



Short range distance sensors (displacement) DT20 Hi

DT20-N224B



Model Name > **DT20-N224B**
Part No. > **1044216**



At a glance

- Four measuring ranges from 50 mm up to 1,000 mm
- Very high linearity of up to ± 0.5 mm
- CMOS receiving element enables accurate distance measurement independent of color or shininess
- Red laser
- Scaleable analog and switching output
- Display with easy to use setup menu
- Advanced settings (e.g., averaging function, external laser-off, etc.)

Your benefits

- Reliable, precise measurement, independent of surface, increases production quality
- Reliable and consistent measurements, regardless of color, reduce changeover time
- Advanced settings provide increased application flexibility to easily solve customer-specific applications
- Fast commissioning via button, remote or numerical teach
- Easy, precise alignment and verification based on red laser light and LC display, decreasing commissioning time
- Tough metal housing permits operation in harsh environments



Performance

Measuring range:	100 mm ... 1,000 mm, 6 % ... 90 % remission
Resolution::	1 mm ^{1) 2)}
Repeatability:::	10 mm/5 mm/2.5 mm ^{3) 4) 5) 6)}
Linearity:::	± 6 mm ^{7) 8) 9)}
Response time ¹⁰⁾ :	2,5 ms/10 ms/40 ms
Measuring frequency:	400 Hz
Light source:	Laser, red
Laser protection class:	2 (EN 60825-1)
Typ. light spot size (distance):	6 mm x 12 mm (1000 mm)
Additional function:	Switch-off display, Invertible analog output, Teach-in of analog output, Teach-in of switching output, Set moving average fast/medium/slow, Multifunctional input: laser off, external teach-in, deactivated, Inverted switching output, Switching mode Distance to object (DtO), Lock user interface
Output rate:	< 2.8 ms

1) 3) 6 % ... 90 % remission 2) 6) 9) The models with measuring range of 100 mm ... 1,000 mm meets the specification of the models with measuring range of 100 mm ... 1,000 mm for distances
 < 600 mm 4) 10) Dependent on the set average: fast/medium/slow 5) 8) When calibrated in the application regularly 7) 90 % remission

Interfaces

Multifunctional input ¹⁾ :	1 x MF
Output type ²⁾ :	1 x NPN (100 mA)
Analog output:	1 x 4 mA ... 20 mA ($\leq 300 \Omega$)
Resolution analog output:	12 bit

¹⁾ MF can be used as laser-off, external teach-in or deactivated ²⁾ PNP: HIGH = $V_S - (< 2 V)$ /LOW = $< 2 V$; NPN: HIGH = $< 2 V$ /LOW = V_S

Mechanics/electronics

Connection type:	Connector M12, 5-pin
Supply voltage V_S ¹⁾ :	DC 10 V ... 30 V
Power consumption ²⁾ :	$\leq 1.8 W$
Warm-up time:	$\leq 10 \text{ min}$
Indication:	2 x LED, LC display
Weight:	135 g
Housing material:	Metal housing with PMMA lens
Ripple:	$\leq 5 V_{pp}$ ³⁾

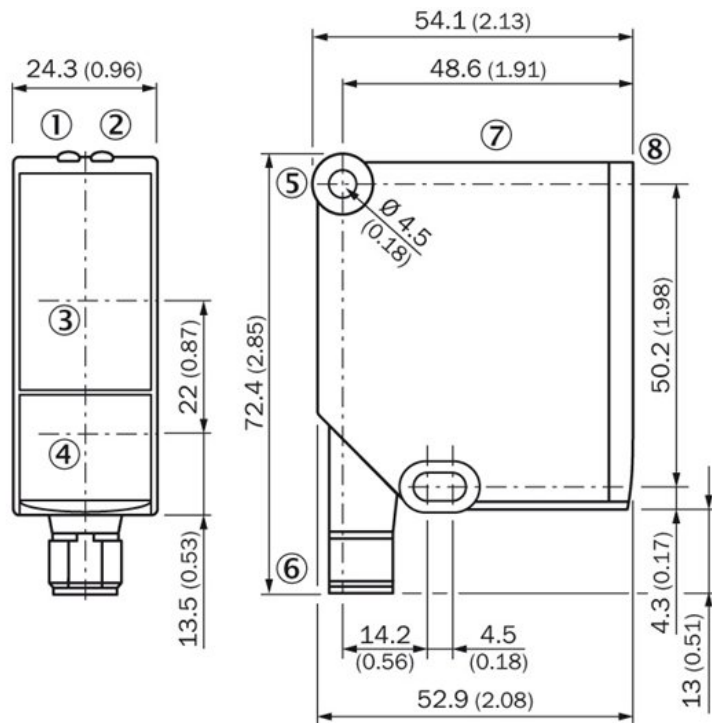
¹⁾ Limit values, reverse-polarity protected, operation in short-circuit protected network, max. 8 A ²⁾ Without load ³⁾ May not fall short of or exceed V_S tolerances

Ambient data

Enclosure rating:	IP 65
Protection class:	II
Ambient temperature:	Operation: $-20 \dots 55 \text{ }^\circ\text{C}$, Storage: $-40 \dots 60 \text{ }^\circ\text{C}$ ¹⁾
Temperature drift:	0.25 mm/K ²⁾
Typ. ambient light safety:	Artificial light: $\leq 3,000 \text{ lx}$ Sunlight: $\leq 10,000 \text{ lx}$
Vibration resistance:	EN 60068-2-6/-2-64
Shock resistance:	EN 60068-2-27

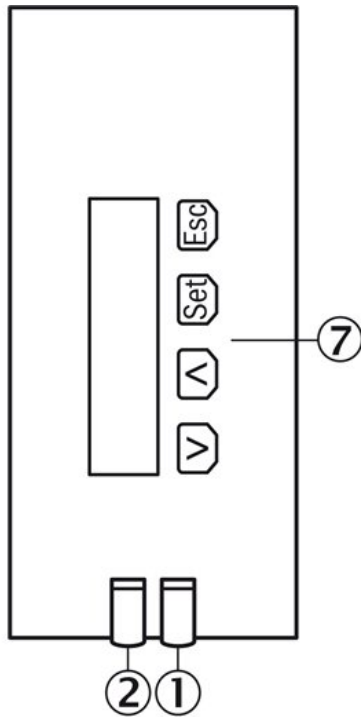
¹⁾ Operating temperature at $V_S = 24 V$ ²⁾ 0.5 mm/K : for distances $> 600 \text{ mm}$

Dimensional drawing



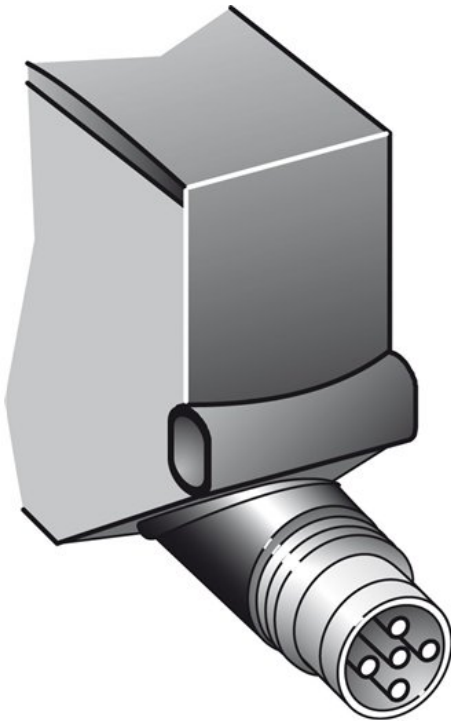
- |1| Status indicator power on (green)
- |2| Status indicator switching output (orange)
- |3| Optical axis, receiver
- |4| Optical axis, sender
- |5| Mounting hole
- |6| Connector M12, 5-pin
- |7| Operating keys and display
- |8| Reference surface = 0 mm

Adjustments

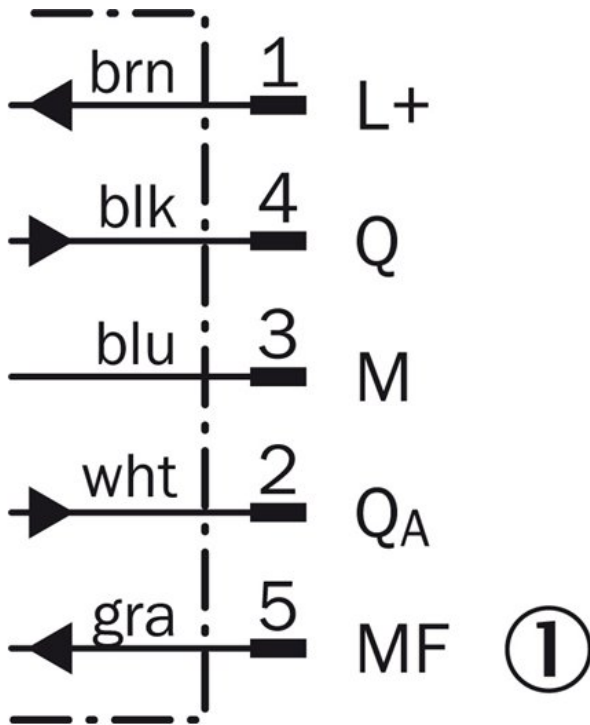


- |1| Status indicator power on (green)
- |2| Status indicator switching output (orange)
- |7| Operating keys and display

Connection type



Connection diagram



[1] Multifunctional input

Einstellung der Tastensperre

Measurement range	Mode	Response time ^{*)}	Reproducibility
50 mm ... 150 mm	Fast	2.5 ms	± 0.5 mm
	Medium	10 ms	± 0.25 mm
	Slow	40 ms	± 0.13 mm
100 mm ... 300 mm	Fast	2.5 ms	± 1 mm
	Medium	10 ms	± 0.5 mm
	Slow	40 ms	± 0.25 mm
100 mm ... 600 mm	Fast	2.5 ms	± 2 mm
	Medium	10 ms	± 1 mm
	Slow	40 ms	± 0.5 mm
100 mm ... 1,000 mm	Fast	2.5 ms	± 5 mm
	Medium	10 ms	± 2.5 mm
	Slow	40 ms	± 1.25 mm

^{*)} Continuous change of distance to object within measurement range.

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