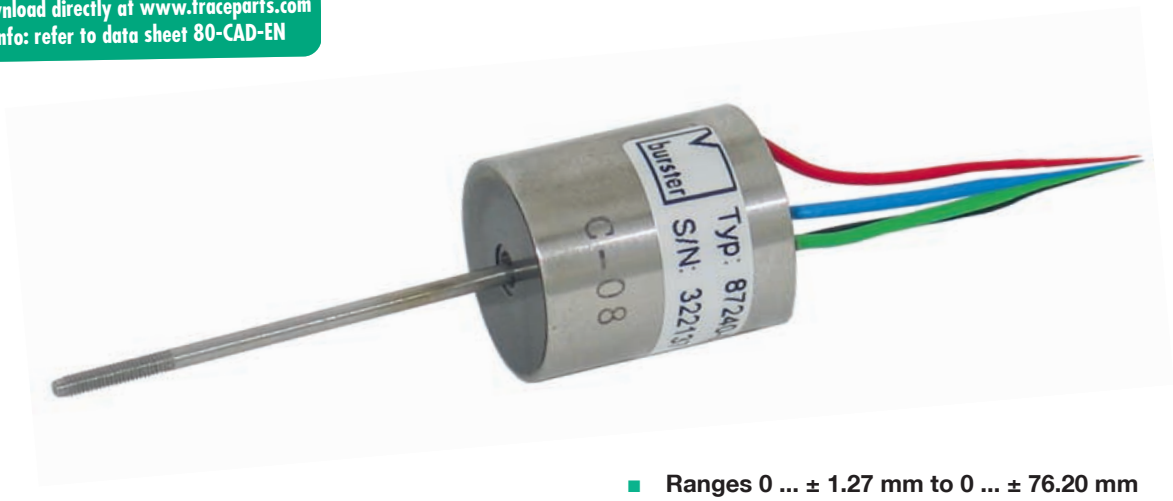
DC/DC Displacement Sensor

Series 87240

Code:	87240 EN
Delivery:	ex stock
Warranty:	24 months

CAD data 2D/3D for this sensor:
Download directly at www.traceparts.com
Info: refer to data sheet 80-CAD-EN

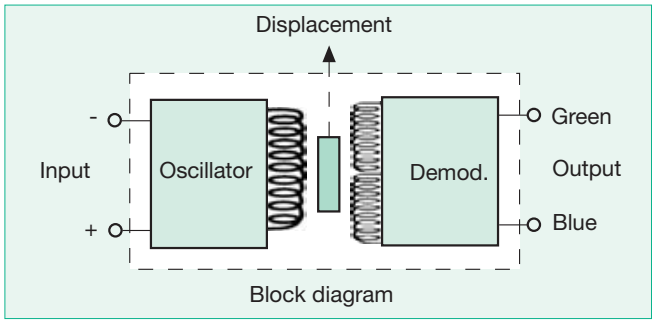


- **Ranges 0 ... ± 1.27 mm to 0 ... ± 76.20 mm**
- **Integrated amplifier**
- **Free of hysteresis**
- **Large temperature range from -50° C ... 120° C**
- **Suitable for operation in hydraulic fluid up to 3 bar**
- **Protection IP64**

87240 EN

Application

Displacement and all mechanical values which can be converted to displacements (e.g. compressive and tensile force, strain, torque and vibration) may be measured by this DC/DC displacement sensor. Typical application areas are the measurement of displacement and strain on machines, servo systems, vehicles, on test plants, in civil engineering and tunnel construction.
An integrated maintenance-free electronic and a high-level DC output signal provide an easy handling without any problems.



Block diagram

Description

Displacement sensors of series 87240 convert a displacement into an analog electrical signal. They consist of a differential transformer with moveable core, an oscillator and a demodulator. These components are integrated and encapsulated in a cylindrical housing made of stainless steel. The sensors are energized by DC voltage, which is converted to AC by the oscillator and brought to the primary coil of differential transformer. The voltages induced by the two secondary windings of the transformer are demodulated, filtered and switched inverse to each other. The result is a 0 V signal, if the core is in the center position.
The direction of an axial core displacement is shown by the polarity of the output voltage. The amplitude of the voltage changes proportional to the magnitude of the core's displacement and respectively to the measured deflection.

In and output terminals of the displacement sensor are galvanically insulated and there is no connection to the housing of the sensor.
The mounting of the DC/DC displacement sensor will be done e.g. by a clip enclosing the sensor's housing. The dynamic unit to be measured should be connected to the core of the sensor. To avoid an influence to the magnetic field and the measured value, coupling elements have to consist of a non magnetizable material like brass, aluminium or non-magnetizable steel.

Technical Data

Displacement Sensor		Models	87240-000	87241-000	87242-000	87243-000	87244-000	87245-000	87246-000
Measurement Range		[mm]	± 1.27	± 2.54	± 6.35	± 12.70	± 25.40	± 50.80	± 76.20
Extended Range		[mm]	± 1.8	± 3.8	± 9.5	± 19.0	± 38.1	± 69.5	± 82.5
Excitation V DC:			Nominal F.S. output (output unloaded)						
	+ 6 V DC		± 1.3 V	± 2.4 V	± 1.8 V	± 3.1 V	± 4.6 V	± 3.9 V	± 3.3 V
	+ 15 V DC		± 3.4 V	± 6.4 V	± 4.8 V	± 8.3 V	± 12.1 V	± 10.2 V	± 8.7 V
	+ 24 V DC		± 5.5 V	± 10.4 V	± 7.8 V	± 13.5 V	± 18.7 V	± 16.5 V	± 14.1 V
	+ 30 V DC		± 7.0 V	± 13.0 V	± 9.7 V	± 17.0 V	± 24.8 V	± 20.7 V	± 17.7 V
Internal Carrier Frequency		[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
Cut-Off Frequency		[Hz]	300	140	115	110	100	110	75
Influence of Temperature		[% Rdg./K]	+ 0.1	+ 0.1	- 0.1	- 0.1	- 0.1	- 0.1	- 0.1
Dimensions:	A	[mm]	22.1	28.4	81.5	94.2	119.6	208.5	267.2
	E	[mm]	8.6	11.7	36.6	42.9	55.6	100.1	129.3
Weight of Sensor		[g]	22	28	70	80	104	180	220
Core Version 1 (Standard Version, see below)		**Models**	**87C04-000**	**87C04-004**	**87C04-010**	**87C04-011**	**87C04-012**	**87C04-013**	**87C04-014**
Dimensions	B	[mm]	14.3	19.1	44.5	47.5	50.8	88.9	88.9
	E	[mm]	62.5	67.3	92.7	108.5	132.1	221.0	302.3
Core Weight		[g]	1.6	2.1	3.4	3.8	4.3	7.0	8.1
Core Version 2 (Optionally, see below)		**Models**	**87C05-002**	**87C05-009**	-	-	-	-	-
Dimensions	B	[mm]	14.3	19.1	-	-	-	-	-
	D	[mm]	continuous	4.8	-	-	-	-	-

Electrical values

Excitation voltage: 6 V DC ... 30 V DC
protected against reverse polarity

Excitation current: 10 mA (at 6 V DC) ... 50 mA (at 30 V DC)

Voltage output: symmetrical to electrical center — refer to table

Resistance: > 100 kΩ

Test voltage: input/output 500 V

Environmental conditions

Operation temperature range: - 50 °C ... 120 °C

Influence of temperature to measurement signal: refer to table

Mechanical values

Non-linearity: measurement range ± 0.5 % F.S
extended range ± 1 % F.S

Resolution: analog signal

Protection class: acc. to EN 60529 IP 64

Electrical connection: 4 teflon insulated wires, length 45 cm, color coded

Wiring code:

red:	excitation	positive	green:	signal output	
black:	excitation	negative	blue:	signal output	
			blue	is positive, if the core is on the side of the connector wires.	

Order Information

DC/DC displacement sensor range ± 1.27 mm **Model 87240-000**

DC/DC displacement sensor range ± 1.27 mm
plug-in connector **Model 87240-000-V001**

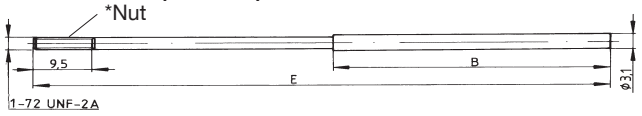
Accessories

1 set (2 pcs) nuts for the rod thread 1-72 UNF-2A
(included in scope of delivery) **Model 87240-Z001**

Amplifiers, process indicators like e.g. model 9163 and model 9243
please refer for product section 9 of catalog.

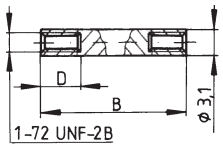
Dimensional drawings

Core version 1 (standard)



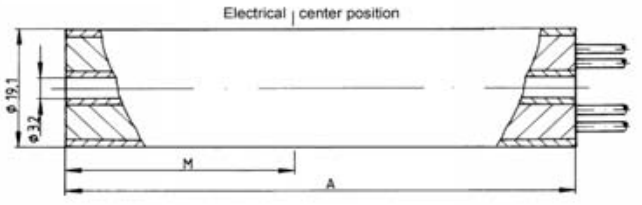
* 2 nuts are included in scope of delivery.

Core version 2 (option for model 87240-000 and 87241-000)



The sensor could be delivered with core version 2 on request, without extra charges.

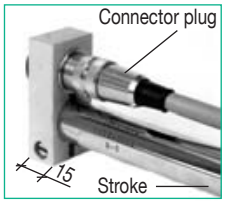
Sensor housing



The CAD drawing (3D/2D) for this sensor can be imported online directly into your CAD system.
Download via www.burster.com or directly at www.traceparts.com. For further information about the burster traceparts cooperation refer to data sheet 80-CAD-EN.

Option

Version with electrical plug-in connector, 5 pin, mating connector model 9991 included **V001**



Manufacturer Calibration Certificate (WKS)

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