



Product Specification

Air Gap Sensor - EQ 2431-A

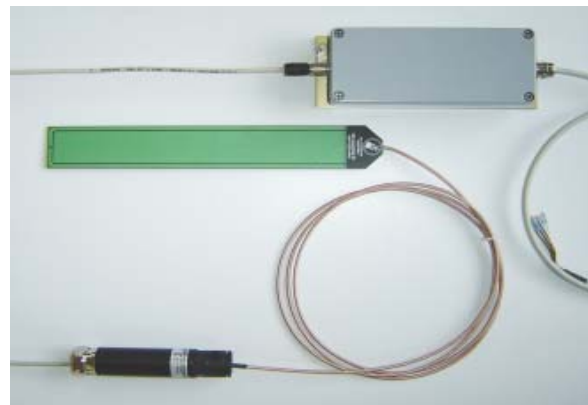
Measuring Range: 5 to 25 mm

The EQ 2431-A 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

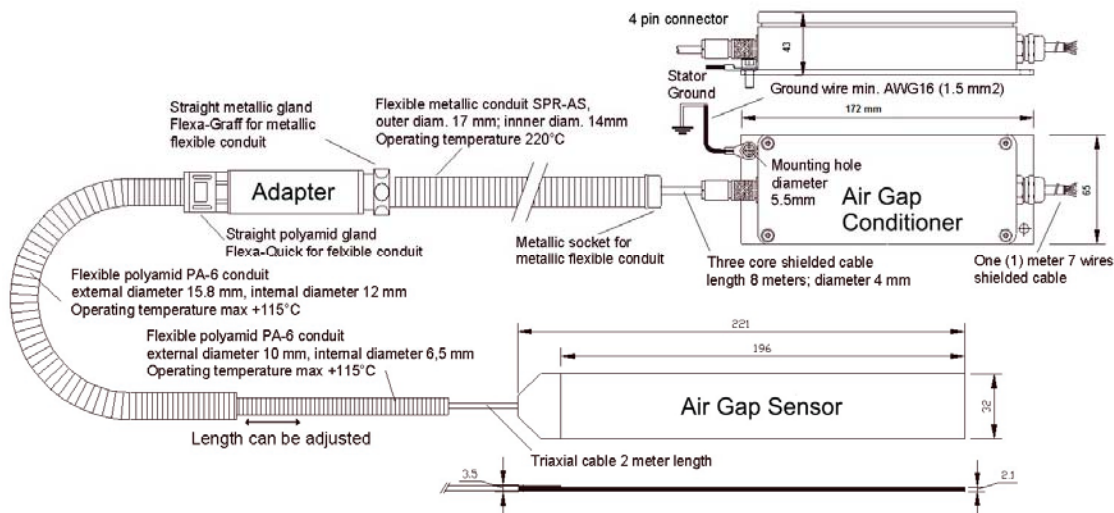
The EQ 2431-A Air Gap Sensor is a high accuracy, high linearity and high stability non-contacting measuring transducer system. Thanks to its very low profile design, the sensor can be mounted on the stator wall of generator and electrical motor having an air gap in the range of 5 to 25 mm. The stator-mounted 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 2 meters terminated by a small size coaxial connector. The 2-meter 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 (8 meters 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



Specifications

Electrical

Linear measuring range	5 to 25mm (0.2 to 1in.)
Outputs	
<i>Output voltage – Pole profile</i>	2 to 10V
Sensitivity to distance	0.4V/mm
Tolerance of sensitivity	±1% at 15mm
Output resistance	<100Ω
<i>Output voltage – Minimum gap</i>	2 to 10V
Sensitivity	0.4V/mm
Residual ripple	Depends on rotor speed
<i>Output current – Pole profile or Min. gap</i>	4 to 20mA, selectable by jumper
Current sensitivity	0.8mA/mm
Tolerance of sensitivity	±1% at 15mm
Linearity of outputs	
8 to 20mm	<2% of reading
5mm and 25mm	<5% of reading
Temp. coefficient of sensitivity	<300 ppm/°C at 15mm
Temp. coefficient at zero	<300 ppm/°C at 15mm
Output noise (peak)	<1% of reading
Typical frequency response	(-3dB) 1kHz
Interchangeability tolerance	Max. ±5% of full scale

Environmental

Temperature range	
<i>Operation</i>	Sensor..... -15°C to +125°C (+5 to +259°F) Conditioner..... -15°C to +55°C (+5 to +131°F)
<i>Non destructive</i>	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	32 W x 220.5 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 AISi12 65 W x 172 L x 43 H mm including 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

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