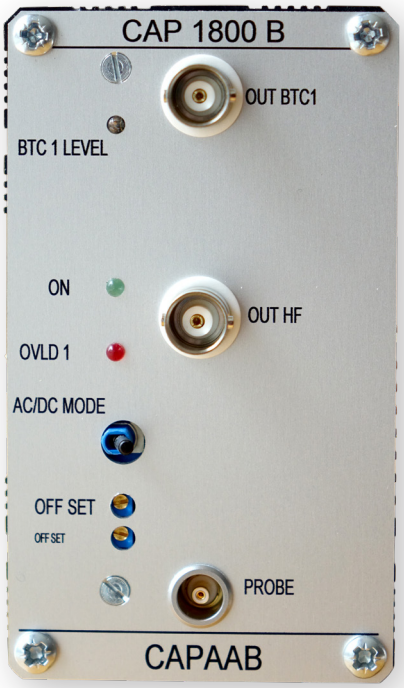
CAP 1800 a/b

Capacitive Conditioner for Pseudo-Triaxial and Triaxial Sensors

The CAP 1800 a/b high-frequency capacitive measurement system is designed for aerospace and aeronautical applications. Developed for use with pseudo-triaxial and triaxial capacitive sensors, it incorporates a range of advanced features that make it a recognized solution in its field.



Unmatched Precision

Benefit from **outstanding measurement accuracy** with a **linearity of ±0.8 %** of full scale and a **dynamic resolution of 50 µm**.

Obtain **reliable measurement results** on applications ranging **from APUs to industrial gas turbines**.

Wide Measurement Range

The CAP 1800 a/b offers **measurement ranges from 0–0.5 mm up to 0–12 mm**, depending on the sensor electrode diameter, providing a **high degree of flexibility**.

This conditioner delivers **reliable and repeatable measurements on both small and large engines**.

Advanced Features

The measurement system incorporates a **range of advanced functions** designed to further enhance **measurement quality**.

Automatic compensation of sensor cable effects, leakage **resistance compensation**, and **adjustable output gain** provide **extensive configuration possibilities** to meet application-specific requirements.

Versatility & Compatibility

The CAP 1800 a/b is **available either as a 19-inch 3U rack-mounted unit (CAP 1800 a)** for easy integration into instrumentation racks, **or as a standalone module (CAP 1800 b)**.

It is **compatible with all pseudo-triaxial and triaxial capacitive sensors** from CAPAAB and its partners, covering **operating temperatures from -270°C to +1300°C**. This makes it suitable for a **wide range of industrial applications, particularly in the aerospace and aeronautical sectors**.

The CAP 1800 a/b is also compatible with the CAPAAB **data acquisition and processing system**, featuring 4 or 8 synchronous channels, 12-bit resolution, and a sampling rate of 10 MSamples/s per channel.

Applications

- Aeronautics
- Aerospace
- Automotive
- Rail
- Energy
- Research / R&D

Technical data

Measurement range	0 to 12 mm	depending on the measurement electrode diameter of the associated triaxial sensor (1)
Linearity	< +/- 0.8 %	of full scale (F.S.) with sensor cable length < 2 metres
Temperature drift (/ °C)	< +/- 0.05 %	of full scale (F.S.)
Maximum frequency range	0 to 220 kHz	typical (-3 dB)
Dynamic resolution at full scale (= F.S.)	50 µm rms	within an analysis bandwidth of 100 Hz to 200 kHz
Measurement output	0 / 10V	linear with capacitance
Static balancing	Automatic	
Compensation	Automatic	Sensor cable effects and sensor losses
Output gain	Adjustable from 1 to 10	Via internal PCB switch

Optional

Online calibration via internal reference capacitor

(1) Pseudo-triaxial sensor: special design.

Packaging

CAP 1800 a : Rack-mounted configuration, up to 7 drawers, 3U format

CAP 1800 b : Standalone module version

Compatibility

CAPAAB and partner pseudo-triaxial and triaxial capacitive sensors (temperature range from -270°C to +1300°C)

CAPAAB data acquisition and processing systems (4 or 8 synchronous channels, 12-bit resolution, 10 MSamples/s per channel)

Capacitive standard probe size

LOW-TEMPERATURE MODELS	Measuring range (mm)	Outer diameter (mm)	Length (mm)
CC2 Capacitive Model	2	6	20
CC5 Capacitive Model	5	15	23
CC8 Capacitive Model	8	24	25
CC12 Capacitive Model	12	36	28

Sensor cable
2 meters
(standard length)

Temperature range
-55 °C to 125 °C

MEDIUM-TEMPERATURE MODELS	Measuring range (mm)	Outer diameter (mm)	Length (mm)
CC4 HTa Capacitive Model	3	12	25
CC5 HTa Capacitive Model	5	15	25
CC8 HTa Capacitive Model	8	25	28
CC10 HTa Capacitive Model	10	30	28

PTFE cable (< 180 °C)
2 mètres
(standard length)

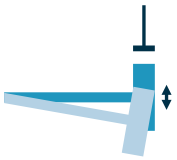
Temperature range
-55 °C to 300 °C

Special design

Temperature range
-270 °C to 1200 °C

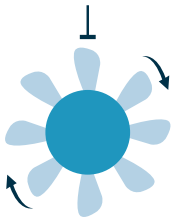
Typical applications

Single-channel measurement



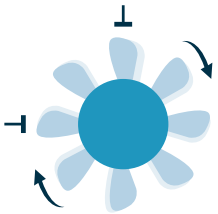
Vibration

Measurement of the oscillations or repetitive movements of an object around a point of rest.



Case to blade tip clearance

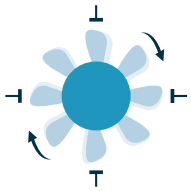
Measuring the clearance between the blades and the housing during rotation.



Blade tip clearance + precession

Measurement of the clearance between the blades and the housing, taking precession (the circular motion of the rotation axis) into account.

Multi-channel



Tip blades orbital movement

Measurement of circular motion at the tips of the blades.