

# DC/DC Displacement Sensors

## Series 87350

Code: 87350 EN  
 Delivery: ex stock  
 Warranty: 24 months



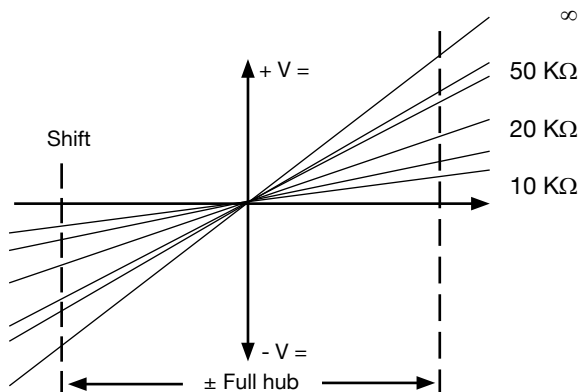
- Ranges 0 ... ± 1.27 mm to 0 ... ± 76.20 mm
- Non-linearity ± 0.5 % F.S.
- Integrated amplifier
- High output voltage
- Free of hysteresis
- Input and output galvanically separated
- Reverse voltage protection

### Application

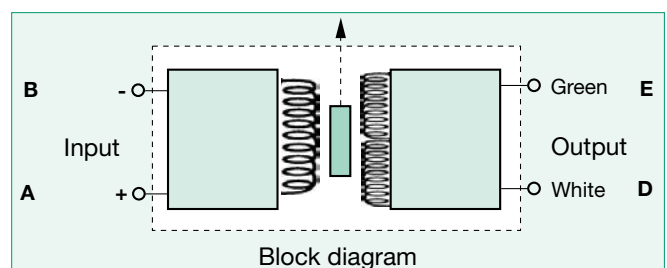
Linear displacements and mechanical values which can be converted to displacements (e.g. compressive and tensile force, strain, torque and vibration) may be measured by these DC/DC displacement sensors. The probe tip of these sensors is pushed onto the measuring object by a spring. This makes it possible to use these sensors where a mechanical modification of the measurement object (mounting hole) is not allowed or difficult. An integrated maintenance-free electronic and a high-level DC output signal provide an easy handling without any problems.

### Description

Sensors of series 87350 generally consist of an oscillator, a demodulator and a transformer with moveable core. They are energized by DC voltage. The oscillator uses this DC voltage to generate the carrier frequency, which is needed for the operation of the sensor. Dependent on the position of the core, which is made of ferromagnetic material, voltages are induced by the two secondary coils of the transformer. These voltages will be demodulated, filtered and switched against each other. The result is, if the core is in its centre position, a 0 V output. Each other position of the core causes a DC voltage on the sensor's output terminal. This output voltage is proportional to the linear deflection of the core. Input and output terminals of these sensors are galvanically separated from each other, a connection to the sensor's housing does not exist.



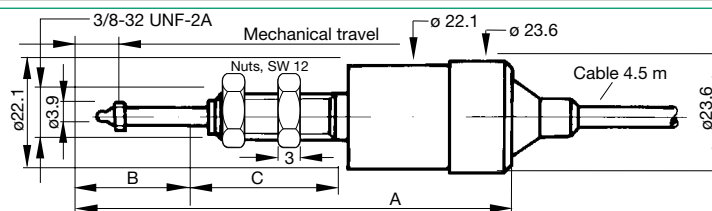
Output voltage as function of the displacement with the impedance as parameter.



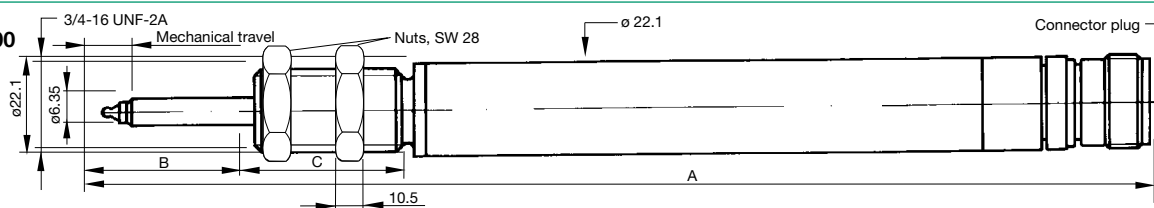
**Technical Data**

| Displacement Sensor                         | Models     | 87350-000 | 87351-000 | 87352-000 | 87353-000 | 87354-000 | 87355-000 | 87356-000 |
|---|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Measurement Range                           | [mm]       | ± 1.27    | ± 2.54    | ± 6.35    | ± 12.70   | ± 25.40   | ± 50.80   | ± 76.20   |
| Max. Deflection of the Probe Tip            | [mm]       | 4.0       | 8.0       | 19.0      | 32.0      | 57.0      | 108.0     | 159.0     |
| Nominal Output Voltage for Measurement      |            |           |           |           |           |           |           |           |
| Excitation Voltage:                         | + 6 VDC    | ± 1.2 V   | ± 2.1 V   | ± 1.6 V   | ± 3.0 V   | ± 4.3 V   | ± 4.0 V   | ± 3.1 V   |
|   | + 15 VDC   | ± 3.0 V   | ± 5.4 V   | ± 4.2 V   | ± 7.5 V   | ± 10.8 V  | ± 10.0 V  | ± 7.8 V   |
|   | + 24 VDC   | ± 5.0 V   | ± 9.0 V   | ± 7.0 V   | ± 12.5 V  | ± 18.0 V  | ± 16.0 V  | ± 13.0 V  |
|   | + 28 VDC   | ± 5.6 V   | ± 10.1 V  | ± 7.9 V   | ± 14.0 V  | ± 20.3 V  | ± 18.7 V  | ± 14.6 V  |
| Internal Carrier Frequency (st.)            | [kHz]      | 13.0      | 12.0      | 3.6       | 3.4       | 3.2       | 1.5       | 1.4       |
| Ripple of Output Voltage                    | [% eff]    | 0.7       | 0.7       | 0.8       | 0.8       | 0.8       | 1.0       | 1.0       |
| Output Resistance                           | [kΩ]       | 2.5       | 3.5       | 5.2       | 5.5       | 5.6       | 5.5       | 5.6       |
| Influence of Temperature                    | [% Rdg./K] | + 0.1     | + 0.1     | - 0.1     | - 0.1     | - 0.1     | - 0.1     | - 0.1     |
| Design Based on Scale Drawing (see Picture) |            | 1         | 1         | 2         | 2         | 2         | 2         | 2         |
| Dimensions:                                 | A [mm]     | 76.5      | 89.4      | 251.0     | 277.0     | 389.0     | 646.0     | 890.0     |
|   | B [mm]     | 10.4      | 14.2      | 36.1      | 36.1      | 61.5      | 121.0     | 172.0     |
|   | B [mm]     | 30.0      | 33.3      | 38.1      | 38.1      | 38.1      | 38.1      | 38.1      |
| Reset Force max.                            | [N]        | 0.6       | 1.7       | 3.1       | 4.2       | 4.8       | 12.7      | 13.6      |
| Natural Frequency of Probe Tip              | [Hz]       | 49.0      | 33.0      | 18.0      | 15.0      | 9.0       | 7.0       | 5.0       |
| Weight                                      | [kg]       | 0.2       | 0.21      | 0.25      | 0.3       | 0.4       | 0.65      | 0.85      |

**Figure 1**  
Models 87350-000 and 87351-000



**Figure 2**  
Models 87352-000 to 87356-000



The CAD drawing (3D/2D) for this sensor can be imported online directly into your CAD system.

Download via [www.burster.com](http://www.burster.com) or directly at [www.traceparts.com](http://www.traceparts.com). For further information about the burster traceparts cooperation refer to data sheet 80-CAD-EN.

**Electrical values**

Excitation voltage: 6.0 V DC/approx. 7 mA to 28 V DC/approx. 48 mA, protected against polarity reversal, refer to table

Output voltage: refer to table

**Environmental conditions**

Operation temperature range: - 50 °C to 90 °C

Influence of temperature to sensitivity: refer to table

**Mechanical values**

Non-linearity: ± 0.5 % F.S.

Resolution: analog signal

Protection class acc. to EN 60529: IP40

**Electrical connection:**

models 87350-000 and 87351-000 color coded, teflon isolated cable with open ends, length approx. 4.5 m  
 models 87352-000 up to 87356-000 5 pin plug-in connection, mating connector model 9947 (included in scope of delivery)

Wiring code: Connector Cable  
 pin A red excitation positive  
 pin B black excitation negative  
 pin D white output\*  
 pin E green output\*\*  
 \*Core outside: negative, inside: positive, with relation to\*\*

**Mounting:**

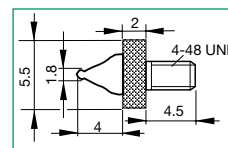
The installation of the sensor is realized with two nuts. These two nuts are included in scope of delivery. Mechanical tensions on the sensor housing caused either by the backmost nut or by any other surrounding parts have to be avoided.

**Order Information**

DC/DC displacement sensor range ± 2.54 mm **Model 87351-000**

**Accessories**

Probe tip with thread 4-48 UNF (included in scope of delivery)



**Model 87350-Z003**

Set of 2 nuts for sensor mounting (included in scope of delivery) for models 87350-000 and 87351-000 **Model 87350-Z001**

for models 87352-000 to 87356-000 **Model 87350-Z002**

**for models 87350-000 and 87351-000:** Connector, 12 pin for burster desktop devices **Model 9941**

Mounting of connector to sensor cable **Order Code 99004**

Mounting of mating connector for model 9163 desktop version **Code 99002**

**for models 87352-000 to 87356-000:** Mating connector 5 pin socket (included in scope of delivery) **Model 9947**

Connection cable, length 3 m, one end open **Model 99547-000A-0160030**

Connection cable to burster desktop devices, length 3 m **Model 9915**

**Manufacturer Calibration Certificate (WKS)**

Standard manufacturer calibration in 20 % increments in raising direction, with or without indicator.



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