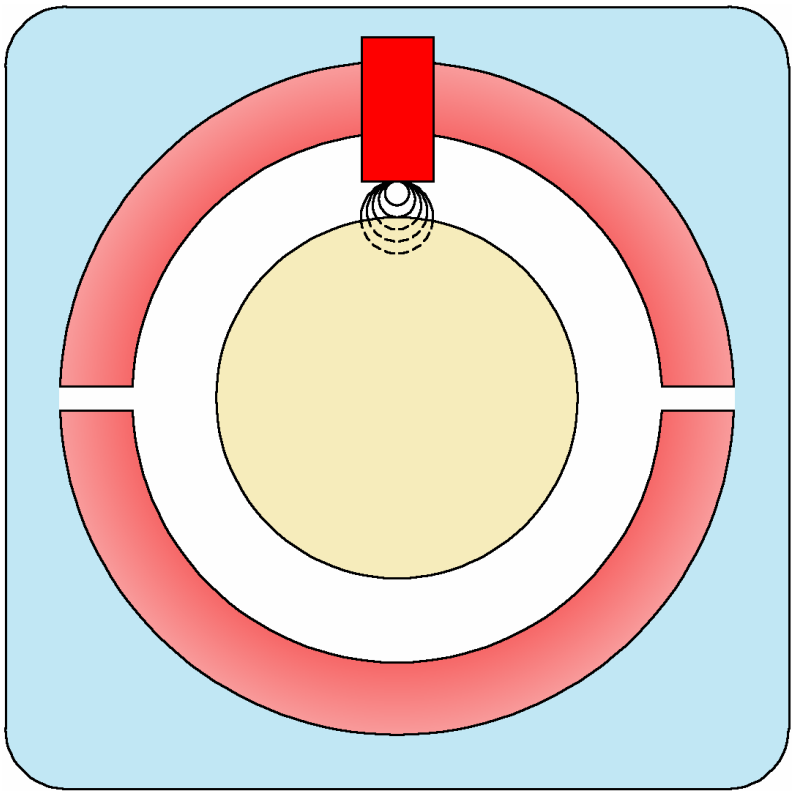
PR 6424/.. series
Eddy current displacement sensor



- **Contactless measurement of static and dynamic shaft displacement e.g.**
  - **Axial and radial shaft displacement**
  - **Shaft eccentricity**
  - **Shaft vibration**
  - **Abrasion of thrust bearings**
  - **Measurement of the oil film - thickness**
- **Meets all industrial requirements**
- **Developed as to the requirements of international standards, e.g. API 670, DIN 45670, ISO 10817-1**
- **Suitable for operating in explosive areas, Eex ib IIC T6/T4**
- **Part of the MMS 3000 and MMS 6000 machine monitoring systems**

Applications:

Measuring systems with eddy current transducers serve the measurement of mechanical quantities, such as shaft vibration and shaft displacement. Applications with such systems can be found in different industrial areas and laboratories.

Due to the contactless measuring principle, small dimensions, a rugged construction and the endurance against aggressive media, this type of sensor is optimally suitable for the use at all kind of turbines.

epro offers a wide range of devices for measuring and monitoring.

Measuring quantities are e.g.:

- Air-gaps between rotating and stationary parts
- Vibrations of machine shafts and housing parts
- Shaft-dynamic and eccentricity
- Deformation and deflection of machine parts
- Axial and radial shaft displacement
- Abrasion and position measurements at thrust bearings
- Thickness of oil film in bearings
- Differential expansion
- Housing expansion
- Valve position

Construction and dimensions of measuring amplifier and relevant sensors apply to international standards, e.g. API 670, DIN 45670 and ISO10817-1.

At connection via safety barriers, sensors and signal converters may also be operated in hazardous areas. The certificate of conformity according to the European standard EN 50014/50020 has been submitted.

epro

Function principle and design:

Together with the signal converter CON 0.. the eddy current sensor forms an electric oscillator whose amplitude is damped by the approach of metallic targets in front of the sensor head.
The damping coefficient is proportional to the distance between transducer and measuring target.
Upon delivery, the sensor could be adjusted to the converter and to the measuring material, thus there is no additional adjustment work necessary for the installation.
Only the initial air-gap between transducer and measuring target must be adjusted to get the correct signal at the output of the converter.

Transducer versions:

To meet all requirements of measuring tasks and environmental conditions, **epro** offers eddy current sensors in several different versions and constructions.
The available sensor versions can be found in the order matrix.

The following standard versions are available ex stock:

PR 6424/000-100
PR 6424/010-100

All other versions have longer delivery times !

Depending on the chosen version, the sensors have got the following characteristics:

- Housing with thread and axial cable outlet
- Connections with self locking, waterproof plugs or open cable ends
- Flexible cable protection
- Adaptor plug at 1 m

Dimensions:

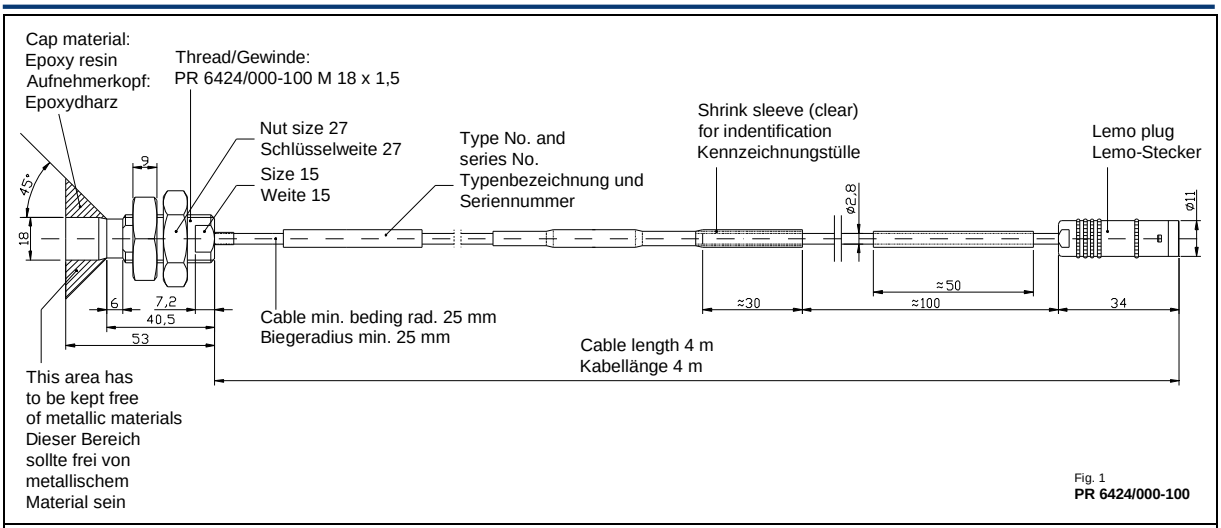


Fig. 1
PR 6424/000-100

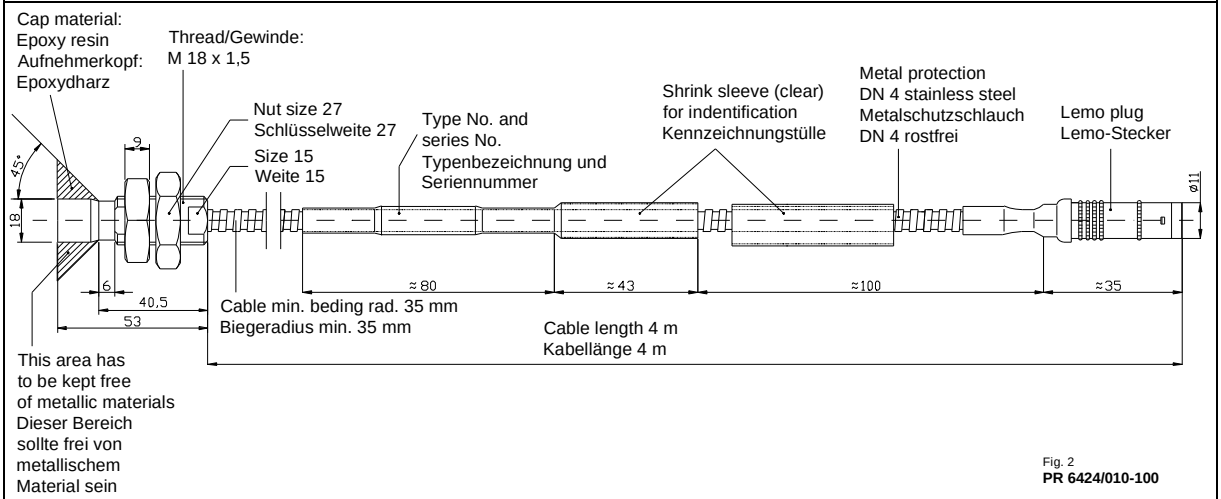


Fig. 2
PR 6424/010-100

Technical data:

If not stated otherwise, the technical data apply to all versions of the PR 6424.

Measuring range:
static: ± 2,0 mm
dynamic: 0...100...1000 µm

Sensitivity:
4 V/mm

Measuring target:
Material:
Electrically conducting steel
Form of the measuring target:
Cylindrical shafts, plain surfaces, measuring collars at machine shafts
Height of the measuring collar on the shaft surface with 1% additional error:
≥40 mm
Peripheral shaft speed:
0...2500 m/s
Shaft diameter:
≥80 mm
Nominal gap (centre of measuring range):
3,0 mm

Measuring error:
In the calibrated condition and in connection with a signal converter CON 0.., the characteristics are related to the f.s.d.
Linearity error:
≤ ±1,5 %
Temperature error:
Zero point: 200 mVs/100 K
Sensitivity:
Long-term drift: 0,3 % max.

Influence of supply voltage:
<20 mV / V

Operating temperature range:
-35...+180°C
short-term:
up to +200 C

Temperature range for storage and transport:
-40...+70°C

Thread of sensor housing:
M18 x 1,5

Housing material:
stainless steel

Endurance to pressure (uniform influence on transducer and cable):
2 bar

Vibration and shock (nominal values at max. 25 °C):
5 g at 60 Hz

Cable length:
PR 6424/000-100;
PR 6424/010-100:
4 m continuous, no plugs

Other cable lengths possible according to order matrix.

Max. cable temperature:
+200°C

Connection of transducers to converters CON 011/CON 021:
Lemo plug
Connection of transducers to converters CON 031 /CON 041:
open cable ends

Direct connection of PR 6423 with Lemo - plug to the following MMS 3000 transmitters:
MMS 3110
MMS 3210
MMS 3311

Cable protection:
PTFE

Weight:
without/with protection tube
net: 0,2/0,3 kg
without/with protection tube
gross: 0,4/0,6 kg

Dimensions:
The dimensions for the standard versions can be found in drawings fig. 1 and fig. 2.

Static output characteristic:

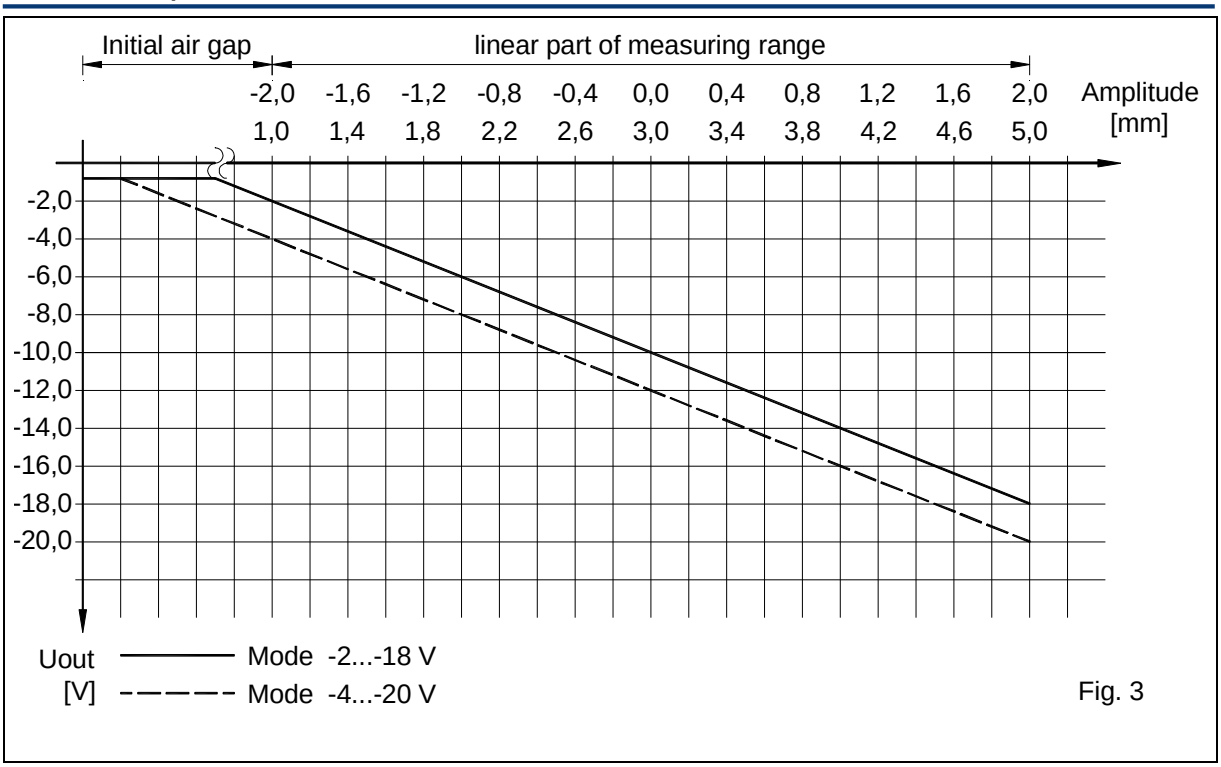


Fig. 3

Order matrix PR 6424:

PR 6424/	X	X	X	-	X	X	X
Sleeve thread:				-			
M18 x 1,5	0						
UNF	1						
Metal protection tube:				-			
without	..	0					
with	..	1					
Sleeve length (+13,0 mm = total length):				-			
40 mm	..	..	0				
50 mm	..	..	1				
60 mm	..	..	2				
70 mm	..	..	3				
80 mm	..	..	4				
90 mm	..	..	5				
100 mm	..	..	6				
110 mm (max. length)	..	..	7				
Adaptor plug at 1 m:				-			
with	..	..	..		0		
without	..	..	..		1		
Total cable length:				-			
4 m	..	..	..		..	0	
5 m	..	..	..		..	1	
6 m	..	..	..		..	2	
8 m	..	..	..		..	3	
10 m	..	..	..		..	4	
Cable end:				-			
Lemo CON plug	..	..	..		..	..	0
open cable end	..	..	..		..	..	1
PR 6424/							

The following standard versions are available ex stock:

PR 6424/000-100
PR 6424/010-100

All other versions have longer delivery times !

To order the desired transducer at epro, please define the relevant order code from the order matrix above.

Further information:

Additional information on the function of transducer and converter are shown in data sheet “Eddy current signal converters”.

The sensors may be operated with converters of type CON 0x1/91 also with extended measuring ranges. Further information on this can be found in data sheet “Eddy current signal converter for extended measuring ranges”.

Jöbkesweg 3 D-48599 Gronau
Tel. +49 (0) 2562/709-245
Fax +49 (0) 2562/709-255

Further Information:
Internet: www.epro.de
E-Mail: info@epro.de

6000 – 00035 01/03 Reh
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