



## Short range distance sensors (displacement) DT20

DT20-P130B1070S01

**Model Name** > [DT20-P130B1070S01](#)  
**Part No.** > [1040638](#)

#### At a glance

- Different measuring ranges from 90 mm ... 1,000 mm
- Repeatability up to  $\pm 1.5$  mm
- Infrared sender, which is not visible to the human eye
- Analog and switching output provide distance and out of range information
- Plug and play sensor that is factory-programmed based on customer specifications
- High output rate - distance outputs are provided every millisecond
- Rugged, metal housing

#### Your benefits

- Fast, easy commissioning based on customer-specific presets saves time
- Tamper-proof sensor concept ensures high machine availability
- Inconspicuous and therefore non distracting by use of infrared light
- High ambient light immunity increases machine availability
- Solid, IP 67-rated metal housing permits operation in harsh environments, making the sensor suitable for a wide range of applications



#### Performance

|                                  |                                                                                                        |
|----------------------------------|--------------------------------------------------------------------------------------------------------|
| Measuring range:                 | 100 mm ... 700 mm, 6 % ... 90 % remission <sup>1)</sup>                                                |
| Resolution:                      | 2 mm <sup>2)</sup>                                                                                     |
| Repeatability:                   | 3 mm <sup>3)</sup>                                                                                     |
| Response time:                   | 15 ms                                                                                                  |
| Light source:                    | LED, infrared                                                                                          |
| Typ. light spot size (distance): | 15 mm x 15 mm (at 1 m)                                                                                 |
| Additional function:             | Customer specific scaled measuring range, Plug & Play, Switching output to monitor the measuring range |
| Output rate:                     | 1 ms                                                                                                   |
| Accuracy:                        | $\pm 4$ mm <sup>4) 5)</sup>                                                                            |
| Service life:                    | 100,000 h                                                                                              |

<sup>1) 2) 3) 4)</sup> 6 % ... 90 % remission <sup>5)</sup>  $\pm 4$  mm u to 600 mm;  $\leq \pm 7$  mm for distances larger < 600 mm; refer to accuracy diagram

#### Interfaces

|                             |                                          |
|-----------------------------|------------------------------------------|
| Output type <sup>1)</sup> : | 1 x PNP (100 mA)                         |
| Analog output:              | 1 x 4 mA ... 20 mA ( $\leq 300 \Omega$ ) |

<sup>1)</sup> PNP: HIGH =  $V_S - (< 2 \text{ V})$  / LOW = 0 V

## Mechanics/electronics

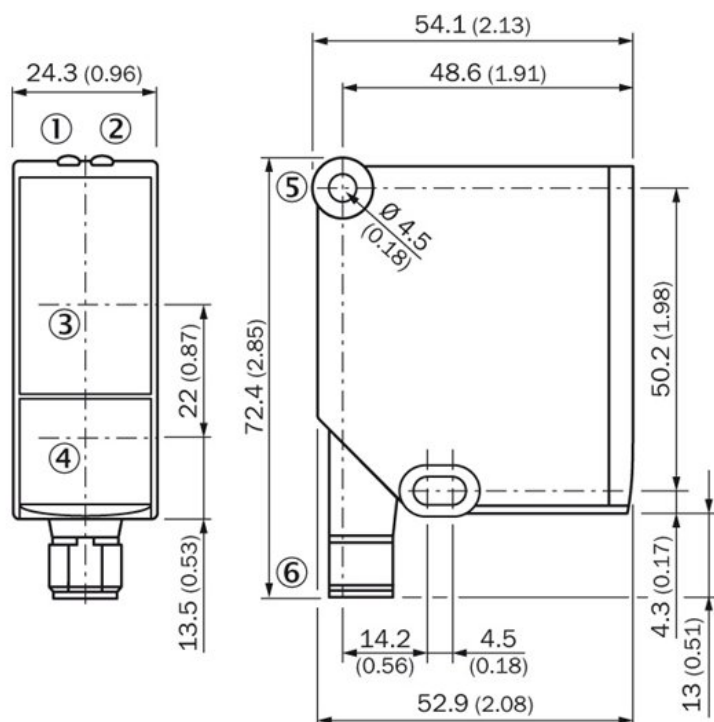
|                                      |                                    |
|--------------------------------------|------------------------------------|
| Connection type:                     | Connector M12, 5-pin               |
| Supply voltage $V_S$ <sup>1)</sup> : | DC 10 V ... 30 V                   |
| Power consumption <sup>2)</sup> :    | $\leq 1.5 \text{ W}$               |
| Warm-up time:                        | $\leq 30 \text{ min}$              |
| Indication:                          | 2 x LED                            |
| Weight:                              | 135 g                              |
| Housing material:                    | Metal                              |
| Initialization time:                 | $\leq 250 \text{ ms}$              |
| Ripple:                              | $\leq 5 \text{ Vpp}$ <sup>3)</sup> |

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

## Ambient data

|                       |                                                  |
|-----------------------|--------------------------------------------------|
| Enclosure rating:     | IP 65                                            |
| Protection class:     | II                                               |
| Ambient temperature:  | Operation: -25 ... 55 °C, Storage: -40 ... 75 °C |
| Temperature drift:    | 0.25 mm/K                                        |
| Vibration resistance: | EN 60068-2-6/-2-64                               |
| Shock resistance:     | EN 60068-2-27                                    |

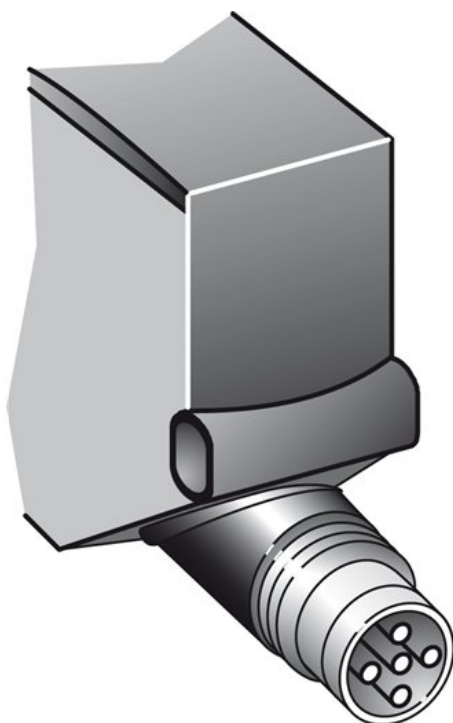
## Dimensional drawing



- [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

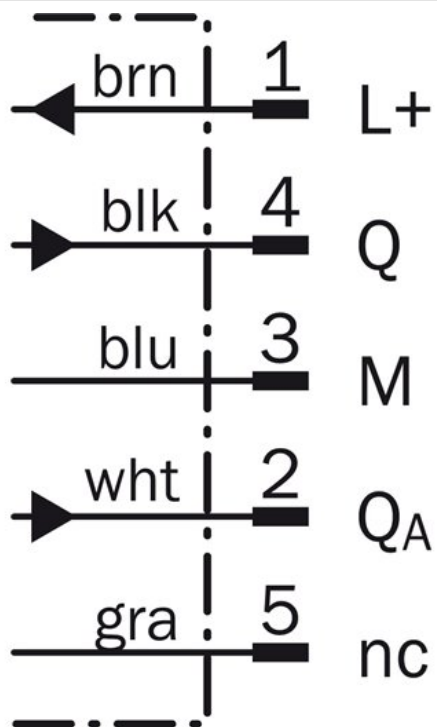
## Connection type

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## Connection diagram

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# Einstellung der Tastensperre

The DT20 can be scaled ex factory for specific measurement ranges based on the type code.

The type code is: „DT20-X130Xbb“. The „bb“ part defines the measurement range as follows:  
**bb** (begin) = distance value chosen by the customer for 4 mA output. The „bb“ value is in cm.  
**ee** (end) = distance value chosen by the customer for 20 mA output. The „ee“ value is in cm.

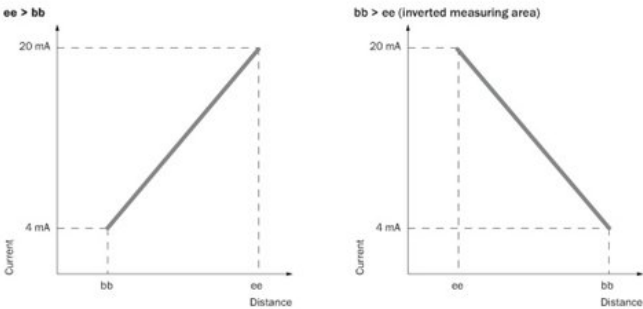
**Measurement ranges**

-90 mm ... 600 mm, any configuration within this range can be chosen. (e.g. 0919, 4060, etc...).  
-100 mm ... 1000 mm, any configuration within this range can be chosen. (e.g. 1070, 7000, etc...).

**Examples**

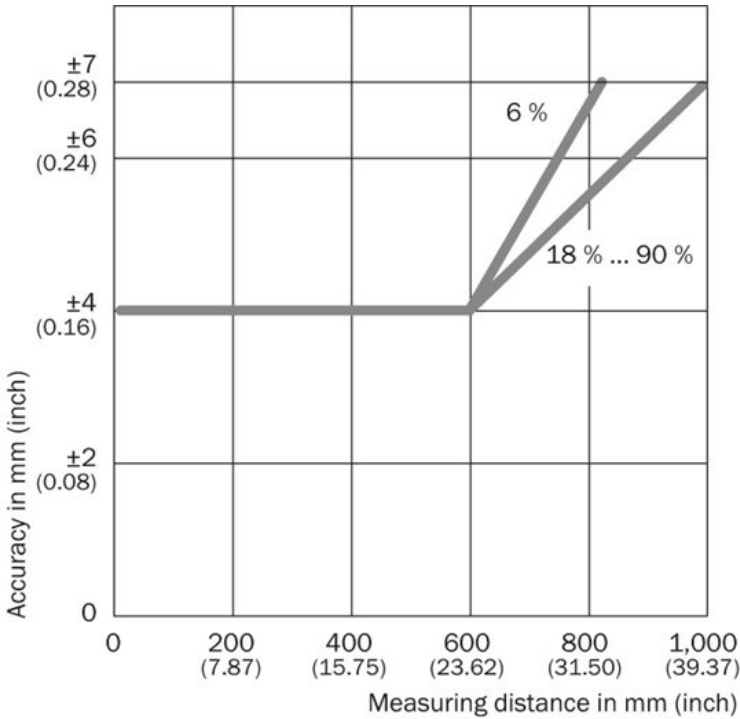
bbee = 0960 = measurement range of sensor: 90 mm ... 600 mm with 4 mA output at 9 cm and 20 mA output at 60 cm.  
bbbe = 7020 = measurement range of sensor: 700 mm ... 200 mm (inverted measurement range).  
Be aware: ee/bb = 00 = 100 cm. (E.g.: bbee = 1000 = measurement range of 100 mm ... 1000 mm).

| Model name     | Description                                                                                               |
|----------------|-----------------------------------------------------------------------------------------------------------|
| DT20-P130B1000 | DT20, switching output PNP, measurement range 100 mm ... 1.000 mm (4 mA ... 20 mA)                        |
| DT20-N130B0990 | DT20, switching output NPN, measurement range 90 mm ... 900 mm (4 mA ... 20 mA)                           |
| DT20-P130B009  | DT20, switching output PNP, measurement range (inverted measuring area) 600 mm ... 90 mm (4 mA ... 20 mA) |



**Please be aware:**  
There is a minimum difference between „bb“ and „ee“ of at least 10 units (100 mm). (e.g. bb = 09 → min. ee = 19)

## Characteristic curve: accuracy



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