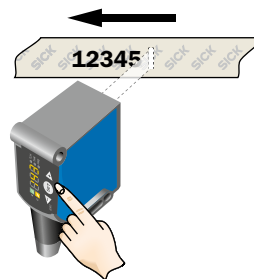


Menu level „bcG“
Press the “Set” pushbutton
to start the teach-in operation.
Move the print through
the light spot. The display
lights up during detection (---).
Press the “Set” pushbutton
to end the teach-in operation
of the background.

2. Place the light spot
before the print and move
it through the light spot



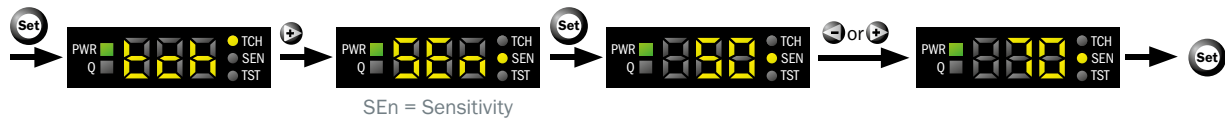
Menu level „Prt“
Press the “Set” pushbutton
to start the teach-in operation.
The display lights up during
detection (---).



Press the “Set” pushbutton
to end the teach-in operation.
The quality of teach is displayed.

Sensitivity

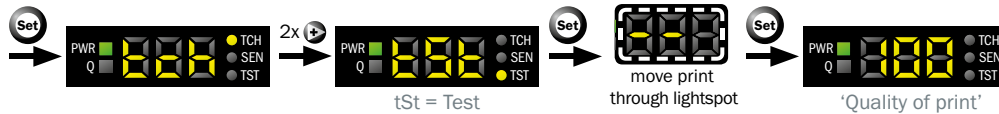
The quality level can be set as follows



The print is detected above the set threshold (Q active 10 ms after end trigger).

Test

Test mode for the offline thorough check of the taught-in print (trigger is activated manually).

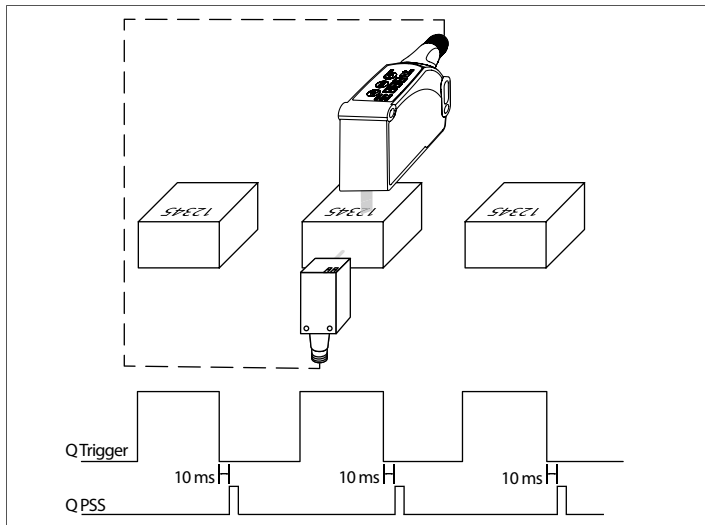


Key lock (activation and deactivation): Press and hold the "+" pushbutton for 10 s.

Fault teach: Q LED and TCH LED flashing.

For operation, the sensor needs a trigger signal regarding the length of the print to be evaluated for signaling the reading window.

See operating instructions for details (8022050).








Functional principle PSS with trigger

Recommended accessories

Mounting systems

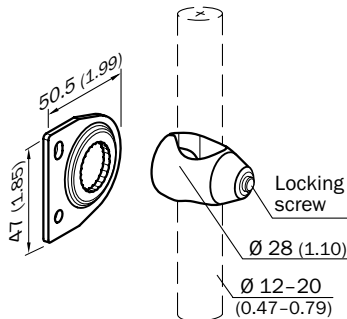
Universal bar clamp systems

Figure	Description	Type	Part no.
	Plate G for universal clamp bracket	BEF-KHS-G01	2022464
	Plate K for universal clamp bracket	BEF-KHS-K01	2022718
	Universal clamp bracket for rod mounting	BEF-KHS-KH1	2022726
	Mounting bar, straight, 200 mm, steel	BEF-MS12G-A	4056054
	Mounting bar, straight, 300 mm, steel	BEF-MS12G-B	4056055
	Mounting bar, L-shaped, 150 mm x 150 mm, steel	BEF-MS12L-A	4056052
	Mounting bar, L-shaped, 250 x 250 mm, steel	BEF-MS12L-B	4056053

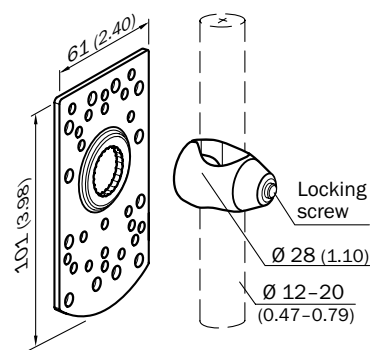
Dimensional drawings for accessories (Dimensions in mm (inch))

Universal bar clamp systems

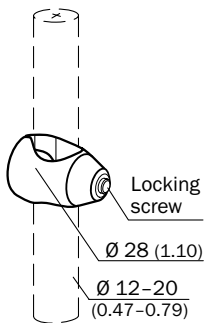
BEF-KHS-G01



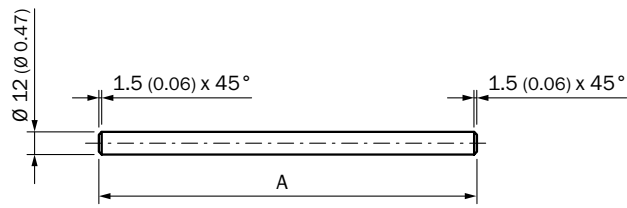
BEF-KHS-K01



BEF-KHS-KH1

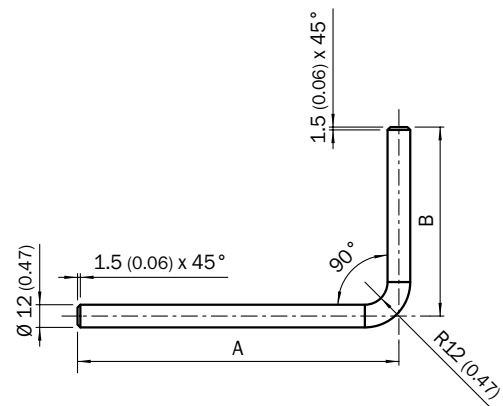


BEF-MS12G-A
BEF-MS12G-B



- ① BEF-MS12G-(N)A: A = 200 mm
- ② BEF-MS12G-(N)B: A = 300 mm

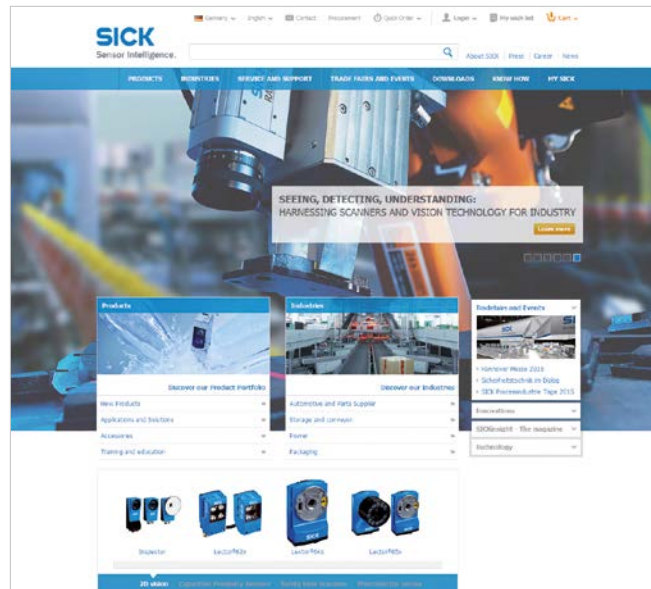
BEF-MS12L-A
BEF-MS12L-B



- ① BEF-MS12L-(N)A: A = 200 mm, B = 150 mm
- ② BEF-MS12L-(N)B: A = 250 mm, B = 250 mm

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