



**AHS36I-S4QC016384**

AHS/AHM36

**ABSOLUTE ENCODERS**

**SICK**  
Sensor Intelligence.



Illustration may differ



### Ordering information

| Type              | Part no. |
|-------------------|----------|
| AHS36I-S4QC016384 | 1093798  |

Other models and accessories → [www.sick.com/AHS\\_AHM36](http://www.sick.com/AHS_AHM36)

### Detailed technical data

#### Performance

|                                                             |                                |
|-------------------------------------------------------------|--------------------------------|
| <b>Number of steps per revolution (max. resolution)</b>     | 16,384 (14 bit)                |
| <b>Error limits G</b>                                       | 0.35° (at 20 °C) <sup>1)</sup> |
| <b>Repeatability standard deviation <math>\sigma</math></b> | 0.2° (at 20 °C) <sup>2)</sup>  |

<sup>1)</sup> In accordance with DIN ISO 1319-1, position of the upper and lower error limit depends on the installation situation, specified value refers to a symmetrical position, i.e. deviation in upper and lower direction is the same.

<sup>2)</sup> In accordance with DIN ISO 55350-13; 68.3% of the measured values are inside the specified area.

#### Interfaces

|                                       |                                                                                                                                                                                     |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Communication interface</b>        | IO-Link                                                                                                                                                                             |
| <b>Communication Interface detail</b> | IO-Link V1.1 / COM3 (230,4 kBaud)                                                                                                                                                   |
| <b>Smart Sensor</b>                   | Efficient communication, Enhanced Sensing                                                                                                                                           |
| <b>Process data</b>                   | Position, speed                                                                                                                                                                     |
| <b>Parameterising data</b>            | Number of steps per revolution<br>PRESET<br>Counting direction<br>Sampling rate for speed calculation<br>Unit for output of the speed value<br>Electronic cams(2 channels x 8 cams) |
| <b>Status information</b>             | Via status LED                                                                                                                                                                      |
| <b>Initialization time</b>            | 2 s                                                                                                                                                                                 |
| <b>Cycle time</b>                     | ≤ 3.2 ms                                                                                                                                                                            |

#### Electrical data

|                                              |                                       |
|----------------------------------------------|---------------------------------------|
| <b>Connection type</b>                       | Male connector, M12, 4-pin, universal |
| <b>Supply voltage</b>                        | 18 ... 30 V                           |
| <b>Power consumption</b>                     | ≤ 1.5 W                               |
| <b>Reverse polarity protection</b>           | ✓                                     |
| <b>MTTFd: mean time to dangerous failure</b> | 145.6 years (EN ISO 13849-1)          |

## Mechanical data

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| <b>Mechanical design</b>                  | Solid shaft, face mount flange               |
| <b>Shaft diameter</b>                     | 10 mm                                        |
| <b>Shaft length</b>                       | 12 mm                                        |
| <b>Weight</b>                             | 0.2 kg, Based on devices with male connector |
| <b>Shaft material</b>                     | Stainless steel 1,4305                       |
| <b>Flange material</b>                    | Stainless steel 1,4305                       |
| <b>Housing material</b>                   | Stainless steel 1,4305                       |
| <b>Material, cable</b>                    | PUR                                          |
| <b>Start up torque</b>                    | $\leq 1 \text{ Ncm}^{1)}$                    |
| <b>Operating torque</b>                   | $\leq 1 \text{ Ncm}^{1)}$                    |
| <b>Permissible Load capacity of shaft</b> | 40 N / radial<br>20 N / axial                |
| <b>Moment of inertia of the rotor</b>     | 2.5 gcm <sup>2</sup>                         |
| <b>Bearing lifetime</b>                   | 3.6 x 10 <sup>8</sup> revolutions            |
| <b>Angular acceleration</b>               | $\leq 500,000 \text{ rad/s}^2$               |
| <b>Operating speed</b>                    | $\leq 6,000 \text{ min}^{-1}$                |

<sup>1)</sup> At 20 °C.

## Ambient data

|                                      |                                                        |
|--------------------------------------|--------------------------------------------------------|
| <b>EMC</b>                           | According to EN 61000-6-2, EN 61000-6-3 and EN 61131-9 |
| <b>Enclosure rating</b>              | IP67 (IEC 60529)<br>IP69K (IEC 60529)                  |
| <b>Permissible relative humidity</b> | 90 % (Condensation not permitted)                      |
| <b>Operating temperature range</b>   | -40 °C ... +85 °C                                      |
| <b>Storage temperature range</b>     | -40 °C ... +100 °C                                     |
| <b>Resistance to shocks</b>          | 100 g, 6 ms (according to EN 60068-2-27)               |
| <b>Resistance to vibration</b>       | 20 g, 10 Hz ... 2,000 Hz (according to EN 60068-2-6)   |

## Classifications

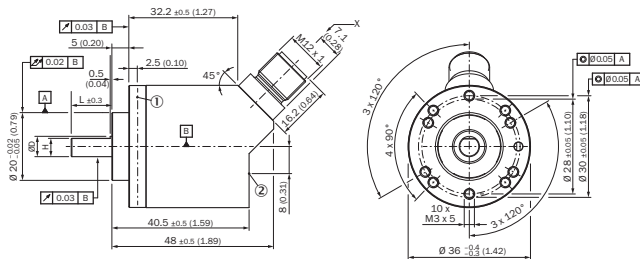
|                     |          |
|---------------------|----------|
| <b>ECI@ss 5.0</b>   | 27270502 |
| <b>ECI@ss 5.1.4</b> | 27270502 |
| <b>ECI@ss 6.0</b>   | 27270590 |
| <b>ECI@ss 6.2</b>   | 27270590 |
| <b>ECI@ss 7.0</b>   | 27270502 |
| <b>ECI@ss 8.0</b>   | 27270502 |
| <b>ECI@ss 8.1</b>   | 27270502 |
| <b>ECI@ss 9.0</b>   | 27270502 |
| <b>ECI@ss 10.0</b>  | 27270502 |
| <b>ECI@ss 11.0</b>  | 27270502 |
| <b>ETIM 5.0</b>     | EC001486 |
| <b>ETIM 6.0</b>     | EC001486 |
| <b>ETIM 7.0</b>     | EC001486 |

UNSPSC 16.0901

41112113

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

Solid shaft, face mount flange, male connector

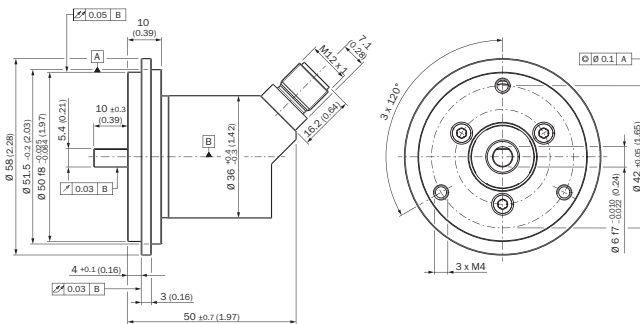


Non-tolerated dimensions according to DIN-ISO 2768-mk

- ① Measuring point for operating temperature
- ② Measuring point for vibrations

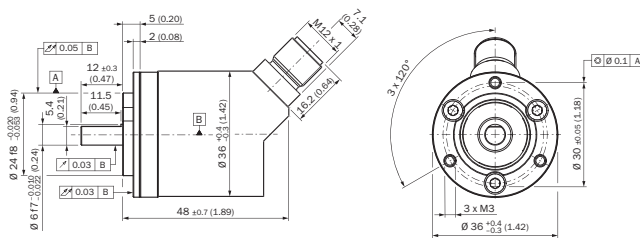
### Attachment specifications

Solid shaft, face mount flange with flange adapter, centering collar D20 on D50 (BEF-FA-020-050-I, 2103985)



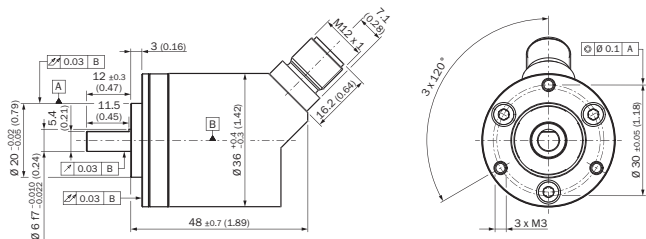
Order example for 6 mm shaft diameter: AHx36I-S3xx0xxxxx + BEF-FA-020-050-I (adapter is not pre-assembled)

Solid shaft, face mount flange with flange adapter, centering collar D20 on D24 (BEF-FA-020-024-I, 2103982)



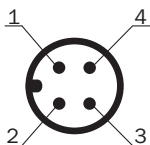
Order example for 6 mm shaft diameter: AHx36I-S3xx0xxxxx + BEF-FA-020-024-I (adapter is not pre-assembled)

Solid shaft, face mount flange with flange adapter, centering collar D20 on D36, 2 mm high (BEF-FA-020-036-2-I, 2103984)



Order example for 6 mm shaft diameter: AHx36I-S3xx0xxxxx + BEF-FA-020-036-2-I (adapter is not pre-assembled)

## PIN assignment



| PIN | Wire color | Signal | Function                                  |                                                                              |                     |
|-----|------------|--------|-------------------------------------------|------------------------------------------------------------------------------|---------------------|
| 1   | Brown      | L+     | Basic                                     | Advanced                                                                     | Advanced Smart Task |
|     |            |        | Encoder supply voltage 18-30 V (+Us)      |                                                                              |                     |
| 2   | White      | I/Q    | Not connect-<br>ed - no function          | Multifunctional pin (configurable as<br>switching input or switching output) |                     |
| 3   | Blue       | L-     | Encoder supply voltage 0 V (GND)          |                                                                              |                     |
| 4   | Black      | C/Q    | IO-Link communication                     |                                                                              |                     |
|     |            |        | -<br><br>Switching out-<br>put (SIO mode) |                                                                              |                     |

## Recommended accessories

Other models and accessories → [www.sick.com/AHS\\_AHM36](http://www.sick.com/AHS_AHM36)

|                                                                                     | Brief description                                                                                                                                                                                                                                                                                 | Type       | Part no. |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------|
| Shaft adaptation                                                                    |                                                                                                                                                                                                                                                                                                   |            |          |
|  | Bellows coupling, shaft diameter 6 mm / 10 mm, maximum shaft offset: radial ± 0.25 mm, axial ± 0.4 mm, angular +/- 4°; max. speed 10,000 rpm, -30 °C to +120 °C, max. torque 80 Ncm; material: stainless steel bellows, aluminum hub                                                              | KUP-0610-B | 5312982  |
|  | Double loop coupling, shaft diameter 6 mm / 10 mm, max. shaft offset: radially +/- 2.5 mm, axially +/- 3 mm, angle +/- 10 degrees; max. speed 3.000 rpm, -30 to +80 degrees Celsius, torsional spring stiffness of 25 Nm/rad                                                                      | KUP-0610-D | 5326697  |
|  | Spring washer coupling, shaft diameter 6 mm / 10 mm, Maximum shaft offset: radial +/- 0.3 mm, axial +/- 0.4 mm, angular +/- 2.5°; max. speed 12,000 rpm, -10° to +80 °C, max. torque 60 Ncm; material: aluminum flange, glass fiber-reinforced polyamide membrane and hardened steel coupling pin | KUP-0610-F | 5312985  |
|  | Double loop coupling, shaft diameter 8 mm / 10 mm, max. shaft offset: radially +/- 0.25 mm, axially +/- 0.4 mm, angle +/- 4 degrees; max. speed 10.000 rpm, -30 to +120 degrees Celsius, torsional spring stiffness of 150 Nm/rad                                                                 | KUP-0810-D | 5326704  |

|                                                                                     | Brief description                                                                                                                                                                                                                                                                                                                                                                                                                                     | Type            | Part no. |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------|
|    | Bellows coupling, shaft diameter 10 mm/10 mm; maximum shaft offset: radial +/- 0.25 mm, axial +/- 0.4 mm, angular +/- 4°; max. revolutions 10,000 rpm, -30° to +120 °C, max. torque 80 Ncm; material: stainless steel bellows, aluminum clamping hubs                                                                                                                                                                                                 | KUP-1010-B      | 5312983  |
|    | Double loop coupling, shaft diameter 10 mm / 10 mm, Maximum shaft offset: radial +/- 2.5 mm, axial +/- 3 mm, angular +/- 10°; max. speed 3,000 rpm, -30° to +80 °C, max. torque 1.5 Nm; material: polyurethane, galvanized steel flange                                                                                                                                                                                                               | KUP-1010-D      | 5326703  |
|    | Spring washer coupling, shaft diameter 10 mm / 10 mm, maximum shaft offset, radial ± 0.3 mm, axial ± 0.4 mm, angle ± 2.5°, torsion spring stiffness 30 Nm/rad; material: aluminum flange, glass-fiber reinforced polyamide membrane and hardened steel coupling pin                                                                                                                                                                                   | KUP-1010-F      | 5312986  |
|    | 10 mm / 12 mm; maximum shaft offset: radial +/- 0.25 mm, axial +/- 0.4 mm, angular +/- 4°; max. revolutions 10,000 rpm, -30° to +120 °C, max. torque 80 Ncm; material: stainless steel bellows, aluminum clamping hubs                                                                                                                                                                                                                                | KUP-1012-B      | 5312984  |
|    | Double loop coupling, shaft diameter 10 mm / 12 mm, Maximum shaft offset: radial +/- 2.5 mm, axial +/- 3 mm, angular +/- 10°; max. speed 3,000 rpm, -30° to +80 °C, max. torque 1.5 Nm; material: polyurethane, galvanized steel flange                                                                                                                                                                                                               | KUP-1012-D      | 5326702  |
| Plug connectors and cables                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                 |          |
|    | Head A: female connector, M12, 4-pin, straight<br>Head B: Flying leads<br>Cable: Sensor/actuator cable, PVC, unshielded, 2 m<br>This product is generally resistant to chemical cleaning agents (see ECOLAB). Please do not use cleaning agents of any other Kind., Not resistant against lactic acid & hydrogen peroxide (H2O2)                                                                                                                      | DOL-1204-G02MNI | 6052613  |
|   | Head A: female connector, M12, 4-pin, straight<br>Head B: Flying leads<br>Cable: Sensor/actuator cable, PP, unshielded, 2 m<br>This product is generally resistant to chemical cleaning agents (see ECOLAB) and other chemical compounds such as H2O2 and CH2O2. Before permanent installation is carried out, the material's resistance to the cleaning agent being used must be checked., Resistant against lactic acid & hydrogen peroxide (H2O2)  | DOL-1204-G02MRN | 6058291  |
|  | Head A: female connector, M12, 4-pin, straight<br>Head B: Flying leads<br>Cable: Sensor/actuator cable, PVC, unshielded, 5 m<br>This product is generally resistant to chemical cleaning agents (see ECOLAB). Please do not use cleaning agents of any other Kind., Not resistant against lactic acid & hydrogen peroxide (H2O2)                                                                                                                      | DOL-1204-G05MNI | 6052615  |
|  | Head A: female connector, M12, 4-pin, straight<br>Head B: Flying leads<br>Cable: Sensor/actuator cable, PP, unshielded, 5 m<br>This product is generally resistant to chemical cleaning agents (see ECOLAB) and other chemical compounds such as H2O2 and CH2O2. Before permanent installation is carried out, the material's resistance to the cleaning agent being used must be checked., Resistant against lactic acid & hydrogen peroxide (H2O2)  | DOL-1204-G05MRN | 6058476  |
|  | Head A: female connector, M12, 4-pin, straight<br>Head B: Flying leads<br>Cable: Sensor/actuator cable, PVC, unshielded, 10 m<br>This product is generally resistant to chemical cleaning agents (see ECOLAB). Please do not use cleaning agents of any other Kind., Not resistant against lactic acid & hydrogen peroxide (H2O2)                                                                                                                     | DOL-1204-G10MNI | 6052617  |
|  | Head A: female connector, M12, 4-pin, straight<br>Head B: Flying leads<br>Cable: Sensor/actuator cable, PP, unshielded, 10 m<br>This product is generally resistant to chemical cleaning agents (see ECOLAB) and other chemical compounds such as H2O2 and CH2O2. Before permanent installation is carried out, the material's resistance to the cleaning agent being used must be checked., Resistant against lactic acid & hydrogen peroxide (H2O2) | DOL-1204-G10MRN | 6058478  |

|                                                                                     | Brief description                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Type            | Part no. |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------|
|    | Head A: female connector, M12, 4-pin, angled<br>Head B: Flying leads<br>Cable: Sensor/actuator cable, PVC, unshielded, 2 m<br>This product is generally resistant to chemical cleaning agents (see ECOLAB). Please do not use cleaning agents of any other Kind., Not resistant against lactic acid & hydrogen peroxide (H2O2)                                                                                                                                             | DOL-1204-W02MNI | 6052614  |
|    | Head A: female connector, M12, 4-pin, angled<br>Head B: Flying leads<br>Cable: Sensor/actuator cable, PP, unshielded, 2 m<br>This product is generally resistant to chemical cleaning agents (see ECOLAB) and other chemical compounds such as H2O2 and CH2O2. Before permanent installation is carried out, the material's resistance to the cleaning agent being used must be checked., Resistant against lactic acid & hydrogen peroxide (H2O2)                         | DOL-1204-W02MRN | 6058474  |
|    | Head A: female connector, M12, 4-pin, angled<br>Head B: Flying leads<br>Cable: Sensor/actuator cable, PVC, unshielded, 5 m<br>This product is generally resistant to chemical cleaning agents (see ECOLAB). Please do not use cleaning agents of any other Kind., Not resistant against lactic acid & hydrogen peroxide (H2O2)                                                                                                                                             | DOL-1204-W05MNI | 6052616  |
|    | Head A: female connector, M12, 4-pin, angled<br>Head B: Flying leads<br>Cable: Sensor/actuator cable, PP, unshielded, 5 m<br>This product is generally resistant to chemical cleaning agents (see ECOLAB) and other chemical compounds such as H2O2 and CH2O2. Before permanent installation is carried out, the material's resistance to the cleaning agent being used must be checked., Resistant against lactic acid & hydrogen peroxide (H2O2)                         | DOL-1204-W05MRN | 6058477  |
|   | Head A: female connector, M12, 4-pin, angled<br>Head B: Flying leads<br>Cable: Sensor/actuator cable, PVC, unshielded, 10 m<br>This product is generally resistant to chemical cleaning agents (see ECOLAB). Please do not use cleaning agents of any other Kind., Not resistant against lactic acid & hydrogen peroxide (H2O2)                                                                                                                                            | DOL-1204-W10MNI | 6052618  |
|  | Head A: female connector, M12, 4-pin, angled<br>Head B: Flying leads<br>Cable: Sensor/actuator cable, PP, unshielded, 10 m<br>This product is generally resistant to chemical cleaning agents (see ECOLAB) and other chemical compounds such as H2O2 and CH2O2. Before permanent installation is carried out, the material's resistance to the cleaning agent being used must be checked., Resistant against lactic acid & hydrogen peroxide (H2O2)                        | DOL-1204-W10MRN | 6058479  |
|  | Head A: female connector, M12, 4-pin, angled<br>Head B: male connector, M12, 4-pin, straight<br>Cable: Sensor/actuator cable, PVC, unshielded, 2 m<br>This product is generally resistant to chemical cleaning agents (see ECOLAB). Please do not use cleaning agents of any other Kind., Not resistant against lactic acid & hydrogen peroxide (H2O2)                                                                                                                     | DSL-1204-B02MNI | 6052633  |
|  | Head A: female connector, M12, 4-pin, angled<br>Head B: male connector, M12, 4-pin, straight<br>Cable: Sensor/actuator cable, PP, unshielded, 2 m<br>This product is generally resistant to chemical cleaning agents (see ECOLAB) and other chemical compounds such as H2O2 and CH2O2. Before permanent installation is carried out, the material's resistance to the cleaning agent being used must be checked., Resistant against lactic acid & hydrogen peroxide (H2O2) | DSL-1204-B02MRN | 6058502  |
|  | Head A: female connector, M12, 4-pin, angled<br>Head B: male connector, M12, 4-pin, straight<br>Cable: Sensor/actuator cable, PVC, unshielded, 5 m<br>This product is generally resistant to chemical cleaning agents (see ECOLAB). Please do not use cleaning agents of any other Kind., Not resistant against lactic acid & hydrogen peroxide (H2O2)                                                                                                                     | DSL-1204-B05MNI | 6052634  |

|                                                                                   | Brief description                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Type            | Part no. |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------|
|  | Head A: female connector, M12, 4-pin, angled<br>Head B: male connector, M12, 4-pin, straight<br>Cable: Sensor/actuator cable, PP, unshielded, 5 m<br>This product is generally resistant to chemical cleaning agents (see ECOLAB) and other chemical compounds such as H2O2 and CH2O2. Before permanent installation is carried out, the material's resistance to the cleaning agent being used must be checked., Resistant against lactic acid & hydrogen peroxide (H2O2)   | DSL-1204-B05MRN | 6058503  |
|  | Head A: female connector, M12, 4-pin, straight<br>Head B: male connector, M12, 4-pin, straight<br>Cable: Sensor/actuator cable, PVC, unshielded, 2 m<br>This product is generally resistant to chemical cleaning agents (see ECOLAB). Please do not use cleaning agents of any other Kind., Not resistant against lactic acid & hydrogen peroxide (H2O2)                                                                                                                     | DSL-1204-G02MNI | 6052630  |
|  | Head A: female connector, M12, 4-pin, straight<br>Head B: male connector, M12, 4-pin, straight<br>Cable: Sensor/actuator cable, PP, unshielded, 2 m<br>This product is generally resistant to chemical cleaning agents (see ECOLAB) and other chemical compounds such as H2O2 and CH2O2. Before permanent installation is carried out, the material's resistance to the cleaning agent being used must be checked., Resistant against lactic acid & hydrogen peroxide (H2O2) | DSL-1204-G02MRN | 6058499  |
|  | Head A: female connector, M12, 4-pin, straight<br>Head B: male connector, M12, 4-pin, straight<br>Cable: Sensor/actuator cable, PVC, unshielded, 5 m<br>This product is generally resistant to chemical cleaning agents (see ECOLAB). Please do not use cleaning agents of any other Kind., Not resistant against lactic acid & hydrogen peroxide (H2O2)                                                                                                                     | DSL-1204-G05MNI | 6052631  |
|  | Head A: female connector, M12, 4-pin, straight<br>Head B: male connector, M12, 4-pin, straight<br>Cable: Sensor/actuator cable, PP, unshielded, 5 m<br>This product is generally resistant to chemical cleaning agents (see ECOLAB) and other chemical compounds such as H2O2 and CH2O2. Before permanent installation is carried out, the material's resistance to the cleaning agent being used must be checked., Resistant against lactic acid & hydrogen peroxide (H2O2) | DSL-1204-G05MRN | 6058500  |

## 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](http://www.sick.com)