

# Laser Distance Sensor

## Triangulation

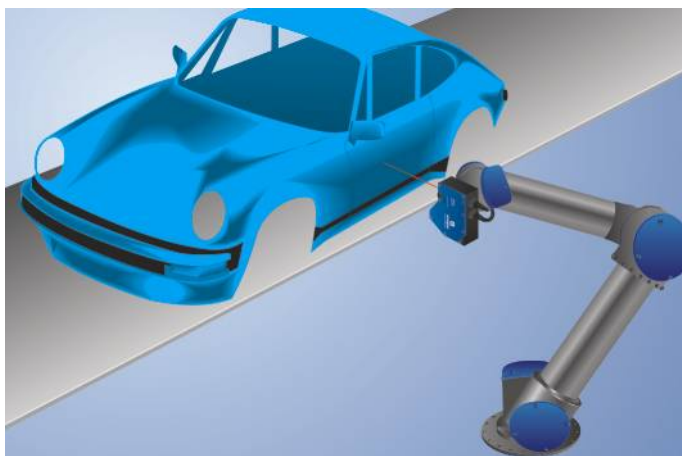
# PNBC007 LASER

Part Number



- **Constant, surface-independent measured values**
- **Highly precise measurement with a maximum linearity deviation of 0.05%**
- **Industry 4.0 compatible thanks to Industrial Ethernet**
- **Thermally stable measured values without any warm-up phase**

Sensors from the PNBC range work with a high resolution CMOS line array and determine distance to the object by means of angular measurement. Top quality optics permit measured values with 16-bit resolution. Thanks to proven algorithms, stable measured values are obtained even for complex surfaces, for example sheet metal with speckle effect. They demonstrate outstanding accuracy with maximum linearity deviation of just 0.05%, and required only a short warm-up phase thanks to minimized temperature drift. Values are read out simultaneously via the analog output and the interface. Up to 4 switching outputs can be taught in externally. An incremental encoder input rounds the product out.



## Technical Data

| Optical Data              |              |
|---------------------------|--------------|
| Working Range             | 250...650 mm |
| Measuring Range           | 400 mm       |
| Resolution                | 6,1 $\mu$ m  |
| Linearity Deviation       | 200 $\mu$ m  |
| Light Source              | Laser (red)  |
| Wavelength                | 658 nm       |
| Service Life (T = +25 °C) | 100000 h     |
| Laser Class (EN 60825-1)  | 2            |
| Max. Ambient Light        | 10000 Lux    |
| Light Spot Diameter       | < 1,2 mm     |

| Electrical Data                             |                 |
|---|-----------------|
| Supply Voltage                              | 15...30 V DC    |
| Current Consumption (U <sub>b</sub> = 24 V) | 280 mA          |
| Switching Frequency                         | 15 kHz          |
| Response Time                               | < 33 $\mu$ s    |
| Output rate                                 | 10...30000 /s   |
| Temperature Drift                           | 0,005 %/K       |
| Temperature Range                           | -10...40 °C     |
| Number of Switching Outputs                 | 4               |
| Switching Output Voltage Drop               | < 1,5 V         |
| Switching Output/Switching Current          | 100 mA          |
| Analog Output                               | 4...20 mA       |
| Short Circuit Protection                    | yes             |
| Reverse Polarity Protection                 | yes             |
| Overload Protection                         | yes             |
| Teach Mode                                  | VT, FT          |
| Interface                                   | Ethernet TCP/IP |
| Baud Rate                                   | 100 Mbit/s      |
| Protection Class                            | III             |
| FDA Accession Number                        | 1620645-000     |

| Mechanical Data             |                               |
|-----------------------------|-------------------------------|
| Setting Method              | Teach-In                      |
| Housing Material            | Aluminum                      |
| Degree of Protection        | IP67                          |
| Connection                  | M12 $\times$ 1; 8-pin         |
| Type of Connection Ethernet | M12 $\times$ 1; 4-pin, D-cod. |
| Optic Cover                 | Glass                         |
| Weight                      | 370 g                         |

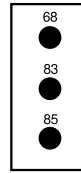
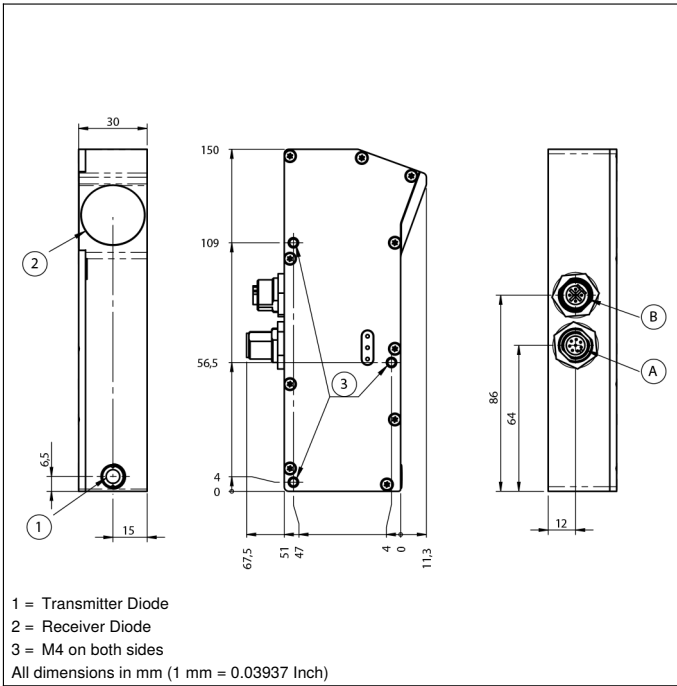
|                   |                    |
|-------------------|--------------------|
| Web server        | yes                |
| Scope of delivery | Calibration report |

|                                   |                                     |
|-----------------------------------|-------------------------------------|
| Push-Pull                         | <input checked="" type="checkbox"/> |
| Connection Diagram No.            | 004   134                           |
| Control Panel No.                 | A16                                 |
| Suitable Connection Equipment No. | 51   89                             |
| Suitable Mounting Technology No.  | 341                                 |

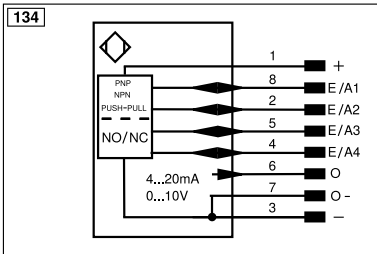
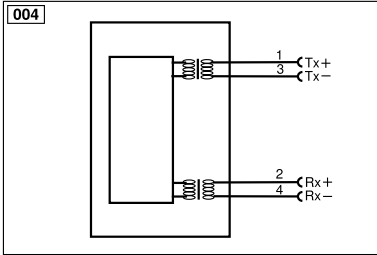
## Complementary Products

|                                    |
|------------------------------------|
| Cooling Unit ZNBK002               |
| Protective Screen Retainer ZNBS006 |
| Software                           |
| Switch ZAC51xN01                   |

## Ctrl. Panel

**A16**


68 = supply voltage indicator  
 83 = Signal  
 85 = Link/Act LED



| Legend    |  |  |                                |
|-----------|--|--|--------------------------------|
| +         | Supply Voltage +                           | nc                                     | Not connected                  |
| -         | Supply Voltage 0 V                         | U                                      | Test Input                     |
| ~         | Supply Voltage (AC Voltage)                | Ü                                      | Test Input inverted            |
| A         | Switching Output (NO)                      | W                                      | Trigger Input                  |
| Ā         | Switching Output (NC)                      | W-                                     | Ground for the Trigger Input   |
| V         | Contamination/Error Output (NO)            | O                                      | Analog Output                  |
| ȳ         | Contamination/Error Output (NC)            | O-                                     | Ground for the Analog Output   |
| E         | Input (analog or digital)                  | BZ                                     | Block Discharge                |
| T         | Teach Input                                | Amv                                    | Valve Output                   |
| Z         | Time Delay (activation)                    | a                                      | Valve Control Output +         |
| S         | Shielding                                  | b                                      | Valve Control Output 0 V       |
| RxD       | Interface Receive Path                     | SY                                     | Synchronization                |
| TxD       | Interface Send Path                        | SY-                                    | Ground for the Synchronization |
| RDY       | Ready                                      | E+                                     | Receiver-Line                  |
| GND       | Ground                                     | S+                                     | Emitter-Line                   |
| CL        | Clock                                      | ±                                      | Grounding                      |
| E/A       | Output/Input programmable                  | SnR                                    | Switching Distance Reduction   |
| IO-Link   |  | Rx+/-                                  | Ethernet Receive Path          |
| PoE       | Power over Ethernet                        | Tx+/-                                  | Ethernet Send Path             |
| IN        | Safety Input                               | Bus                                    | Interfaces-Bus A(+)/B(-)       |
| OSSD      | Safety Output                              | La                                     | Emitted Light disengageable    |
| Signal    | Signal Output                              | Mag                                    | Magnet activation              |
| BI_D+/-   | Ethernet Gigabit bidirect. data line (A-D) | RES                                    | Input confirmation             |
| ENo RS422 | Encoder 0-pulse 0/0 (TTL)                  | EDM                                    | Contactor Monitoring           |
| PT        | Platinum measuring resistor                | ENARs422                               | Encoder A/Ā (TTL)              |
|           |  | ENBrs422                               | Encoder B/B̄ (TTL)             |
|           |  | ENa                                    | Encoder A                      |
|           |  | ENb                                    | Encoder B                      |
|           |  | AMIN                                   | Digital output MIN             |
|           |  | AMAX                                   | Digital output MAX             |
|           |  | Aok                                    | Digital output OK              |
|           |  | SY In                                  | Synchronization In             |
|           |  | SY OUT                                 | Synchronization OUT            |
|           |  | OLT                                    | Brightness output              |
|           |  | M                                      | Maintenance                    |
|           |  | rsv                                    | Reserved                       |
|           |  | Wire Colors according to DIN IEC 60757 |                                |
|           |  | BK                                     | Black                          |
|           |  | BN                                     | Brown                          |
|           |  | RD                                     | Red                            |
|           |  | OG                                     | Orange                         |
|           |  | YE                                     | Yellow                         |
|           |  | GN                                     | Green                          |
|           |  | BU                                     | Blue                           |
|           |  | VT                                     | Violet                         |
|           |  | GY                                     | Grey                           |
|           |  | WH                                     | White                          |
|           |  | PK                                     | Pink                           |
|           |  | GNYE                                   | Green/Yellow                   |