



# Product Specification

## Air Gap Sensor - EQ 2431-A2

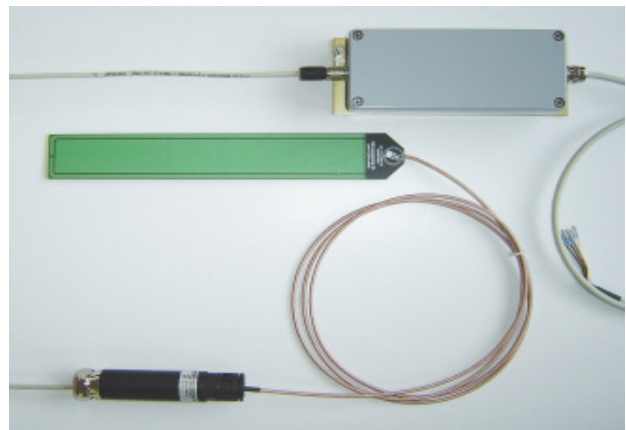
Measuring Range: 15 to 35mm

The EQ 2431-A2 is used for monitoring air gap in large turbogenerators, hydrogenerators and electrical motors for detecting changes in the rotor profile and stator core relative movement. The flat, small size of the sensor makes it easy to install on the stator wall, often without the need to remove rotor poles. The temperature compensated components give excellent accuracy in strong magnetic fields. The sensor is immune to deposits and stator vibrations.

### Description

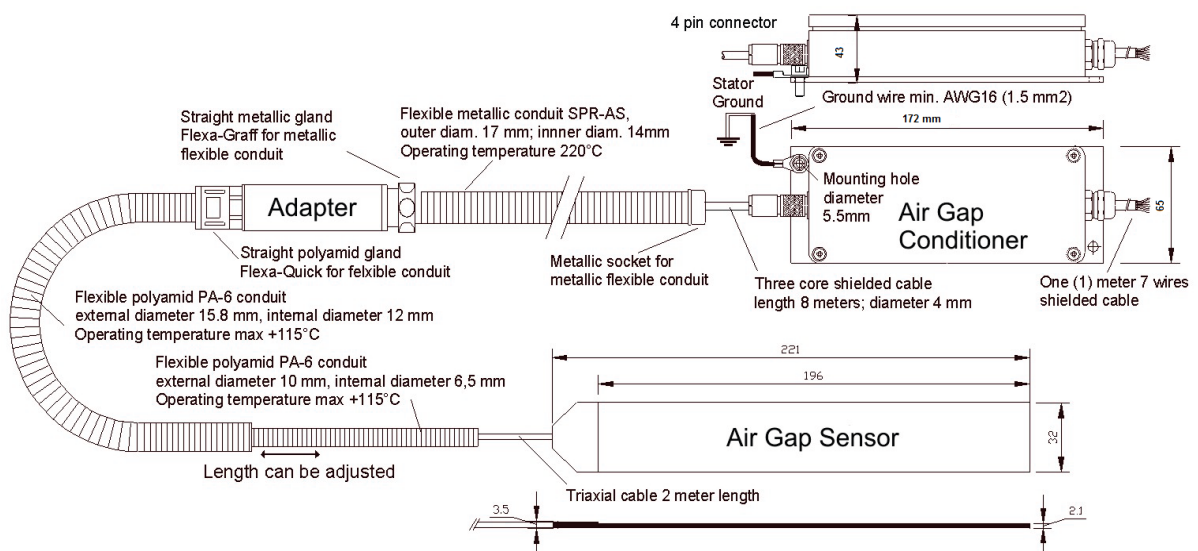
The EQ 2431-A2 Air Gap Sensor is a high accuracy, high linearity and high stability non-contacting measuring transducer system. Thanks to its very low profile design, the sensor can be mounted on the stator wall of generator and electrical motor having an air gap in the range of 15 to 35mm. The stator-mounted sensor measures the distance between its surface and a target using the capacitive measuring principle. This novel transducer design entirely eliminates the influences of signal cable.

The transducer system consists of a sensor with integral flexible triaxial cable of 2m terminated by a small size coaxial connector. The 2m triaxial cable is protected on its entire length by a flexible polyamid conduit plugged to an adapter module terminated by integral three-core shielded cable (8m length) with a 4-pole connector. A flexible metallic conduit protects the signal cable for its entire length.



The conditioner provides two types of output as follows: Pole profile and Minimum gap. Current and voltage outputs are provided for signal transmission.

### Physical Dimensions



## Product Specification – Air Gap Sensor - EQ 2431-2A2

### Specifications

#### Electrical

Linear measuring range..... 15 to 35mm (0.6 to 1.4in.)

#### Outputs

*Output voltage – Pole profile* ..... 2 to 10V  
Sensitivity to distance ..... 0.4V/mm  
Output resistance ..... <100Ω

*Output voltage – Minimum gap*..... 2 to 10V  
Residual ripple ..... Depends on rotor speed  
Linearity of outputs in measuring range .... <2% of reading

*Output current – Pole profile or Min. gap*.....  
Current loop resistance ..... Max 500 ohms  
Temp. coefficient of sensitivity..... Typical 500 ppm/°C  
Output noise (peak) ..... <1% of reading  
Typical frequency response..... (-3dB) 1kHz  
Interchangeability tolerance..... <3% of reading

#### Environmental

Temperature range

*Operation*                      Sensor ..... -15°C to +125°C (+5 to +259°F)  
   Conditioner ..... -15°C to +55°C (+5 to +131°F)

*Non destructive*            Sensor ..... -40°C to +150°C (-40 to +302°F)  
   Conditioner ..... -20°C to +70°C (-5 to +212°F)

Humidity ..... Resistant to 95% RH  
Vibration ..... IEC 68.2.27 standard, 5g peak, 10Hz to 150Hz  
Shock ..... IEC 68 2.27 standard, 15g peak, 11ms  
EMC ..... Probe withstands 1.5Tesla in a 50 or 60Hz magnetic field  
Fluid compatibility ..... Withstand contact with water, oil, solvents, acids without degradation

#### Mechanical

Sensor dimensions ..... 38 W x 263.5 L x 2.1 D mm – 3.5mm at cable entry  
Sensor ..... Cable permanently connected to 2m triaxial cable terminated with a 5mm diameter coaxial connector to plug to adapter module. Delivered with polyamid flexible conduit.

Adapter module ..... Sensor input via coaxial connector and output via shielded three-core cable of 8m terminated with a 4-pole connector diameter 11.5mm. Delivered with 8 meters metallic flexible conduit.

Conditioner module..... Silver painted, color RAL 7001, aluminum case AlSi12 65 W x 172 L x 43 H mm with 3mm anodized mounting plate, stuffing gland and 4-pole input connector

Case protection class ..... IP66, EN60529

#### Power

Voltage..... +24VDC nominal, ±10%  
Current consumption ..... Approx. 125mA

*Brüel & Kjær Vibro reserves the right to change specifications without notice*

**Brüel & Kjær Vibro A/S**  
2850 Nærum – Denmark  
Tel.: +45 7741 2500  
Fax: +45 4580 2937  
E-mail: info@bkvibro.com

**Brüel & Kjær Vibro GmbH**  
65293 Darmstadt – Germany  
Tel.: +49 (0) 6151 428 1100  
Fax: +49 (0) 6151 428 1200  
E-mail: info@bkvibro.de