# VSPI-4F2111

Inspector

**2D VISION**

**SICK**
Sensor Intelligence.

# VSPI-4F2111 | Inspector

## 2D VISION

## Ordering information

| Type | Part no. |
|---|---|
| VSPI-4F2111 | 1047913 |

Other models and accessories ➔ www.sick.com/Inspector

## Detailed technical data

### Features

| | |
|---|---|
| **Task** | Inspection |
| **Technology** | 2D, snapshot, image analysis |
| **Product category** | Configurable devices |
| **Toolkit** | Object locator, contour, pixel count, edge pixel count, Pattern |
| **Sensor** | CMOS matrix sensor, grayscale values |
| **Focus** | Adjustable focus (manually) |
| **Working distance** | ≥ 50 mm |
| **Operating distance with internal illumination** | 50 mm ... 200 mm |
| **Field of view of internal illumination** | 22 mm x 15 mm ... 79 mm x 58 mm |
| **Internal lighting** | White |
| **LED class** | Risk group 1 (low risk, IEC62471 : 2006) |
| **Spectral range** | Approx. 400 nm ... 750 nm |
| **Offline support** | Emulator |
| **Lens** | Exchangeable (M12-mount) |
| Optical format | 1/3" |
| Focal length | 10 mm |

### Mechanics/electronics

| | |
|---|---|
| **Connections** | M12, 12-pin male connector<br>M12, 4-pin female connector |
| **Supply voltage** | 24 V DC, ± 20 % |
| **Ripple** | < 5 $V_{pp}$ |
| **Current consumption** | < 450 mA, without output load |
| **Enclosure rating** | IP67 |
| **Housing material** | Aluminum |
| **Window material** | PMMA |

| | |
|---|---|
| **Weight** | 350 g |
| **Dimensions (L x W x H)** | 100 mm x 53 mm x 38 mm |

## Performance

| | |
|---|---|
| **Sensor resolution** | 640 px x 480 px |
| **Scan/frame rate** | 40 fps [1] |
| **Number of inspections** | 32 |
| **Reference images** | 32 objects |

[1] Max. 250 fps.

## Interfaces

| | |
|---|---|
| **EtherNet/IP™** | ✔ |
| Data transmission rate | 100 Mbit/s |
| **Operator interfaces** | Inspector Viewer |
| **Configuration software** | SOPAS ET |
| **Data storage and retrieval** | Log for 30 images, record images on PC, store images to FTP |
| **Ethernet communication** | EtherNet/IP™ |
| **Digital input** | 4 inputs (24 V) |
| **Configurable inputs** | External trigger, encoder input, External teach, reference object selection |
| **Digital output** | 3 digital outputs, 24 V (B-type) |
| **Configurable outputs** | Output by logical expressions, Additional image storage possibility via FTP |
| **Output current** | ≤ 100 mA |
| **Standard outputs** | No object detected, Everything OK, Detail error |
| **Maximum encoder frequency** | 40 kHz |
| **External illumination control** | 5 V TTL |
| **I/O box extension** | 5 x inputs for object selection, 16 outputs |

## Ambient data

| | |
|---|---|
| **Shock load** | EN 60068-2-27 |
| **Vibration load** | IEC 60068-2-6 |
| **Ambient operating temperature** | 0 °C ... +45 °C [1] |
| **Ambient storage temperature** | −20 °C ... +70 °C [1] |

[1] Relative humidity: 35% ... 85%, 95% in storage.

## Classifications

| | |
|---|---|
| **ECl@ss 5.0** | 27310205 |
| **ECl@ss 5.1.4** | 27310205 |
| **ECl@ss 6.0** | 27310205 |
| **ECl@ss 6.2** | 27310205 |
| **ECl@ss 7.0** | 27310205 |
| **ECl@ss 8.0** | 27310205 |
| **ECl@ss 8.1** | 27310205 |
| **ECl@ss 9.0** | 27310205 |
| **ETIM 5.0** | EC001820 |

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## 2D VISION

| ETIM 6.0 | EC001820 |
|---|---|
| UNSPSC 16.0901 | 43211731 |

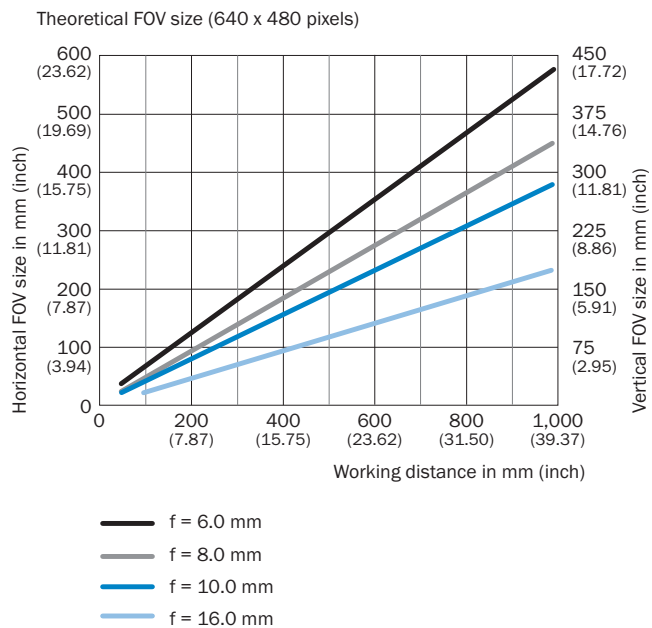## Dimensional drawing (Dimensions in mm (inch))

Standard
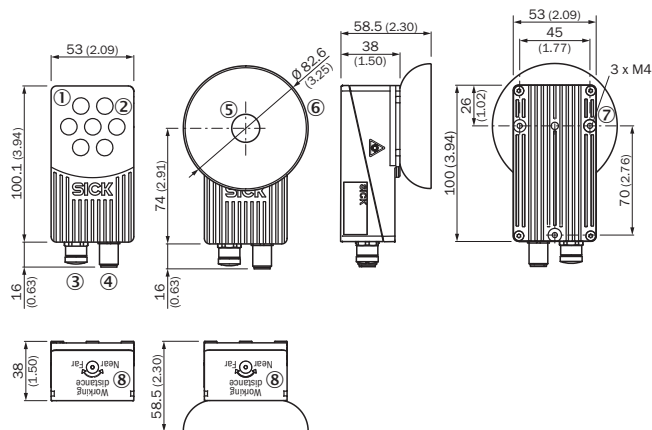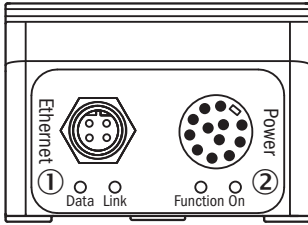
① Front screen: standard, flex
② Ring lighting
③ Ethernet connection M12, 4-pin, female
④ Power connection M12, 12-pin, male
⑤ Front screen: dome
⑥ Dome light
⑦ Mounting hole M4
⑧ Focus

## Field of view

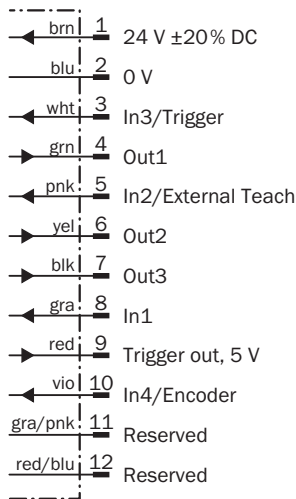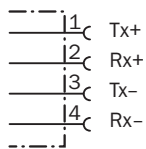Theoretical FOV size (640 x 480 pixels)



f = 6.0 mm
f = 8.0 mm
f = 10.0 mm
f = 16.0 mm

## Connection type



① Ethernet connection M12, 4-pin, female
② Power connection M12, 12-pin, male

## Connection diagram

M12 connection diagram, 12-pin

| | | |
|---|---|---|
| brn | 1 | 24 V ±20 % DC |
| blu | 2 | 0 V |
| wht | 3 | In3/Trigger |
| grn | 4 | Out1 |
| pnk | 5 | In2/External Teach |
| yel | 6 | Out2 |
| blk | 7 | Out3 |
| gra | 8 | In1 |
| red | 9 | Trigger out, 5 V |
| vio | 10 | In4/Encoder |
| gra/pnk | 11 | Reserved |
| red/blu | 12 | Reserved |

Ethernet connection diagram

| | |
|---|---|
| 1 | Tx+ |
| 2 | Rx+ |
| 3 | Tx− |
| 4 | Rx− |

## Recommended accessories

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

| Brief description | Type | Part no. |
|---|---|---|
| **Plug connectors and cables** | | |
| Head A: female connector, M12, 12-pin, straight<br>Head B: Flying leads<br>Cable: PUR, halogen-free, shielded, 5 m | DOL-1212-G05MAS01 | 6036556 |

| | Brief description | Type | Part no. |
|---|---|---|---|
| | Head A: male connector, M12, 4-pin, straight, D-coded<br>Head B: male connector, RJ45, 8-pin, straight<br>Cable: Ethernet, twisted pair, PUR, halogen-free, shielded, 2 m | YM2D24-020EA1MRJA4 | 6034414 |
| **Lenses and accessories** | | | |
| | Replaces the front screen and generates even and uniform illumination, for glossy surfaces, PMMA | Inspector Flex Dome | 2050678 |
| | Exchangeable lens, focal length 6 mm, Round connector M12 x 0.5 | OBJ-B06025BA | 2049668 |
| | Exchangeable lens, focal length 16 mm, including spacer ring, Round connector M12 x 0.5 | OBJ-B16018BA | 2049418 |
| **Optical filters** | | | |
| | Color filter blue (468 nm ± 62 nm) for variants with exchangeable lens and front window, PMMA | Inspector Flex blue color filter | 2050676 |
| | Color filter green (544 nm ± 53 nm) for variants with exchangeable lens and front window, PMMA | Inspector Flex green color filter | 2050677 |
| | Color filter red (> 548 nm) for variants with exchangeable lens and front window, PMMA | Inspector Flex red color filter | 2050675 |

# 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**

SICK AG  |  Waldkirch  |  Germany  |  www.sick.com

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