# High-Performance Distance Sensor

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.
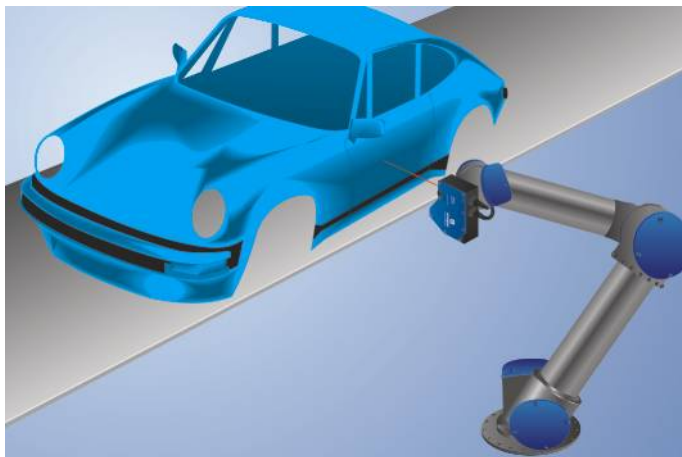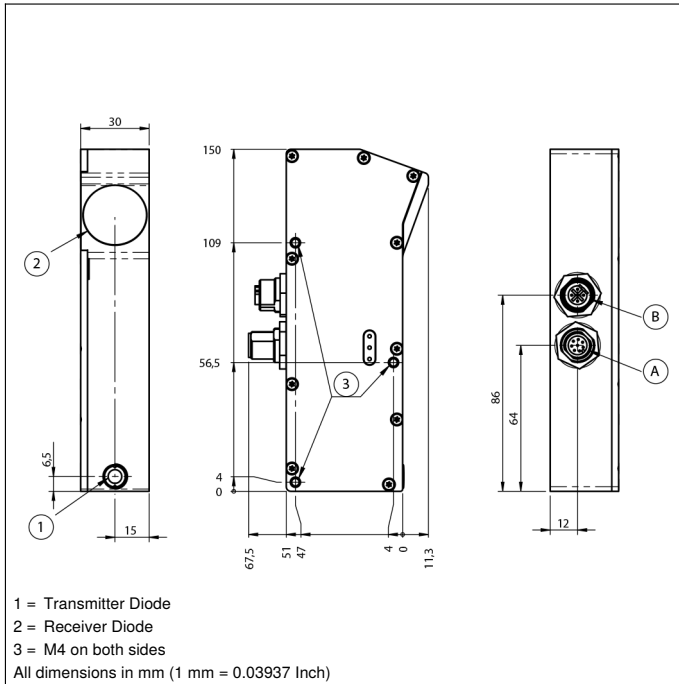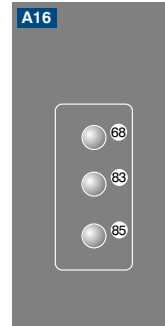

Technical Data

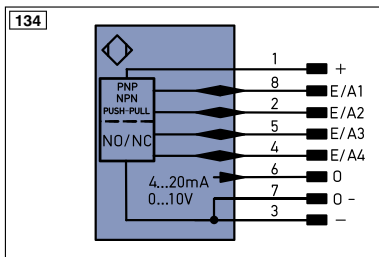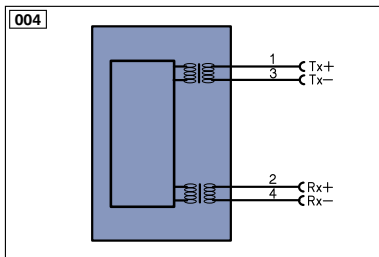| Optical Data	
Working Range	250...650 mm
Measuring Range	400 mm
Resolution	6,1 μm
Linearity Deviation	200 μm
Light Source	Laser (red)
Wavelength	658 nm
Service Life (T = +25 °C)	100000 h
Laser Class (EN 60825-1)	2
Max. Ambient Light	10000 Lux
Light Spot Diameter	< 1,2 mm
Electrical Data	
Supply Voltage	10...30 V DC
Current Consumption (Ub = 24 V)	280 mA
Switching Frequency	15 kHz
Response Time	< 33 μs
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	0...10 V/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 × 1; 8-pin
Type of Connection Ethernet	M12 × 1; 4-pin, D-cod.
Optic Cover	Glass
Weight	370 g
Web server	yes
Scope of delivery	Calibration report
Configurable as PNP/NPN/Push-Pull	●
Switchable to NC/NO	●
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

Dimensional drawing

30
150
109
56,5
86
64
4
0
6,5
15
67,5
51
47
4
0
11,3
12

B
A
2
1
3

1 = Transmitter Diode
2 = Receiver Diode
3 = M4 on both sides
All dimensions in mm (1 mm = 0.03937 Inch)

Ctrl. Panel

A16

68
83
85

68 = Supply Voltage Indicator
83 = Signal
85 = Link/Act LED

004

1	Tx+
3	Tx−
2	Rx+
4	Rx−

134

PNP
NPN
PUSH–PULL
NO/NC
4...20mA
0...10V

1	+
8	E/A1
2	E/A2
5	E/A3
4	E/A4
6	0
7	0 −
3	−

Legend

+	Supply Voltage +	PT	Platinum measuring resistor	EN$_{ARS422}$	Encoder A/Ā (TTL)
−	Supply Voltage 0 V	nc	not connected	EN$_{BRS422}$	Encoder B/B̄ (TTL)
~	Supply Voltage (AC Voltage)	U	Test Input	EN$_A$	Encoder A
A	Switching Output (NO)	Ū	Test Input inverted	EN$_B$	Encoder B
Ā	Switching Output (NC)	W	Trigger Input	A$_{MIN}$	Digital output MIN
V	Contamination/Error Output (NO)	W−	Ground for the Trigger Input	A$_{MAX}$	Digital output MAX
V̄	Contamination/Error Output (NC)	O	Analog Output	A$_{OK}$	Digital output OK
E	Input (analog or digital)	O−	Ground for the Analog Output	SY In	Synchronization In
T	Teach Input	BZ	Block Discharge	SY OUT	Synchronization OUT
Z	Time Delay (activation)	A$_{MV}$	Valve Output	0$_{LT}$	Brightness output
S	Shielding	a	Valve Control Output +	M	Maintenance
RxD	Interface Receive Path	b	Valve Control Output 0 V	rsv	reserved
TxD	Interface Send Path	SY	Synchronization		Wire Colors according to DIN IEC 757
RDY	Ready	SY−	Ground for the Synchronization	BK	Black
GND	Ground	E+	Receiver-Line	BN	Brown
CL	Clock	S+	Emitter-Line	RD	Red
E/A	Output/Input programmable	⏚	Grounding	OG	Orange
⟳	IO-Link	SnR	Switching Distance Reduction	YE	Yellow
PoE	Power over Ethernet	Rx+/−	Ethernet Receive Path	GN	Green
IN	Safety Input	Tx+/−	Ethernet Send Path	BU	Blue
OSSD	Safety Output	Bus	Interfaces-Bus A(+)/B(−)	VT	Violet
Bl_D+/−	Ethernet Gigabit bidirect. data line (A-D)	La	Emitted Light disengageable	GY	Grey
EN0$_{RS422}$	Encoder 0-pulse 0-0̄ (TTL)	Mag	Magnet activation	WH	White
		RES	Input confirmation	PK	Pink
		EDM	Contactor Monitoring	GNYE	Green/Yellow