



Short range distance sensors (displacement) DT20 Hi

DT20-P214BS03



Model Name > **DT20-P214BS03**
Part No. > **1051547**



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 ... 600 mm, 6 % ... 90 % remission
Resolution:	0.5 mm ¹⁾
Repeatability::	2 mm/1 mm/0.5 mm ^{2) 3) 4)}
Linearity::	± 2 mm ^{5) 6)}
Response time ⁷⁾ :	5 ms/20 ms/80 ms
Measuring frequency:	200 Hz
Light source:	Laser, red
Laser protection class:	1 (EN 60825-1)
Typ. light spot size (distance):	3 mm x 6 mm (600 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) 2) 6 % ... 90 % remission 3) 7) Dependent on the set average: fast/medium/slow 4) 6) When calibrated in the application regularly 5) 90 % remission

Interfaces

Multifunctional input ¹⁾ :	1 x MF
Output type ²⁾ :	1 x PNP (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⁾

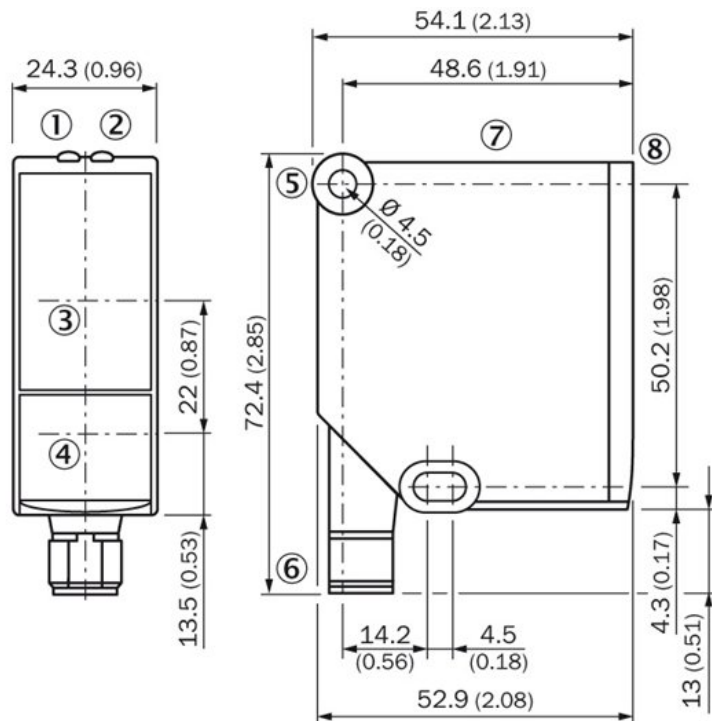
¹⁾ Limit values, reverse-polarity protected, operation in short-circuit protected network, max. 8 A ²⁾ Without load ³⁾ May not fall short of or exceed V_S tolerances

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

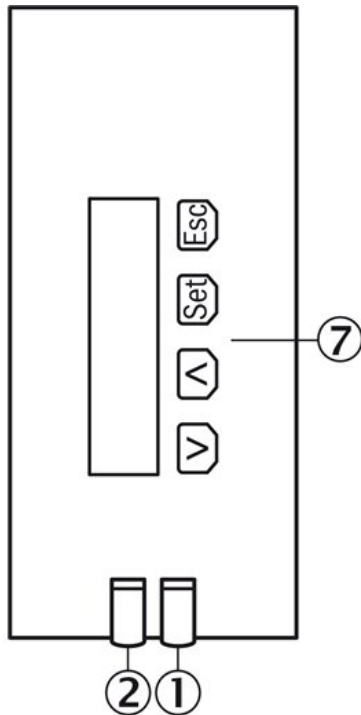
¹⁾ Operating temperature at $V_S = 24 V$ ²⁾ 0.5 mm/K : for distances $> 600 \text{ mm}$

Dimensional drawing



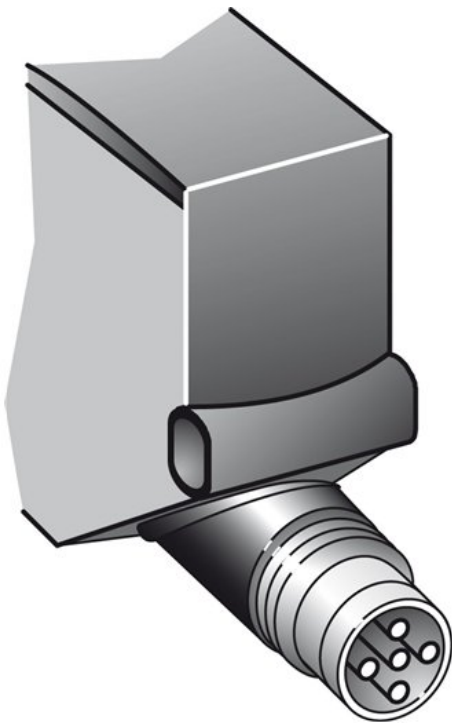
- [1] Status indicator power on (green)
- [2] Status indicator switching output (orange)
- [3] Optical axis, receiver
- [4] Optical axis, sender
- [5] Mounting hole
- [6] Connector M12, 5-pin
- [7] Operating keys and display
- [8] Reference surface = 0 mm

Adjustments

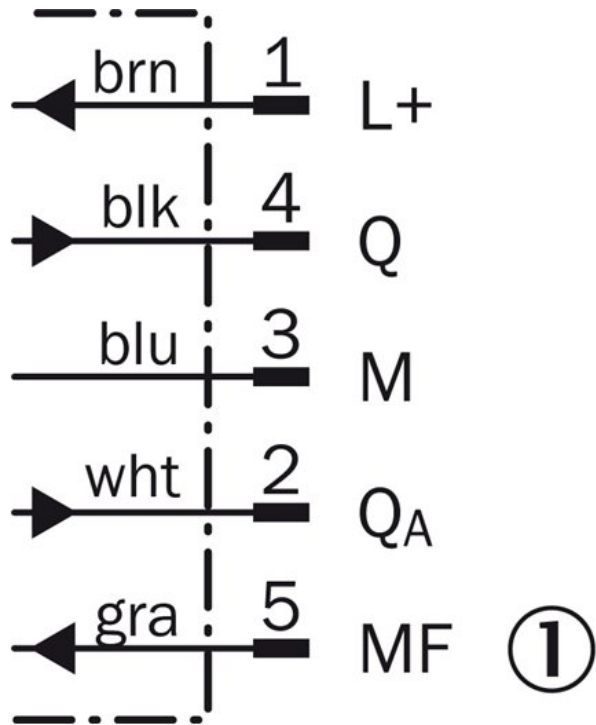


- [1] Status indicator power on (green)
- [2] Status indicator switching output (orange)
- [7] Operating keys and display

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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