



# AT20E-NM331

Ax20

ARRAY SENSORS

**SICK**  
Sensor Intelligence.



Illustration may differ

### Ordering information

| Type        | part no. |
|-------------|----------|
| AT20E-NM331 | 1046459  |

**Included in delivery:** REF-AX-002 (1)

Other models and accessories → [www.sick.com/Ax20](http://www.sick.com/Ax20)

### Detailed technical data

#### Features

|  |   |
|--|---|
| <b>Functional principle</b>            | Edge detection, scanning, and reflector operation |
| <b>Dimensions (W x H x D)</b>          | 24.3 mm x 59.8 mm x 54.1 mm                       |
| <b>Sensing distance</b>                | ≤ 100 mm  |
| <b>Housing design</b>                  | Rectangular                                       |
| <b>Working range</b>                   | 90 mm ... 110 mm                                  |
| <b>Measurement range</b>               | 30 mm   |
| <b>Minimum detectable object (MDO)</b> | 1.6 mm  |
| <b>Light source</b>                    | LED, White  |
| <b>Wave length</b>                     | 400 nm ... 700 nm                                 |
| <b>Light spot size</b>                 | 50 mm x 10 mm                                     |
| <b>Repeatability</b>                   | 0.05 mm <sup>1)</sup>                             |
| <b>Linearity</b>                       | ± 2 % <sup>2)</sup>                               |

<sup>1)</sup> With respect to sensing distance.

<sup>2)</sup> Analog current range (16 mA).

#### Mechanics/electronics

|                                    |                                       |
|------------------------------------|---------------------------------------|
| <b>Supply voltage</b>              | ≤ 24 V DC <sup>1)</sup>               |
| <b>Ripple</b>                      | ≤ 5 V <sup>2)</sup>                   |
| <b>Power consumption</b>           | < 3.1 W <sup>3)</sup>                 |
| <b>Switching output</b>            | NPN                                   |
| <b>Switching output (voltage)</b>  | NPN: HIGH = approx. $U_V$ / LOW ≤ 2 V |
| <b>Analog output</b>               | 4 mA ... 20 mA                        |
| <b>Resolution of analog output</b> | 12 bit                                |

<sup>1)</sup> ± 20 %. Operation in short-circuit protected network max. 8 A.

<sup>2)</sup> May not exceed or fall below  $U_V$  tolerances.

<sup>3)</sup> Without load.

<sup>4)</sup> Typ. max. 1.6 s.

|  |  |
|--|--|
| <b>Output rate of analog output</b>    | 1 ms   |
| <b>Output current I<sub>max.</sub></b> | < 100 mA   |
| <b>Initialization time</b>             | 0.48 s <sup>4)</sup>   |
| <b>Connection type</b>                 | Male connector M12, 5-pin  |
| <b>Protection class</b>                | III  |
| <b>Circuit protection</b>              | U <sub>V</sub> connections, reverse polarity protected<br>Output Q short-circuit protected<br>Interference pulse suppression |
| <b>Enclosure rating</b>                | IP67   |
| <b>Weight</b>                          | 135 g  |
| <b>Housing material</b>                | Metal, metal   |

1) ± 20 %. Operation in short-circuit protected network max. 8 A.

2) May not exceed or fall below U<sub>V</sub> tolerances.

3) Without load.

4) Typ. max. 1.6 s.

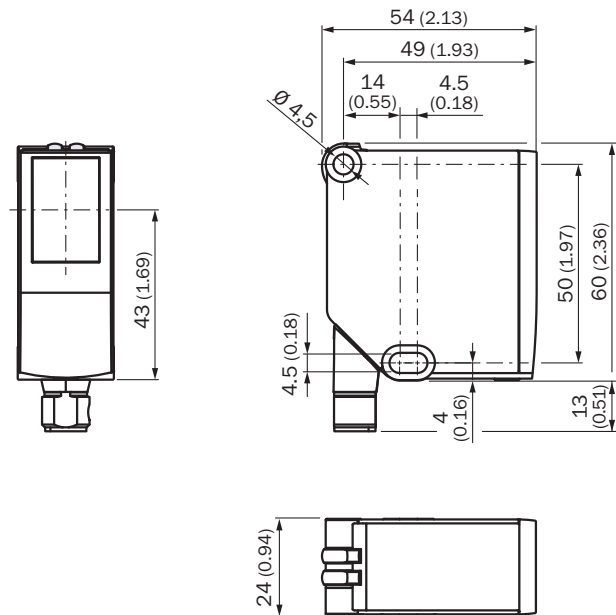
### Ambient data

|                                      |                              |
|--------------------------------------|------------------------------|
| <b>Ambient operating temperature</b> | -10 °C ... +55 °C            |
| <b>Ambient temperature, storage</b>  | -25 °C ... +75 °C            |
| <b>Shock load</b>                    | According to IEC 60068       |
| <b>UL File No.</b>                   | NRKH.E181493 & NRKH7.E181493 |

### Classifications

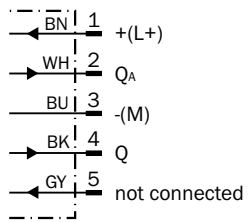
|                       |          |
|-----------------------|----------|
| <b>ECLASS 5.0</b>     | 27270906 |
| <b>ECLASS 5.1.4</b>   | 27270906 |
| <b>ECLASS 6.0</b>     | 27270906 |
| <b>ECLASS 6.2</b>     | 27270906 |
| <b>ECLASS 7.0</b>     | 27270906 |
| <b>ECLASS 8.0</b>     | 27270906 |
| <b>ECLASS 8.1</b>     | 27270906 |
| <b>ECLASS 9.0</b>     | 27270906 |
| <b>ECLASS 10.0</b>    | 27270906 |
| <b>ECLASS 11.0</b>    | 27270906 |
| <b>ECLASS 12.0</b>    | 27270906 |
| <b>ETIM 5.0</b>       | EC001820 |
| <b>ETIM 6.0</b>       | EC001820 |
| <b>ETIM 7.0</b>       | EC001820 |
| <b>ETIM 8.0</b>       | EC001820 |
| <b>UNSPSC 16.0901</b> | 39121528 |

### Dimensional drawing

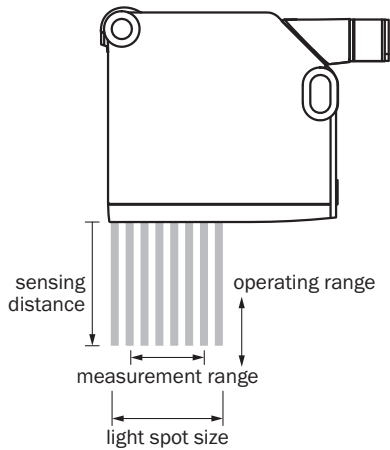


Dimensions in mm (inch)

### Connection diagram Cd-315




Explanation of parameters





| Sensing distance | Operating range  | Measurement range | Light spot size |
|------------------|------------------|-------------------|-----------------|
| 25 mm            | 20 mm ... 30 mm  | 20 mm             | 30 mm x 5 mm    |
| 100 mm           | 90 mm ... 110 mm | 30 mm             | 50 mm x 10 mm   |

Recommended accessories

Other models and accessories → [www.sick.com/Ax20](http://www.sick.com/Ax20)

|   | Brief description   | Type        | part no. |
|---|---|-------------|----------|
| Mounting systems  |   |             |          |
|  | <ul style="list-style-type: none"> <li><b>Description:</b> Mounting bracket, stainless steel, without mounting material, for DT20 Hi</li> <li><b>Items supplied:</b> Without mounting hardware</li> </ul> | BEF-WN-DT20 | 4043524  |

|   | Brief description   | Type               | part no. |
|---|---|--------------------|----------|
| connectors and cables   |   |                    |          |
|    | <ul style="list-style-type: none"> <li><b>Description:</b> Unshielded</li> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li><b>Connection systems:</b> Screw-type terminals</li> <li><b>Permitted cross-section:</b> ≤ 0.75 mm<sup>2</sup></li> </ul>  | DOS-1205-G         | 6009719  |
|    | <ul style="list-style-type: none"> <li><b>Description:</b> Unshielded</li> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, angled, A-coded</li> <li><b>Connection systems:</b> Screw-type terminals</li> <li><b>Permitted cross-section:</b> ≤ 0.75 mm<sup>2</sup></li> </ul>  | DOS-1205-W         | 6009720  |
|    | <ul style="list-style-type: none"> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, angled, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 2 m, 5-wire, PVC</li> <li><b>Application:</b> Untaminated zones, Zones with chemicals</li> </ul>    | YG2A15-020VB5XLEAX | 2096215  |
|    | <ul style="list-style-type: none"> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, angled, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 5 m, 5-wire, PVC</li> <li><b>Application:</b> Untaminated zones, Zones with chemicals</li> </ul>    | YG2A15-050VB5XLEAX | 2096216  |
|    | <ul style="list-style-type: none"> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, angled, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 10 m, 5-wire, PVC</li> <li><b>Application:</b> Untaminated zones, Zones with chemicals</li> </ul>   | YG2A15-100VB5XLEAX | 2096217  |
|   | <ul style="list-style-type: none"> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 2 m, 5-wire, PVC</li> <li><b>Application:</b> Untaminated zones, Zones with chemicals</li> </ul>  | YF2A15-020VB5XLEAX | 2096239  |
|  | <ul style="list-style-type: none"> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 5 m, 5-wire, PVC</li> <li><b>Application:</b> Untaminated zones, Zones with chemicals</li> </ul>  | YF2A15-050VB5XLEAX | 2096240  |
|  | <ul style="list-style-type: none"> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 10 m, 5-wire, PVC</li> <li><b>Application:</b> Untaminated zones, Zones with chemicals</li> </ul> | YF2A15-100VB5XLEAX | 2096241  |
|  | <ul style="list-style-type: none"> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, angled, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 0.6 m, 5-wire, PVC</li> <li><b>Application:</b> Untaminated zones, Zones with chemicals</li> </ul>  | YG2A15-C60VB5XLEAX | 2145573  |
|  | <ul style="list-style-type: none"> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, angled, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 1 m, 5-wire, PVC</li> <li><b>Application:</b> Untaminated zones, Zones with chemicals</li> </ul>    | YG2A15-010VB5XLEAX | 2145574  |
|  | <ul style="list-style-type: none"> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, angled, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 3 m, 5-wire, PVC</li> </ul>   | YG2A15-030VB5XLEAX | 2145575  |

|   | Brief description   | Type               | part no. |
|---|---|--------------------|----------|
|  | <ul style="list-style-type: none"> <li>• <b>Application:</b> Uncontaminated zones, Zones with chemicals</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 0.6 m, 5-wire, PVC</li> <li>• <b>Application:</b> Uncontaminated zones, Zones with chemicals</li> </ul> | YF2A15-C60VB5XLEAX | 2145570  |
|  | <ul style="list-style-type: none"> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 3 m, 5-wire, PVC</li> <li>• <b>Application:</b> Uncontaminated zones, Zones with chemicals</li> </ul>   | YF2A15-030VB5XLEAX | 2145572  |

## 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.”

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Contacts and other locations –[www.sick.com](http://www.sick.com)