

Product data

SOUNDCAM ULTRA 3

Ultrasonic camera: powerful, intuitive, versatile



Built-in thermal imaging camera

High sensitivity from 176 microphones with 200 kHz sampling rate

Built-in LEDs for illumination

Ergonomic design and IP54 waterproof

Configurable hardware buttons

Live, on-screen results at 100 acoustic fps

Easy to use thanks to intuitive software



Typical applications

- | | |
|--|----------------------------|
| Compressed air/gas/vacuum leak detection | Wildlife studies |
| Detection of partial discharge | Non-destructive testing |
| Condition monitoring | Mechanical fault detection |

Hardware High-performance

The new **SoundCam Ultra 3** is an ultrasound-capable camera with outstanding performance features. The high number of microphones ensures high-resolution images with very high dynamics. Even weak sound sources can be made visible in the presence of strong sources. Of course, the microphone data is analyzed in real time. Simultaneous data from the optical and thermal imaging camera as well as other sensors ensure optimum information acquisition with very simple and intuitive operation. In addition to the standard mode, which is very easy to operate, and the Pro mode, which is used for very sophisticated analyses, operating modes are implemented for special applications, such as the leakage mode for locating and quantifying leaks in compressed air systems or the partial discharge mode for locating and evaluating partial discharges on high-voltage systems. The SoundCam Ultra 3 is not only a superior measuring instrument, but with the help of a Windows software package it is also a comprehensive tool that takes you all the way to the finished PDF report of your leaks or partial discharges.

The SoundCam Ultra 3 combines ease of use with performance, completes measurement tasks right up to the report and is resource-saving.

- » Extremely high dynamic range and accuracy thanks to the optimized array with 176 microphones and 200 kHz sampling rate at 24 bit resolution
- » Wide frequency range for more sensitive detection and better noise suppression
- » High frame rate of the acoustic video for the detection of transient noise
- » Synchronization between acoustic and optical video for high analysis accuracy
- » Global shutter and high frame rate of the optical video for fast-moving objects or fast movements
- » Simultaneous acquisition and recording of the acoustic, optical and thermal image
- » Very good readability and high color transmission of the display thanks to optical bonding, even in bright sunlight



Hardware

Microphones	Number	176 digital MEMS microphones
	Frequency range	Up to 100 kHz
	Sample rate	200 kHz
	Sound pressure	Max. 120 dB
	Resolution	24 bit
	Beamforming	100 fps
Optical Camera	Resolution	1280 x 800 px at 40 fps
	Aperture angle	74° x 51° (FoV horizontal x vertical)
	Zoom	3x digital
	Shutter	Global shutter
	Illumination	4 LEDs
	Night vision	Optional (external IR illumination required)
Thermal Imaging Camera	Sensor Technology	Uncooled microbolometer
	Spectral Range	Longwave infrared, 8 µm to 14 µm
	Resolution	160 x 120 progressive scan
	Frame Rate	8,7 fps
	Sensitivity	<50 mK (0,050°C)
	T.-Compensation	Automatic
	Measuring Range and Accuracy	-10° to +140°C with +/-5°C or 5% -10° to +400°C with +/-10°C or 10% Larger value is to be applied
	Aperture angle	57° x 44° (FoV horizontal x vertical)
	Temperature unit	Kelvin, Celsius, Fahrenheit
Display	Size	7 inch
	Resolution	1280 x 800 px
	Brightness	Adjustable
	Readability	Excellent through optical bonding
	Touch	Capacitive 10-finger touch
Sensors	GPS	Position
Embedded Controller	Internal memory	1TB M.2 SSD
	OS	Linux
Interfaces	USB A 3.0	Data export
	Ethernet	LAN (for running the PC software)
	Audio	3,5 mm port for headphones
	USB C	Charging and data export
Physical Properties	Dimensions	31 x 16 x 5,5 cm (12,2 x 6,3 x 2,2 inch)
	Weight	1,5 kg (3,3 lb)
	Protection class	IP54 waterproof
	Operation	Two-, one-handed, shoulder strap, tripod
	Battery life	10 h (3,5 h (built-in) + 6,5 h (external))
	Bat. charging time	1,5 h (built-in) und 4 h (external)
	Tripod socket	1/4 inch
	Buttons	8 configurable + on/off switch
	Operating temp	-20°C to 50°C (-4°F to 122°F)
	Charging temp	0°C to 45°C (32°F to 113°F)
	Storage temp	-30°C to 60°C (-22°F to 140°F)
	Power	Built-in battery
External battery		Li-ion-battery(88 Wh;6150 mAh at 14,4 V)
Input		20 V via USB C (charger min. 45W)
Consumption		Normal power consumption 12 W

Software Comprehensive and intuitive

The software of the new **SoundCam Ultra 3** is intuitive and very easy to use. The structured user interface starts directly with the most important menus and very useful measurement modes for fast and efficient work. At the touch of a button, the Ultra 3 starts the measurement and finds the acoustic source very quickly. The measurement modes have preset parameters so that any user can carry out the measurements without prior knowledge. Important information such as the leakage loss or the PRPD diagram are displayed in the corresponding mode. The file manager is the perfect interface between Ultra 3 and the PC. The measurement data can be analyzed and evaluated using identical software on the PC. An evaluation and documentation software for the leakages and partial discharges creates a meaningful report in the shortest possible time. The software package for the Ultra 3 is extremely high-performance, user-friendly and inclusive. There are no extra costs or running costs.

- » Four modes with preset parameters: Standard, Pro, Leakage and Partial discharge
- » Live, on-screen results at 100 acoustic fps
- » Three acoustic scaling modes
 - » Smart: Suppression of background noise
 - » Auto: Dynamic scaling
 - » Manual: Comparison with a reference level
- » Creation of measurement profiles to be able to carry out recurring measurements with the same settings
- » Pinpoint listen-in including making ultrasound audible
- » Trigger function for automated recording when a level or frequency curve is exceeded
- » Create measurement series
- » Create photos and videos



Software

Modes **Standard:** Simplified mode for a quick start

Pro: Expert mode with extended range of functions

Leak: Optimized mode for the detection of leaks including **real-time display of the loss rate**

Partial Discharge: Optimized mode for PD detection including **real-time display of the PRPD diagram**

Network: Remote control of the device via the Windows software

Functions **Local and global spectrum** (narrowband, 1/3rd octaves and octaves), **spectrogram**, acoustic, optical and thermal image

Setting the distance

Frequency filter (narrow band, 1/3rd octaves and octaves)

3 acoustic scaling modes: Smart, Auto, Manual

Pinpoint listen-in (broadband or frequency-filtered) incl. making ultrasound audible

Screenshot with comment option

Playback in real time, slow motion or frame by frame

Marking of events

Adjustment of window sizes

Project-based work via measurement series

Creation and management of **measurement profiles**

Time weighting: fast, slow, impulse

File manager for copying, moving, deleting, exporting and viewing files

Recording **Ring buffer:** 10 s, 30 s, 60 s or 180 s (Windows only)

Trigger recording: SPL- or frequency-triggered up to 10 s with pre-run plus post-run time

Long-term measurement: One image (average and peak hold) every 20 s to 900 s (adjustable)

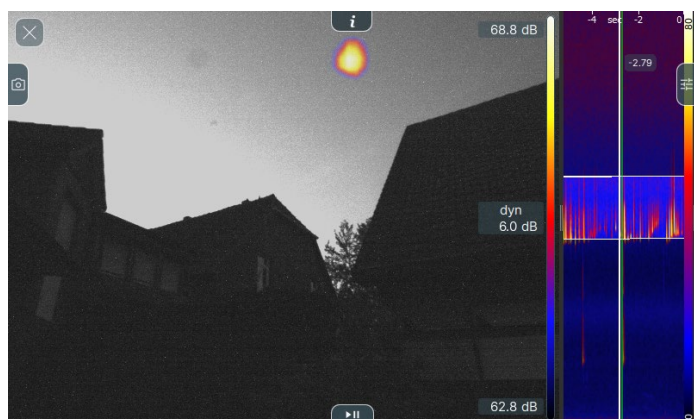
Export Photo, video, audio, measurement data

Units Metric or imperial system

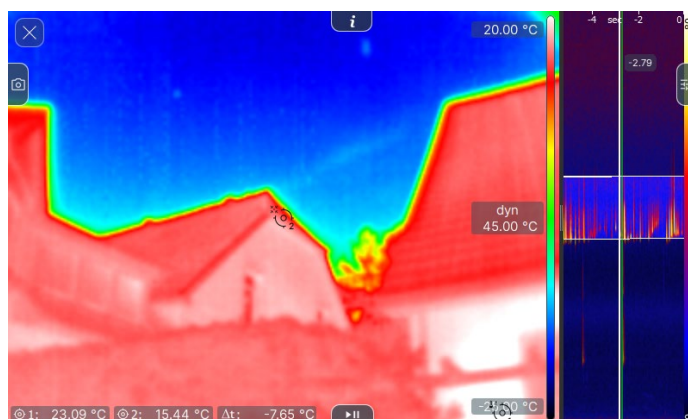
Languages German, English, Spanish, Croatian, Italian, Japanese, Korean, Polish, Turkish, Chinese

OS Linux (for the device), Windows (for laptop/PC)

Protection Password protection against unauthorized access



Bat observation at night:
Locating a bat via vocalization.



Bat observation at night:
Two bats can be seen in the thermal image.

Application Pinpointing compressed air leaks

The simple transfer of the measurement data from the device to the PC via a USB stick allows the measurements to be analyzed and evaluated quickly. The evaluation and documentation software for compressed air leaks generates a meaningful report in the shortest possible time. All relevant data are presented clearly and efficiently with images, diagrams and tables.

- » Detection of leaks from a great distance, even during ongoing, noisy production
- » Large-area scanning saves a lot of time compared to other leak detection methods
- » Live, on-screen display of losses for immediate assessment
- » Easy to operate without prior knowledge thanks to the leakage mode
- » The Windows software LeakReport displays all detected leaks, classifies them by size and summarizes them in a report



Choose measurement data

Analyze measurements

Create report

List of all leaks

Result for all leaks

Location of the leak

Leak details

The screenshot shows the LeakReport software interface. It includes a 'Path to measurement folder' field with a file explorer icon, a 'Files to analyse' count of 32, and buttons for 'Start Analysis' and 'Start Report'. The interface is divided into sections for 'Location of the leak' (showing a video feed and leak details like ID, Priority, Date, Machine, Component, Leak rate, Level, Pressure, Gas type, and Comment) and 'Leak details' (showing a video feed and leak details for a specific leak). The 'Result' section displays a summary of measurements, overall leakage, overall costs, and emission.

Get a detailed report quickly and easily in three steps: select measurement files, start analysis, generate report

Cover page

Classification of leaks by number and severity

Savings and savings potential

Detailed view of the leaks

The collage shows various pages from the LeakReport software. The cover page includes the CAE logo, report title 'LEAKREPORT', date '27.05.2024', and a summary of measurements. The 'Classification of leaks by number and severity' page shows a table of leaks categorized by class (Class 1 to Class 4) and a pie chart showing the distribution. The 'Savings and savings potential' page shows a table of savings potential and a pie chart showing the distribution. The 'Detailed view of the leaks' page shows a detailed view of a specific leak, including a video feed, leak details, and a table of measurements.

The pie charts in the report provide a quick overview of the number of leaks found, the loss and possible savings.

Application Detection of partial discharges

The simple transfer of the measurement data from the device to the PC via a USB stick allows the measurements to be analyzed and evaluated quickly. The evaluation and documentation software for partial discharges generates a meaningful report in the shortest possible time. All relevant data are presented clearly and efficiently with images, diagrams and tables.

- » Detection from a great distance, even in noisy surroundings
- » Large-area scanning saves a lot of time compared to other partial discharge measurement methods
- » Low effort thanks to contactless measurement
- » Live, on-screen display of the PRPD diagram for immediate assessment
- » Easy to operate without prior knowledge thanks to PD mode
- » The Windows software PDReport displays all detected partial discharges, categorizes them by type and summarizes them in a report
- » GPS for clear identification of the system



Choose measurement data

Analyze measurements

Overview of the partial discharge

Create report

Localization of the partial discharge

List of all partial discharges

PRPD diagram and classification of the partial discharge

Get a detailed report quickly and easily in three steps: select measurement files, start analysis, generate report

The pie charts in the report provide a quick overview of the number of partial discharges found and their classification.

Performance Well thought out to the last detail

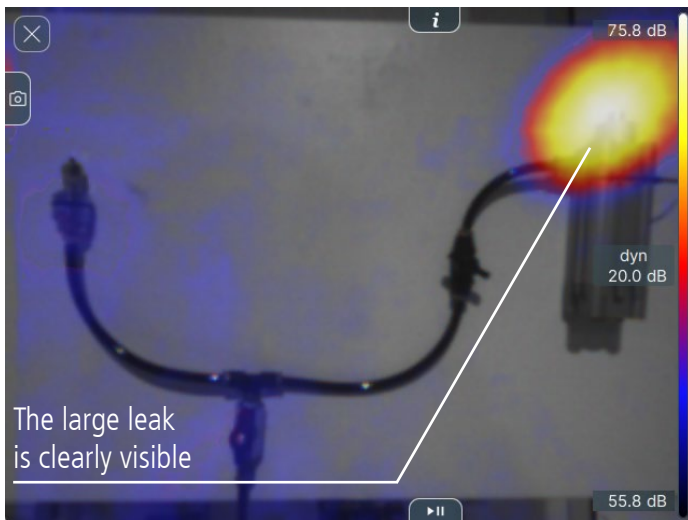


- » Very high sensitivity and dynamic range thanks to 176 microphones with 200 kHz sampling rate at 24 bit resolution
- » Live, on-screen results at 100 acoustic fps
- » Precise synchronization between acoustic and optical video for high analysis accuracy
- » Built-in thermal imaging camera and GPS
- » High-resolution display with 1280 x 800 px and very good readability and high color transmission thanks to optical bonding

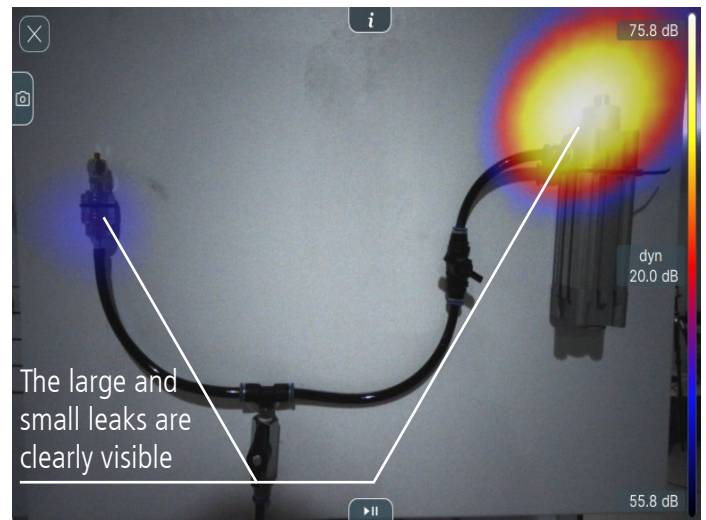


- » Ergonomic hand-held device with protection class IP54 waterproof
- » Can be used without prior knowledge thanks to intuitive software
- » Special operating modes for the localization of compressed air leaks or the detection of partial discharges give results in real time
- » Windows software for fast, detailed evaluation and reporting of compressed air leaks and partial discharges
- » Pinpoint listen-in, including making ultrasound audible, provides additional information

Sensors Extremely sensitive



Result of the SoundCam Ultra, the predecessor model of the SoundCam Ultra 3. This is a very good acoustic camera with 72 microphones. The large leakage is detected very well. The small leakage is not detected as it disappears in the image noise.



The 176 microphones and the optimized microphone array design of the SoundCam Ultra 3 increase the sensitivity and dynamic range immensely. As a result, the large and small leaks are clearly visible. Even at 20 dB dynamic range, no image noise is visible.

More microphones, a higher sampling rate and high 24-bit resolution ensure better, more detailed and more reliable results.