Accessible version (HTML): amperis.com/en/accesible/catalogo-amperis-camara-acustica-en/

Acoustic Camera

Partial discharge · Gas leak · Abnormal noise

112 MEMS microphones, measurement distance up to 200 m and cloud-based artificial intelligence analysis

Acoustic Camera

Detects partial discharge, gas leaks and abnormal noise

amperis

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Locate partial discharges, gas leaks and abnormal noise with a single ultrasonic camera.

Product overview

112-microphone MEMS array and optical camera on the front face

5" touch screen and power / save buttons

One device, three types of anomaly

The camera combines a 112-channel digital MEMS microphone array with an 8 MP optical camera to visually locate partial discharges, gas leaks and abnormal BSR (buzz, squeak, rattle) noise. The effective frequency range runs from 2 kHz to 100 kHz and the measurement distance spans 0.5 to 200 m.

Where it is used

- Inspection of substations and high-voltage switchgear to detect partial discharge.
- Leak location on gas installations and compressed-air networks.
- Diagnosis of abnormal noise in rotating machinery and production lines.

At a glance

- 112 digital MEMS microphones and an integrated 8 MP optical camera.
- 5" touch screen with x2 digital zoom and two auxiliary LEDs.
- Compact 237 x 146 x 56 mm body weighing 1.1 kg, easy to carry.
- Up to 5 hours of operating autonomy.

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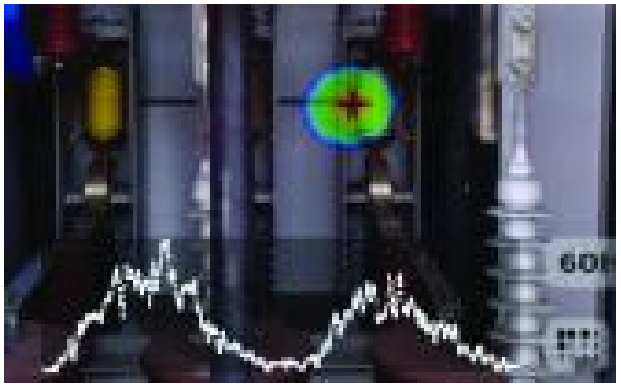
Analysis runs in the cloud and every finding can be placed on a map.

Cloud analysis and mapping of findings



Application example: locating a discharge in a substation

Cloud-based artificial intelligence analysis

Images and acoustic recordings can be sent to a cloud service that applies artificial intelligence to automatically classify partial discharge events from their PRPD (phase resolved partial discharge) pattern, and to estimate the leak flow rate and the annual loss for detected gas leaks.

Geographic map of the findings

The GPS position of each measurement is saved through the mobile application connected over Bluetooth, which lets discharges, leaks or noise sources be placed on a geographic map of the site and be found again on later inspections.

Camera software

- Real-time display of sound sources and sound pressure.
- Selectable measurement mode: single, multiple or full source view.
- Digital zoom and microphone self-test.
- Saves images and video as JPG, MP4 and WAV.

Reports

- Gas leak report, with the estimated flow rate and estimated annual loss.
- Partial discharge report, with the PRPD graph and automatic classification.

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Both a gas leak and an electric arc generate ultrasonic waves above the audible range.

Principle of ultrasound measurement

How the signals are generated

When a gas leak occurs it produces an ultrasonic wave element above the audible frequency; the same type of wave appears when an electric arc occurs. By measuring that ultrasonic element in a noisy environment, the camera determines whether a gas leak or an electric arc has occurred and where it is located.

Detection example

In a reference test, the camera detected a gas leak at a distance of 0.5 m with a flow rate of 51 cc/min (0.85 cc/s) at a pressure of 1.6 bar.

Types of anomaly detected

- Partial discharge.
- Gas leak.
- Abnormal noise.

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Sensor and acoustic measurement

Number and type of microphones	112 channels, digital MEMS microphones
Effective frequency range	2 kHz to 100 kHz
Sampling rate	Not published by the manufacturer
Measurement distance	0.5 to 200 m

Sensitivity (detection threshold) by frequency band

2 kHz	2.34 dB SPL
20 kHz	2.22 dB SPL
40 kHz	1.90 dB SPL
55 kHz	1.22 dB SPL
70 kHz	1.84 dB SPL
100 kHz	20.10 dB SPL

The manufacturer does not publish a single dynamic-range figure in dB; the values above are the detection thresholds it does publish for each frequency band.

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Optical camera and display

Optical camera	8 MP, horizontal field of view 63°, vertical 40°
Image resolution	1024 × 600 px
Frame rate	25 FPS
Digital zoom and auxiliary light	x2 digital zoom; 2 auxiliary LEDs
Display	5" colour LCD, 800 × 480 px, capacitive touch screen
Display brightness	1000 nit, automatic and manual

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Recording, storage and connectivity

Recording formats	JPG, MP4, WAV
Storage	21 GB internal (up to 8400 photos or 20 h of video); recorded in 5-minute clips
Connectivity	USB-C; Bluetooth 5.0
Mobile app	compatible with iOS and Android
GPS location	saved through the mobile app connected over Bluetooth

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Autonomy, dimensions and environmental conditions

Autonomy	up to 5 h of operation
Charging time	up to 4 h
Dimensions	237 × 146 × 56 mm
Weight	1.1 kg
Operating temperature	-20 °C to 50 °C
Protection rating	Not published by the manufacturer
Certifications	KC, CE, FCC

The manufacturer does not publish an IP protection rating for the unit.

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