**SICK**

# ICS 100

## Intelligent Camera Sensor

| | Scanning distance 70 mm |
|---|---|

**Intelligent Camera Sensor**

- Independent, compact unit
- Fast system architecture
- Simple integration
- Intensive and homogenous illumination
- Wide-ranging application field
- Presence monitoring
- Shape, position and dimension check
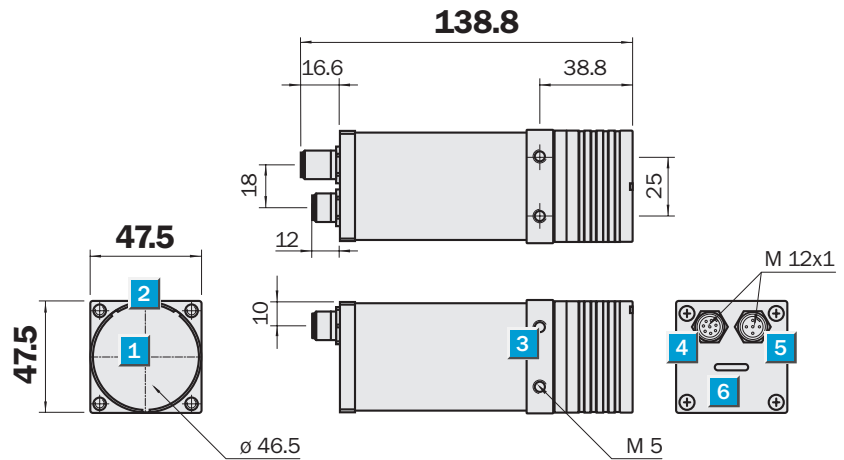- Object detection
- Completeness check

to be used within the field of
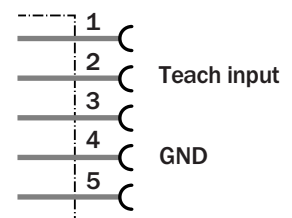- Process control
- Quality assurance

$C\epsilon$

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**Dimension illustration**

ICS 100

138.8
16.6
38.8
18
25
47.5
47.5
12
10
M 12x1
4
5
6
ø 46.5
M 5

VSC 100 | 9

7
8
F1 F2 F3 F4
OK EXIT
ON
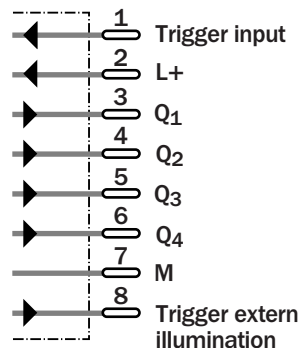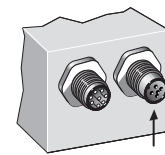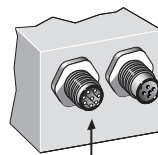
1 Lens
2 Ring light, 15x LED/green lens combination
3 Mounting hole M 5, 4-times
4 User output, 8-pin, M 12
5 Operating unit connection, 5-pin, M 12
6 Display of output switching state
7 LC Display
8 Keyboard
9 VSC 100: W x H x D = 150 x 82 x 31 mm$^3$

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**Connection type**

| ICS 100-B1111 | 8-pin, M 12 (user output) | 5-pin, M 12 setup unit/teach input |
|---|---|---|

| 1 | Trigger input |
| 2 | L+ |
| 3 | $Q_1$ |
| 4 | $Q_2$ |
| 5 | $Q_3$ |
| 6 | $Q_4$ |
| 7 | M |
| 8 | Trigger extern illumination |

| 1 | |
| 2 | Teach input |
| 3 | |
| 4 | GND |
| 5 | |

| Cable, 2 m with receptacles M 12, 8-pin | | Cable, 2 m with plug M 12, 5-pin | |
|---|---|---|---|
| **Part no.** | 6 020 633 | **Part no.** | 6 022 349 |

| Technical data | | ICS 100 -B1111 | VSC 100 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Scanning distance [1] | 70 mm | ▪ | | | | | | | | |
| Field of view | 20 mm x 20 mm | ▪ | | | | | | | | |
| Teach/search window | 2 mm x 2 mm ... 20 mm x 20 mm, adjustable | ▪ | | | | | | | | |
| Image sensor | CMOS, 512 x 512 pixel | ▪ | | | | | | | | |
| Light source [2] | 15x LED green/Lens combination | ▪ | | | | | | | | |
| Flash length | 30 $\mu$s to 1 ms, normally 500 $\mu$s | ▪ | | | | | | | | |
| Number of objects | Up to 16 | ▪ | | | | | | | | |
| Supply voltage $U_S$ [3] | 24 V DC | ▪ | | | | | | | | |
| Ripple [4] | < 5 $V_{PP}$ | ▪ | | | | | | | | |
| Current consumption [5] | < 450 mA | ▪ | | | | | | | | |
| Switching outputs | 4 x B (NPN/PNP) | ▪ | | | | | | | | |
| Output current $I_A$ max. [6] | < 100 mA | ▪ | | | | | | | | |
| Response time [7], cycle time [7] | ≥ 2.5 ms | ▪ | | | | | | | | |
| Switching frequency max. [8] | 200/s | ▪ | | | | | | | | |
| Trigger input [9] | Falling edge, HIGH = 10 V ... $U_S$ | ▪ | | | | | | | | |
| Trigger output for ext. lighting | 5 V when sender OFF (TTL) | ▪ | | | | | | | | |
| Connection type setup unit [10] | Connectors 5-pin, M 12 | ▪ | ▪ | | | | | | | |
| Connection type user output | Plug 8-pin, M 12 | ▪ | | | | | | | | |
| Operating unit display | 16 gray levels | | ▪ | | | | | | | |
| Protection type | IP 64 | ▪ | | | | | | | | |
| | IP 40 | | ▪ | | | | | | | |
| Ambient temperature | Operation    0 °C ... + 50 °C | ▪ | | | | | | | | |
| | Storage    − 25 °C ... + 70 °C | ▪ | | | | | | | | |
| | Storage    − 20 °C ... + 60 °C | | ▪ | | | | | | | |
| Shock load | 15 g, 6 directions | ▪ | ▪ | | | | | | | |
| Weight | Approx. 350 g | ▪ | | | | | | | | |
| | Approx. 240 g | | ▪ | | | | | | | |
| Housing material | Aluminium | ▪ | | | | | | | | |
| | Plastic | | ▪ | | | | | | | |

[1] Range depending on object and para-meters; e.g.: ± 8 mm with shape check and threshold = 95 %
[2] Average service life at room temperature 50,000 h at $T_U$ = +25 °C
[3] Limit values ± 20 %
[4] Must be within $U_S$ tolerances
[5] Without load
[6] Amount total for all four outputs
[7] With resistive load
[8] With light/dark ratio 1:1
[9] 1000 ms > trigger pulse ≥ 2.5 ms; trigger active when HIGH ≥ 1000 ms
[10] Cable length 2 m, PVC, Ø 5 mm, do not distort cable below 0 °C

### Ordering information

| Type | Part no. |
|---|---|
| ICS 100-B1111 | 1 022 631 |
| VSC 100 | 2 022 605 |
| Mounting bracket | 4 035 008 |
| Rod mount. clamp | 2 022 464 |

| Check Mode | Procedure [1] | Typical Applications |
|---|---|---|
| Shape check (pattern matching) | Structures are compared translation-invariant with respect to shape | Shape, position and dimension check, object detection, presence monitoring, completeness |
| Multi-area-evaluation | Blobs are compared with respect to number and area | Presence monitoring, completeness monitoring |
| Minimum pixel sum | Checking for pixel number exceeding a limit | Presence monitoring, e.g., for transparent bodies with reflecting surfaces, completeness monitoring, especially with gloss [2] |
| Pixel sum | Comparison of the absolute number of white and black dots | Presence monitoring, completeness check |

[1] All procedures are used in the binary image. A comparison is made each time between the taught-in reference image and the image to be checked.
[2] Made possible by the special resistance of the sensor against overshooting

### Shape of tought-in reference image

| Rectangular | Shape of reference image = rectangle |
|---|---|
| Autoshape | Shape of reference image = shape of object in reference image (only possible for closed areas) |

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