CAPACITIVE AIR GAP SENSOR - CGS

The **CGS** Capacitive Air Gap sensor is designed for measurements of hydrogenerator air gap. This type of measurement is standard part of power-generating machines monitoring, providing data for complete evaluation of conditions in generator air-gap and dynamical behavior of machines. Air gap monitoring of hydro generators is important because the stator and the rotor geometry can be quite flexible, and their shape and location are significantly influenced by operating conditions (e.g., centrifugal and magnetic forces, thermal effects and structure stiffness failures.)

The **CGS** Capacitive Air Gap sensor is designed to be mounted on stator, consists of air gap sensor/probe (**CGP**), sensor interface unit and linearization module (**CGL**). It is used with **VESKI CoDiS** (Computerized Diagnostic System) and can be included in vibrations, magnetic field and power quality analysis procedures.

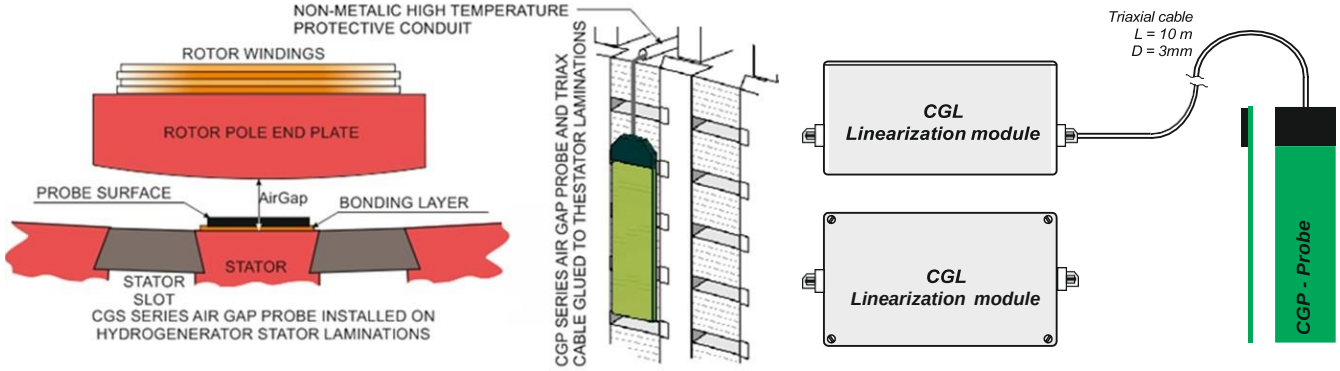
The CGP probe is made from FR4 material and is attached to the stator core bore using an application specific epoxy resin. Linear measurement range of the sensor, depending of the generator air gap, can be from **2–50 mm**.

CGP-03 is also available as **MCGP-03** magnetic mounted probe, perfect for temporarily measurements with CoDiS Portable Monitoring Unit (CoDiS PMU).

The **CGS** Capacitive Gap Sensor kit types:

- CGS020110 - covering the range from 2-10 mm
- CGS020210 - covering the range from 3-15 mm
- CGS020310 - covering the range from 5-25 mm
- CGS020410 - covering the range from 10-50 mm
- CGS020510 - covering the range from 2-10 mm

CAPACITIVE AIR GAP SENSOR LAYOUT



TECHNICAL DATA:

Capacitive Gap Kit type	CGS020110	CGS020210	CGS020310	CGS020410	CGS020510
Capacitive Gap Sensor type	CGP-01	CGP-02	CGP-03	CGP-04	CGP-05
Capacitive Gap Conditioner (Linearization module) type	CGL0201	CGL0202	CGL0203	CGL0204	CGL0205
Measurement type	Capacitive, non-contact distance measurement				
Measuring range, from sensor surface [mm]	2 ... 10	3 ... 15	5 ... 25	10 ... 50	2 ... 10
OUTPUTS					
Output voltage [V]	2 ... 10 (default)				
Output current [mA]	4 ... 20				
Sensitivity [V/mm] [mA/mm]	1 2	0.6667 1.3334	0.4 0.8	0.2 0.4	1 2
Linearity, max [%] of full scale	±3				
Interchangeability,max [%] of full scale	±5				
Typical frequency response (-3dB) [Hz]	1000				
Temperature drift [ppm/°C]	<300				
ENVIRONMENTAL					
Temperature range according to EN 60068-2-1 and EN 60068-2-2					
Operation, sensor	- 10°C ... +125°C (+14°F ... +257°F)				
Operation, conditioner	- 10°C ... +70°C (+14°F ... +158°F)				
Storage, sensor	- 25°C ... +125°C (-13°F ... +257°F)				
Storage, conditioner	- 25°C ... +80°C (-13°F ... +176°F)				
Humidity, noncondensing	95 [%]				
EMC / SHOCK / VIBRATION					
Vibration (EN 60068-2-6)	10Hz - 60Hz / ±0,75 mm; 60Hz - 150Hz / 1g				
Shock (EN 60068-2-27)	10g				
EMC – sensor withstanding magnetic field up to:	2 T, (50/60 Hz)				
EMC Compliance	EN 61326-1: 2013, EN 61000-6-4: 2007 + A1: 2011, EN 61000-6-2: 2005				
DIMENSIONS / WEIHGTS					
Sensor dimensions L x W x H [mm]	80 x 17 x 1	135 x 32 x 1.8 135 x 32 x 3.5* * MCGP-02	230 x 32 x 2.5 230 x 32 x 4* * MCGP-03	250 x 40 x 3.3 250 x 40 x 4.8 * MCGP-04	115 x 14 x 1.5
Preamplifier cable (triax) [m]	1.2	1.2	2		1.2
Shielded extension cable [m]	10				
Conditioner housing + endplate dimensions L x W x H [mm]	175 x 80 x 60				
Conditioner weight [kg]	0.60				
Sensor weight [kg]	0.38	0.41 0.43* * MCGP-02	0.45 0.48* * MCGP-03	0.51 0.55* * MCGP-04	0.39
Protection class	IP66				
POWER SUPPLY					
Voltage [Vdc]	+18 ... +36				
Power consumption [W]	typical 3, maximal 4				
Current consumption [mA]	max 220				
Protection	Auto Reset Fuse				
Warm-up time [min]	15				