# Eddy Current Displacement Transducer Specifications

The PR 6424 is a non-contact eddy current transducer with a rugged construction and designed for extremely critical turbomachinery applications such as steam, gas, compressor and hydroturbo machinery, blowers and fans.

The purpose of a displacement probe is to measure position or shaft movement without contacting the measured surface – the rotor. In the case of sleeve bearing machines, the shaft is separated from the bearing material by a thin film of oil. The oil acts as a dampener and therefore the vibration and position of the shaft are not transmitted through the bearing to the bearing case.

The use of case vibration sensors is discouraged for monitoring sleeve bearing machines since the vibration produced by shaft motion or position is greatly attenuated through the bearing oil film. The ideal method of monitoring shaft position and motion is by mounting a non-contact eddy sensor through the bearing, or inside the bearing, measuring the shaft motion and position directly.

The PR 6424 is commonly used to measure vibration of machine shafts, eccentricity, thrust (axial displacement), differential expansion, valve position, and air gaps.

- Non-contact measurement of static and dynamic shaft displacement
  - Axial and radial shaft displacement (position)
  - Shaft eccentricity
  - Shaft vibration (motion)
- Meets international standards, DIN 45670, ISO 10817-1 and API 670
- Rated for explosive area, Eex ib IIC T6/T4
- Other displacement sensor selections include PR 6422, PR 6423, PR 6424 and PR 6425
- Select converter, such as CON 011/91, 021/91, 041/91, and cable for complete transducer system

| Technical Data | |
|---|---|
| Measuring range | Static: ±2.0 mm (.08 in)<br>Dynamic: 0 to 1000µm (0 to 40 mil)<br>Best suited for 100 to 1000µm (4 to 40 mil) |
| Sensitivity | 4 V/mm |
| Target | Electrically conducting steel<br>Cylindrical shaft<br>■ On measuring collars, if target surface is less than 40 mm (1.57 in) diameter, then error may be 1% or greater.<br>■ Error negligible when target surface is greater than 40 mm (1.57 in) in diameter.<br>Peripheral speed of shaft: 0 to 2500 m/s<br>Shaft diameter > 80 mm (3.15 in)<br>Nominal gap (center of measuring range): 3.0 mm (.12 in) |
| Measuring error after calibration | < ±1.5% linearity error |
| Temperature error | Zero point: 200 mV / 100˚ K<br>Sensitivity: < 2% / 100˚ K |
| Long term drift | 0.3% max. |
| Influence of supply voltage | < 20 mV/V |
| Operating temperature range | -35 to +180˚ C (-31 to 356˚ F) (short term, up to 5 hours, up to +200˚ C / 392˚ F) |
| Temperature range for storage | -40 to +70˚ C (-40˚ to 158˚ F) |
| Thread of sensor | M18x 1.5 |
| Sensor material | Stainless steel |
| Pressure resistance to sensor head | 10,000 hPa |
| Pressure and differential pressure resistance at cable outlet | on request |
| Vibration and shock nominal values at 25˚ C (77˚ F) | 5 g at 60 Hz |
| Cable length | PR 6424/000-000<br>PR 6424/010-000<br>3m continuous, no separate extension cable |
| Maximum cable temperature | +200˚ C (392˚ F) |
| Connection of transducer to converters | CON 011 and CON 021, Lemo plug<br>CON 041, blunt cut cable for screw terminals |
| Cable protection | Severe and high performance insulation, PTFE |
| Net weight without armored cable | 0.2 kg (.44 lbs) |
| Net weight with armored cable | 0.3 kg (.66 lbs) |
| Gross weight without armored cable | 0.4 kg (.88 lbs) |
| Gross weight with armored cable | 0.6 kg (1.32 lbs) |

# Dimensions:

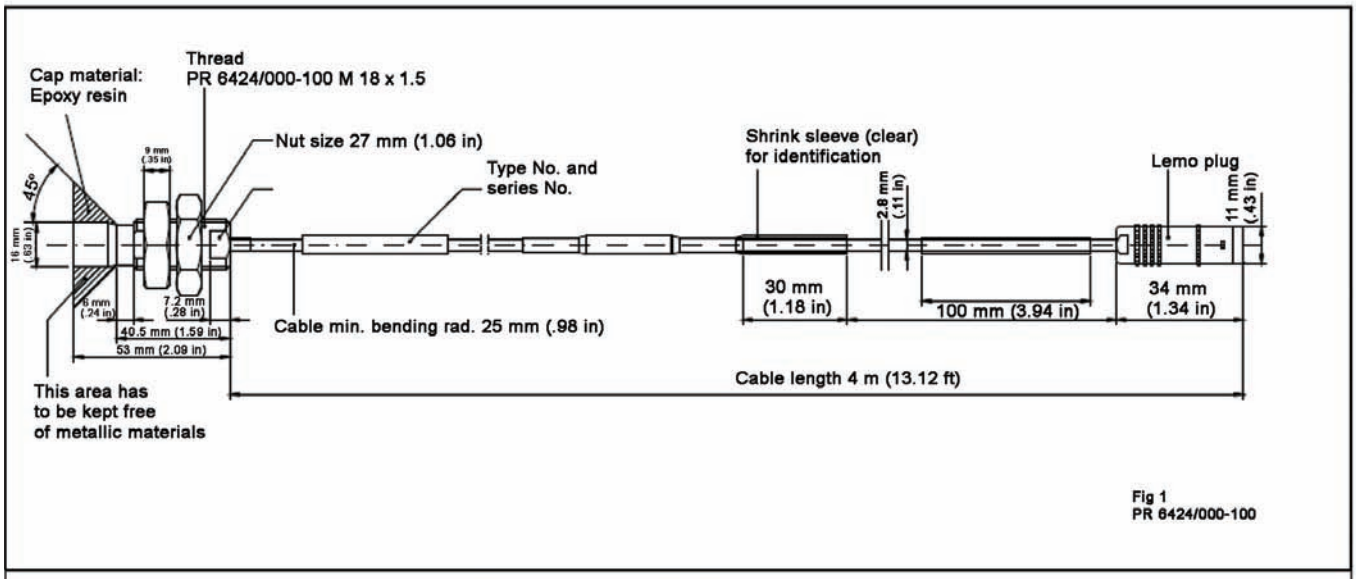


Fig 1
PR 6424/000-100

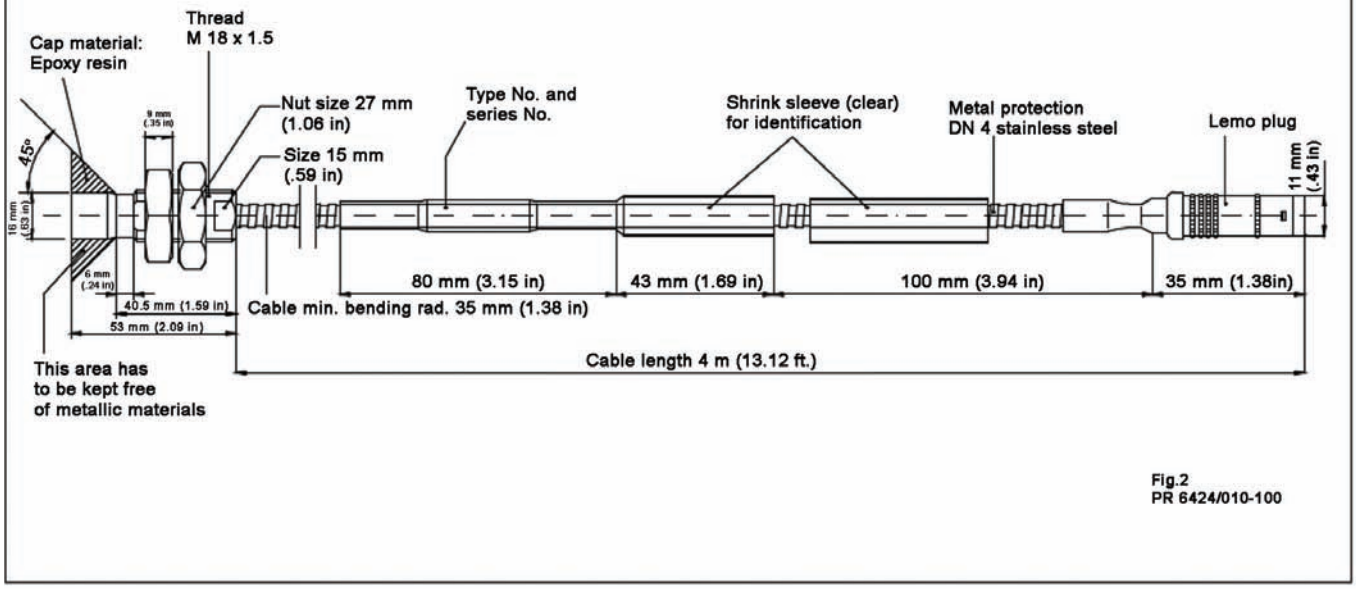


Fig.2
PR 6424/010-100

# Static Output Characteristics:

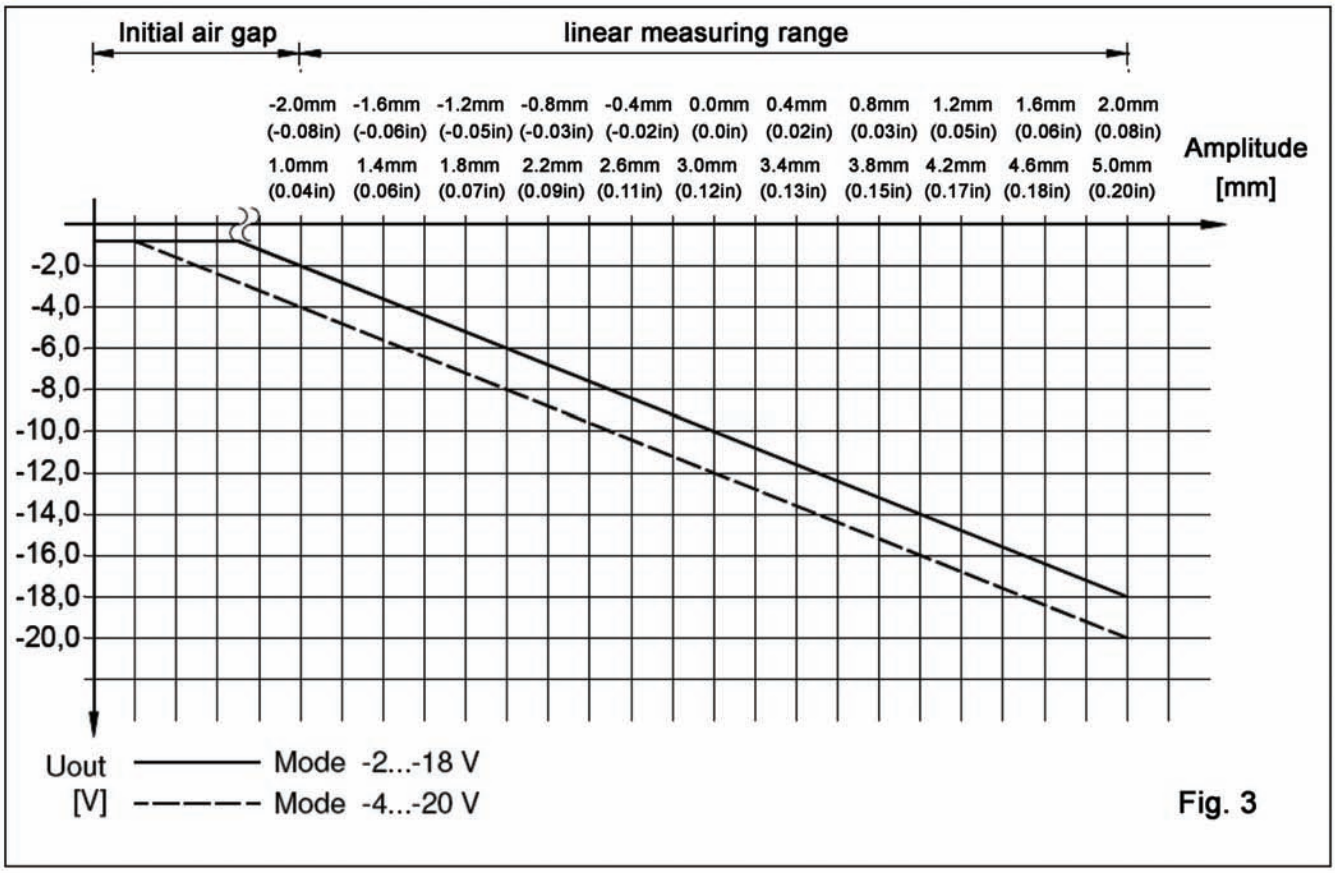


Fig. 3

**Specifications Sheet**
March 2013

# CSI 6500 Machinery Health™ Monitor

## Order Matrix, PR 6424

| | PR 6424 | x | x | x | - | x | x | x |
|---|---|---|---|---|---|---|---|---|
| **Sleeve Thread:** | | | | | | | | |
| M18 x 1.5 | | 0 | | | | | | |
| UNF | | 1 | | | - | | | |
| **Armored cable:** | | | | | | | | |
| Without | | | 0 | | - | | | |
| With | | | 1 | | | | | |
| **Sleeve length (+9.0 mm (.35 in) = total length):** | | | | | | | | |
| 40 mm (1.5 in) | | | | 0 | | | | |
| 50 mm (1.97 in) | | | | 1 | | | | |
| 60 mm (2.36 in) | | | | 2 | | | | |
| 70 mm (2.76 in) | | | | 3 | | | | |
| 80 mm (3.15 in) | | | | 4 | | | | |
| 90 mm (3.54 in) | | | | 5 | | | | |
| 100 mm (3.94 in) | | | | 6 | | | | |
| 110 mm (max. length) (4.33 in) | | | | 7 | | | | |
| **Adapter plug at 1 m (0.4 ft):** | | | | | | 0 | | |
| With | | | | | | 1 | | |
| Without | | | | | | | | |
| **Total cable length:** | | | | | | | | |
| 4 m (3.12 ft) | | | | | | | 0 | |
| 5 m (16.4 ft) | | | | | | | 1 | |
| 6 m (19.69 ft) | | | | | | | 2 | |
| 8 m (26.25 ft) | | | | | | | 3 | |
| 10 m (32.81 ft) | | | | | | | 4 | |
| **Cable end:** | | | | | | | | |
| Lemo connector for converter | | | | | | | | 0 |
| Blunt cut cable end for converter | | | | | | | | 1 |
| | **PR 6424** | | | | - | | | |

## Optional Accessories

Mounting brackets, armored cable, cable exist seals and safety barriers for hazardous or intrinsically-safe areas

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