

SOUNDCAM 2.0

Product data



Highlights

- Real-time results at 100 fps
- Handheld device with IP54 protection
- Integrated object lighting
- 8 configurable buttons for fast control
- Audible and ultrasound range
- Analysis up to 60 kHz

Applications

- Maintenance and servicing
- Health and safety
- NVH, Squeak and Rattle measurement
- Product development
- Noise localization



SOUNDCAM 2.0

The First Handheld Ultrasound Camera for Everyone



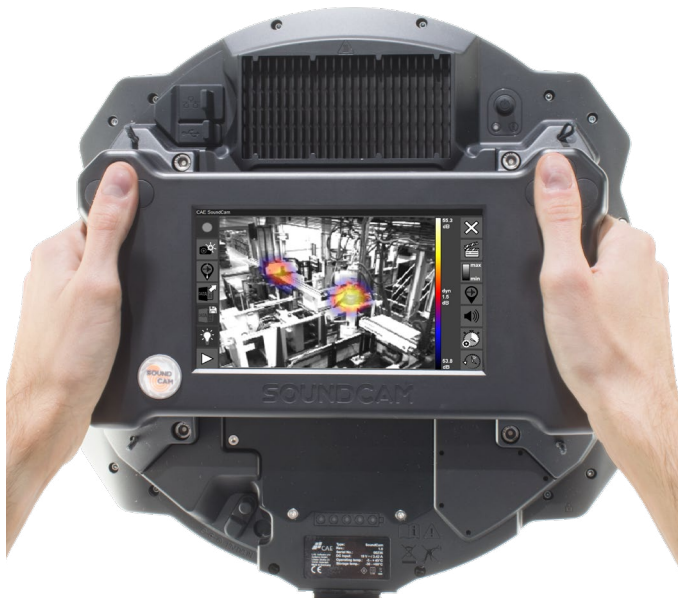


What is SoundCam?

SoundCam 2.0 is the first camera that images audible sound and ultrasound. The device locates sound sources in realtime and immediately displays the results on the screen. It is as easy to use as a smartphone.

The SoundCam 2.0 can be used in a broad frequency range up to 60 kHz, which makes it suitable for a wide range of applications e.g. for product development, predictive maintenance and occupational safety.

The SoundCam 2.0 visualizes complex acoustic information. Analyzing and understanding sound has never been easier!



Hardware

Physical Properties	Dimensions	34 x 34 x 9.5 cm (13.4 x 13.4 x 3.8 inch)
	Weight	3 kg (7 lb)
	Waterproof	IP54
	Anti-theft system	Kensington lock
	Battery	Life ~ 3.5 h; fully charged in 1.5 h
	Tripod socket	1/4 inch
	Buttons	8 configurable + power on/off
	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)
Display	Size	7 inch / 15.5 x 8.6 cm
	Resolution	800 x 480 px
	Touch	10 finger capacitive touch
Embedded Controller	Processor	ARM A53 4x1.2 GHz with 1 GB RAM
	Internal storage	32 GB or 512 GB
	OS	Linux for ARM
Interfaces	USB	For data export
	Ethernet	LAN (for running software on laptop/PC)
	Audio	3.5 mm for headphones
Sensors	Microphones	64 digital MEMS
	Frequency range	Up to 60 kHz (recommended)
	Sample rate	200 kHz
	Sound pressure	Max. 120 dB
Optical Camera	Resolution	320x240 (50fps) or 640x480 (16fps)
	Lighting	4 LEDs
	Aperture angle	70° (FoV horizontal)
	Shutter	Global shutter
	Battery	Li-ion rechargeable battery (48 Wh)
Power	Input	19V with power adapter
	Management	Smart: work and charge simultaneously

Software features

OS	Linux (on SoundCam), Windows (for Laptop/PC)
HMI	Touchscreen, headphones, buttons
Protection	Password (unauthorized access protection)
Online Performance	Up to 100 acoustic fps, up to 50 optical fps
	Acoustic pictures, optical pictures, FFT and spectrogram
	Listen to local sound (broadband or frequency filtered)
	Place marker while measuring
	Buffer recording, trigger recording (SPL or frequency)
Offline Features	Long term measurements (average and peak-hold)
	Time weighting: fast, slow, impulse
	View acoustic results frame by frame
Export	Save and reload
	Replay in real-time or slow motion
Intuitive Usability	Listen to local sound
	Screenshots, video, sound
	Distance settings
	Frequency filters (narrow band, 1/3-octave and octave)
	Dynamic filter and low cut-off
	3 scaling modes: off, auto, smart (crest factor)

SOUNDCAM 2.0 SENSOR

Product data



Highlights

- Real-time results at 100 fps
- IP54 protection
- Suitable for outdoor use
- Audible and ultrasound range
- Streaming via Ethernet (TCP/IP)
- Analysis up to 60 kHz

Applications

- Road/traffic monitoring
- EOL testing/quality assurance
- Condition based monitoring
- Non destructive testing
- Partial discharge localization



SOUNDCAM 2.0 SENSOR

The First Outdoor Sound Camera Sensor



What is SoundCam?

The SoundCam 2.0 Sensor is an acoustic camera covering the audible and ultrasonic frequency ranges. It has a USB and an ethernet interface, which allow connection to a remote PC. The supplied PC software will show the location of acoustic events in real-time at up to 100fps, overlaid on the camera image.

One or more of these sensors can be combined into your own applications to form complex machine monitoring, leak detection, or animal or traffic monitoring networks, for example. Since the ultrasonic range is also included, electrical discharge or arcing can be monitored over vast networks.

The robustness, compact and waterproofed design makes it highly suitable for outdoor use. No other acoustic camera is so robust and flexible, opening up infinite possibilities for new applications!



Hardware

Physical Properties	Dimensions	35 x 35 x 5 cm (13.8 x 13.8 x 2.0 inch)
	Weight	5.6 kg (12.3 lb)
	Waterproof	IP54
	Housing	Aluminium
	Mounting	32 x M6 (8 on each side)
	Operating temp	-20°C to 50°C (-4°F to 122°F)
	Storage temp	-30°C to 60°C (-22°F to 140°F)
Interfaces	USB	data streaming and firmware updates
	Ethernet	LAN for data streaming
Sensors	Microphones	64 digital MEMS
	Frequency range	Up to 60 kHz (recommended)
	Sample rate	200 kHz
	Sound pressure	Max. 120 dB
Optical Camera	Resolution	320x240 (50fps) or 640x480 (16fps)
	Aperture angle	70° (FoV horizontal)
	Shutter	Global shutter
	Type	Digital
	Output	Acoustic map video
Communication	Logical	TCP/IP
	Physical	Ethernet or USB-B
	Power Input	9 - 19V with power adapter

Software features

OS	Windows (for Laptop/PC)
HMI	Keyboard, mouse, headphones
Protection	Password (unauthorized access protection)
Online Performance	Up to 100 acoustic fps, up to 50 optical fps
	Acoustic pictures, optical pictures, FFT and spectrogram
	Listen to local sound (broadband or frequency filtered)
	Place marker while measuring
	Buffer recording, trigger recording (SPL or frequency)
	Long term measurements (average and peak-hold)
Offline Features	Time weighting: fast, slow, impulse
	View acoustic results frame by frame
	Save and reload
Export	Replay in real-time or slow motion
	Listen to local sound
Intuitive Usability	Screenshots, video, sound
	Distance settings
	Frequency filters (narrow band, 1/3-octave and octave)
Dynamic filter and low cut-off	3 scaling modes: off, auto, smart (crest factor)

SOUNDCAM BIONIC XS

Product data



Highlights

- Modular system
- Compact array with 28 cm diameter
- Beamforming
- Quick toolless assembly
- Integrated battery
- Real-time results at 100 fps
- Input for Trigger and Tacho

Applications

- NVH/BSR
- Health and occupational safety
- Electronic components
- Gap testing
- Interior measurement



28 cm

SOUNDCAM BIONIC XS

The Advanced Modular Sound Camera

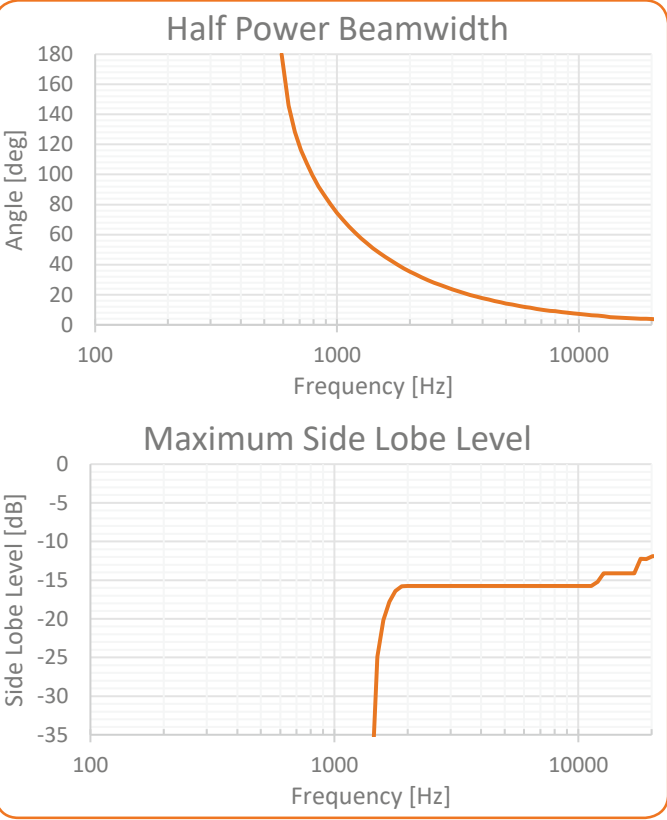
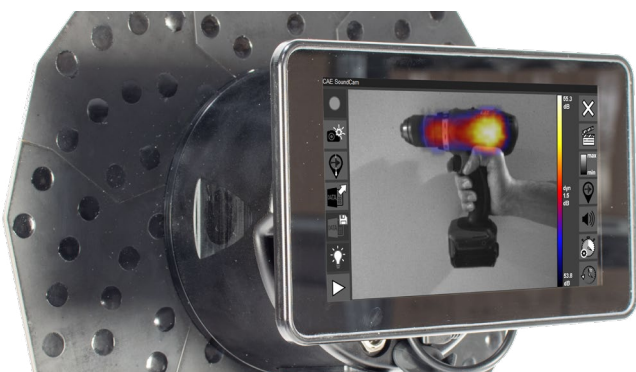


What is SoundCam?

SoundCam Bionic is a modular acoustic camera that images sound. The device locates sound sources in realtime and immediately displays the results on the screen. It is as easy to use as a smartphone.

The SoundCam Bionic XS microphone array has a diameter of 28 cm and consists of 112 microphones. It is designed for use in the far field. The optimized microphone arrangement guarantees perfect results. The seven detachable microphone arms are locked and held by magnets and guarantee a very fast setup and a small packing volume.

The carrying handle on the device and the integrated rechargeable battery make the SoundCam Bionic XS suitable for mobile use.



Hardware

Physical Properties	Dimensions	28 x 28 x 15 cm (11 x 11 x 5.9 inch)
	Weight	3.2 kg (7 lb)
	Waterproof	IP20 or IP54
	Battery	Life ~ 3.5 h; fully charged in 1.5 h
	Tripod socket	1/4 inch
	Buttons	1 configurable + power on/off
	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)
	Display	Size
Resolution		800 x 480 px
Touch		10 finger capacitive touch
Embedded Controller	Processor	ARM A53 4x1.2 GHz with 1 GB RAM
	Internal storage	32 GB or 512 GB
	OS	Linux for ARM
Interfaces	USB	For data export
	Ethernet	LAN (for running software on laptop/PC)
	Audio	3.5 mm for headphones
	Input	Trigger, Tacho
Sensors	Microphones	112 digital MEMS
	Frequency range	Up to 24 kHz
	Beamforming	850 Hz to 24 kHz
	Sound from behind	Protected by closed array
	Sample rate	48 kHz
	Sound pressure	Max. 120 dB
Optical Camera	Resolution	320 x 240 (50 fps) or 640 x 480 (16 fps)
	Aperture angle	70° (FoV horizontal)
	Shutter	Global shutter
	Battery	Li-ion rechargeable battery (48 Wh)
Power	Input	19V with power adapter
	Management	Smart: work and charge simultaneously

Software features

OS	Linux (on SoundCam), Windows (for Laptop/PC)
HMI	Touchscreen, headphones, buttons
Protection	Password (unauthorized access protection)
Online Performance	Up to 100 acoustic fps, up to 50 optical fps
	Acoustic pictures, optical pictures, FFT and spectrogram
	Listen to local sound (broadband or frequency filtered)
	Place marker while measuring
	Buffer recording, trigger recording (SPL or frequency)
	Long term measurements (average and peak-hold)
Offline Features	Time weighting: fast, slow, impulse
	View acoustic results frame by frame
	Save and reload
Export	Replay in real-time or slow motion
	Listen to local sound
Intuitive Usability	Screenshots, video, sound
	Distance settings
	Frequency filters (narrow band, 1/3-octave and octave)
	Dynamic filter and low cut-off
	3 scaling modes: off, auto, smart (crest factor)

SOUNDCAM BIONIC S

Product data



Highlights

- Modular system
- Compact array with 54 cm diameter
- Beamforming and Holography
- Quick toolless assembly
- Integrated battery
- Real-time results at 100 fps
- Input for Trigger and Tacho

Applications

- Machine acoustics
- Automotive measurements
- Consumer goods measurements
- Squeak and rattling
- Environmental measurements



54 cm

SOUNDCAM BIONIC S

The Advanced Modular Sound Camera

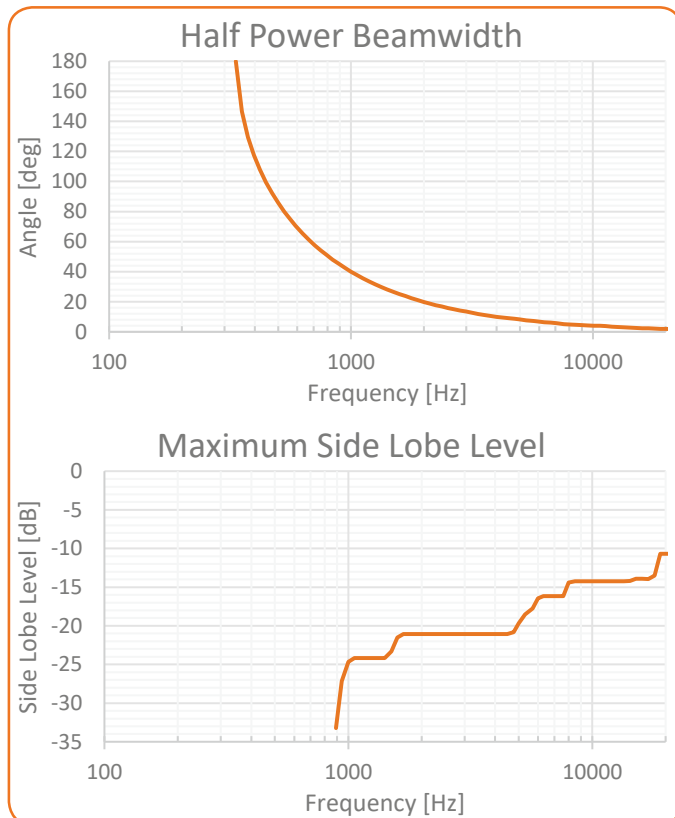


What is SoundCam?

SoundCam Bionic is a modular acoustic camera that images sound. The device locates sound sources in realtime and immediately displays the results on the screen. It is as easy to use as a smartphone.

The SoundCam Bionic S microphone array has a diameter of 54 cm and consists of 112 microphones. It is designed for use in the far field and can also be used in the near field from 40 Hz. The optimized microphone arrangement guarantees perfect results. The seven detachable microphone arms are locked and held by magnets and guarantee a very fast setup and a small packing volume.

The carrying handle on the device and the integrated rechargeable battery make the SoundCam Bionic S suitable for mobile use.



Hardware

Physical Properties	Dimensions	54 x 54 x 15 cm (21 x 21 x 5.9 inch)
	Weight	3.4 kg (7.5 lb)
	Waterproof	IP20 or IP54
	Battery	Life ~ 3.5 h; fully charged in 1.5 h
	Tripod socket	1/4 inch
	Buttons	1 configurable + power on/off
	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)
	Display	Size
Resolution		800 x 480 px
Touch		10 finger capacitive touch
Embedded Controller	Processor	ARM A53 4x1.2 GHz with 1 GB RAM
	Internal storage	32 GB or 512 GB
	OS	Linux for ARM
Interfaces	USB	For data export
	Ethernet	LAN (for running software on laptop/PC)
	Audio	3.5 mm for headphones
	Input	Trigger, Tacho
Sensors	Microphones	112 digital MEMS
	Frequency range	Up to 24 kHz
	Beamforming	480 Hz to 24 kHz
	SONAH	40 Hz to 2 kHz
	Sample rate	48 kHz
	Sound pressure	Max. 120 dB
Optical Camera	Resolution	320 x 240 (50 fps) or 640 x 480 (16 fps)
	Aperture angle	70° (FoV horizontal)
	Shutter	Global shutter
	Battery	Li-ion rechargeable battery (48 Wh)
Power	Input	19V with power adapter
	Management	Smart: work and charge simultaneously

Software features

OS	Linux (on SoundCam), Windows (for Laptop/PC)
HMI	Touchscreen, headphones, buttons
Protection	Password (unauthorized access protection)
Online Performance	Up to 100 acoustic fps, up to 50 optical fps
	Acoustic pictures, optical pictures, FFT and spectrogram
	Listen to local sound (broadband or frequency filtered)
	Place marker while measuring
	Buffer recording, trigger recording (SPL or frequency)
	Long term measurements (average and peak-hold)
Offline Features	Time weighting: fast, slow, impulse
	View acoustic results frame by frame
	Save and reload
Export	Replay in real-time or slow motion
	Listen to local sound
Intuitive Usability	Screenshots, video, sound
	Distance settings
	Frequency filters (narrow band, 1/3-octave and octave)
	Dynamic filter and low cut-off
	3 scaling modes: off, auto, smart (crest factor)

SOUNDCAM BIONIC M

Product data



Highlights

- Modular system
- Big array with 100 cm diameter
- Beamforming and Holography
- Quick toolless assembly
- Integrated battery
- Real-time results at 100 fps
- Input for Trigger and Tacho

Applications

- Automotive
- Machine acoustics
- Railway vehicles
- Building acoustics
- Sound insulation checking



100 cm

SOUNDCAM BIONIC M

The Advanced Modular Sound Camera



What is SoundCam?

SoundCam Bionic is a modular acoustic camera that images sound. The device locates sound sources in realtime and immediately displays the results on the screen. It is as easy to use as a smartphone.

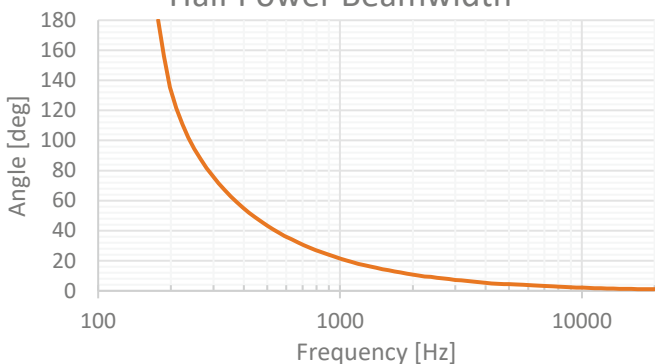
The SoundCam Bionic M microphone array has a diameter of 100 cm and consists of 112 microphones. It is designed for use in the far field and can also be used in the near field from 40 Hz. The optimized microphone arrangement guarantees perfect results.

The seven detachable microphone arms are locked and held by magnets and guarantee a very fast setup and a small packing volume.

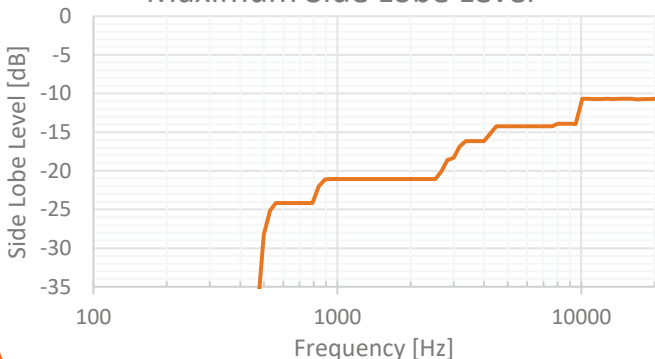
The carrying handle on the device and the integrated rechargeable battery make the SoundCam Bionic M suitable for mobile use.



Half Power Beamwidth



Maximum Side Lobe Level



Hardware

Physical Properties	Dimensions	100 x 100 x 15 cm (39 x 39 x 5.9 inch)
	Weight	3.8 kg (8.4 lb)
	Waterproof	IP20 or IP54
	Battery	Life ~ 3.5 h; fully charged in 1.5 h
	Tripod socket	1/4 inch
	Buttons	1 configurable + power on/off
	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)
	Display	Size
Resolution		800 x 480 px
Touch		10 finger capacitive touch
Embedded Controller	Processor	ARM A53 4x1.2 GHz with 1 GB RAM
	Internal storage	32 GB or 512 GB
	OS	Linux for ARM
Interfaces	USB	For data export
	Ethernet	LAN (for running software on laptop/PC)
	Audio	3.5 mm for headphones
	Input	Trigger, Tacho
Sensors	Microphones	112 digital MEMS
	Frequency range	Up to 24 kHz
	Beamforming	250 Hz to 24 kHz
	SONAH	40 Hz to 2 kHz
	Sample rate	48 kHz
	Sound pressure	Max. 120 dB
Optical Camera	Resolution	320 x 240 (50 fps) or 640 x 480 (16 fps)
	Aperture angle	70° (FoV horizontal)
	Shutter	Global shutter
	Battery	Li-ion rechargeable battery (48 Wh)
Power	Input	19V with power adapter
	Management	Smart: work and charge simultaneously

Software features

OS	Linux (on SoundCam), Windows (for Laptop/PC)
HMI	Touchscreen, headphones, buttons
Protection	Password (unauthorized access protection)
Online Performance	Up to 100 acoustic fps, up to 50 optical fps
	Acoustic pictures, optical pictures, FFT and spectrogram
	Listen to local sound (broadband or frequency filtered)
	Place marker while measuring
	Buffer recording, trigger recording (SPL or frequency)
	Long term measurements (average and peak-hold)
Offline Features	Time weighting: fast, slow, impulse
	View acoustic results frame by frame
	Save and reload
Export	Replay in real-time or slow motion
	Listen to local sound
Intuitive Usability	Screenshots, video, sound
	Distance settings
	Frequency filters (narrow band, 1/3-octave and octave)
	Dynamic filter and low cut-off
	3 scaling modes: off, auto, smart (crest factor)

SOUNDCAM BIONIC L

Product data

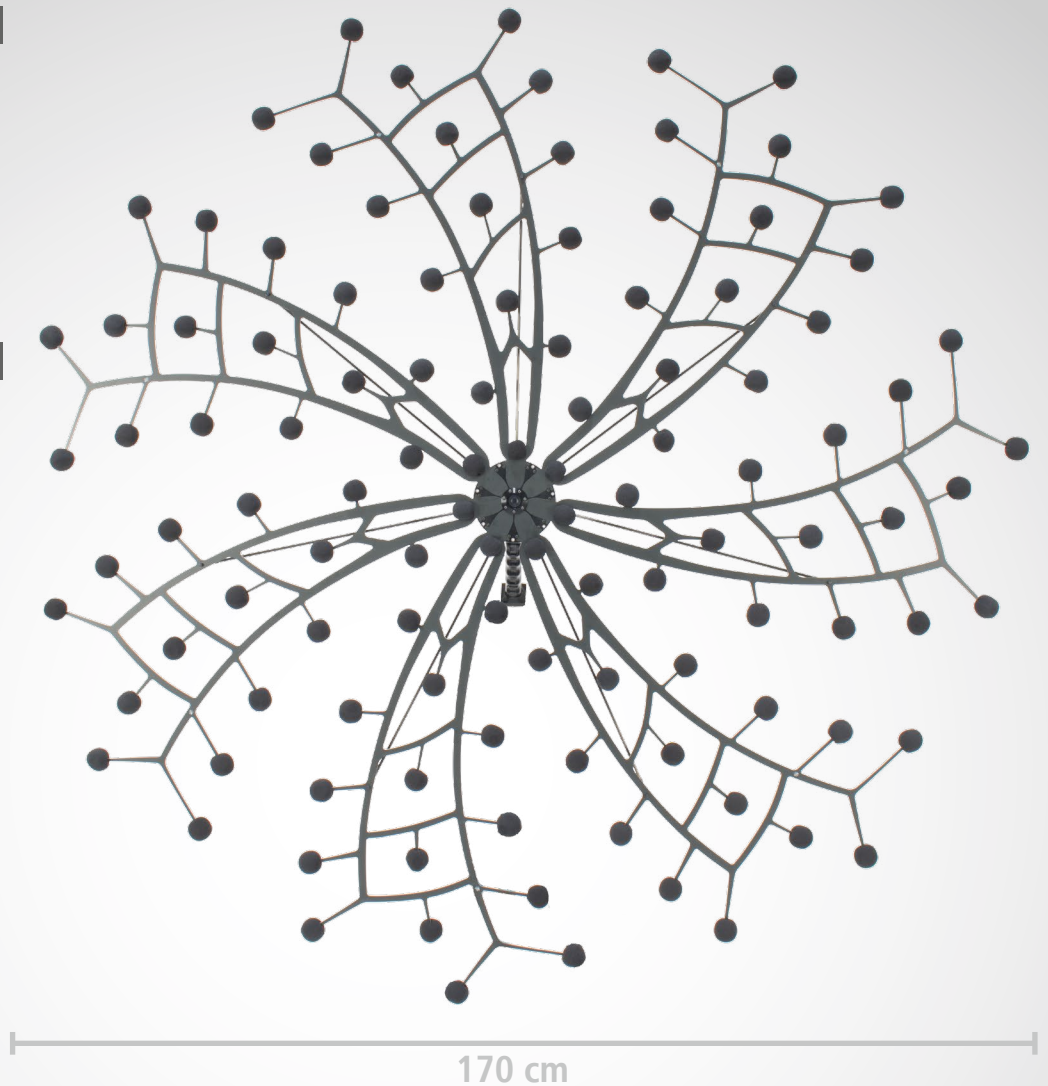


Highlights

- Modular system
- Big array with 170 cm diameter
- Beamforming and Holography
- Quick toolless assembly
- Integrated battery
- Real-time results at 100 fps
- Input for Trigger and Tacho

Applications

- Wind turbines
- Building acoustics
- Gearbox and machine measurement
- Wind tunnel measurements
- Environmental measurements



SOUNDCAM BIONIC L

The Advanced Modular Sound Camera



What is SoundCam?

SoundCam Bionic is a modular acoustic camera that images sound. The device locates sound sources in realtime and immediately displays the results on the screen. It is as easy to use as a smartphone.

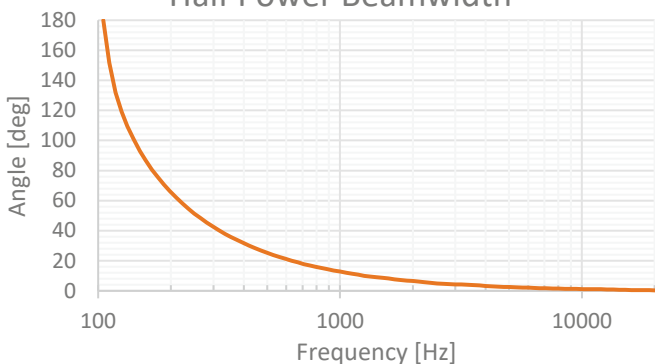
The SoundCam Bionic L microphone array has a diameter of 170 cm and consists of 112 microphones. It is designed for use in the far field and can also be used in the near field from 40 Hz. The optimized microphone arrangement guarantees perfect results.

The seven detachable microphone arms are locked and held by magnets and guarantee a very fast setup and a small packing volume.

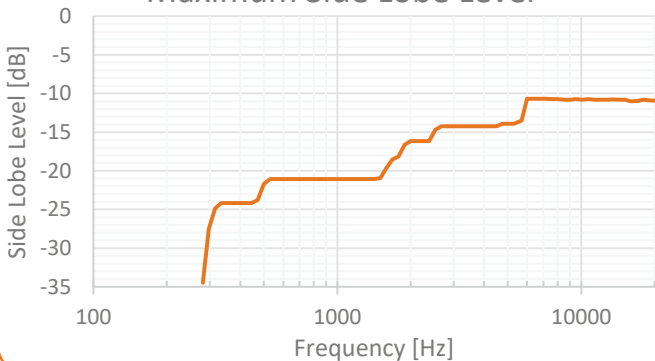
The carrying handle on the device and the integrated rechargeable battery make the SoundCam Bionic L suitable for mobile use.



Half Power Beamwidth



Maximum Side Lobe Level



Hardware

Physical Properties	Dimensions	170 x 170 x 15 cm (67 x 67 x 5.9 inch)
	Weight	5.1 kg (11.2 lb)
	Waterproof	IP20 or IP54
	Battery	Life ~ 3.5 h; fully charged in 1.5 h
	Tripod socket	1/4 inch
	Buttons	1 configurable + power on/off
	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)
	Display	Size
Resolution		800 x 480 px
Touch		10 finger capacitive touch
Embedded Controller	Processor	ARM A53 4x1.2 GHz with 1 GB RAM
	Internal storage	32 GB or 512 GB
	OS	Linux for ARM
Interfaces	USB	For data export
	Ethernet	LAN (for running software on laptop/PC)
	Audio	3.5 mm for headphones
	Input	Trigger, Tacho
Sensors	Microphones	112 digital MEMS
	Frequency range	Up to 24 kHz
	Beamforming	150 Hz to 24 kHz
	SONAH	40 Hz to 2 kHz
	Sample rate	48 kHz
	Sound pressure	Max. 120 dB
Optical Camera	Resolution	320 x 240 (50 fps) or 640 x 480 (16 fps)
	Aperture angle	70° (FoV horizontal)
	Shutter	Global shutter
	Battery	Li-ion rechargeable battery (48 Wh)
Power	Input	19V with power adapter
	Management	Smart: work and charge simultaneously

Software features

OS	Linux (on SoundCam), Windows (for Laptop/PC)
HMI	Touchscreen, headphones, buttons
Protection	Password (unauthorized access protection)
Online Performance	Up to 100 acoustic fps, up to 50 optical fps
	Acoustic pictures, optical pictures, FFT and spectrogram
	Listen to local sound (broadband or frequency filtered)
	Place marker while measuring
	Buffer recording, trigger recording (SPL or frequency)
	Long term measurements (average and peak-hold)
Offline Features	Time weighting: fast, slow, impulse
	View acoustic results frame by frame
	Save and reload
Export	Replay in real-time or slow motion
	Listen to local sound
Intuitive Usability	Screenshots, video, sound
	Distance settings
	Frequency filters (narrow band, 1/3-octave and octave)
	Dynamic filter and low cut-off
	3 scaling modes: off, auto, smart (crest factor)

Product data

SOUNDCAM ULTRA 3

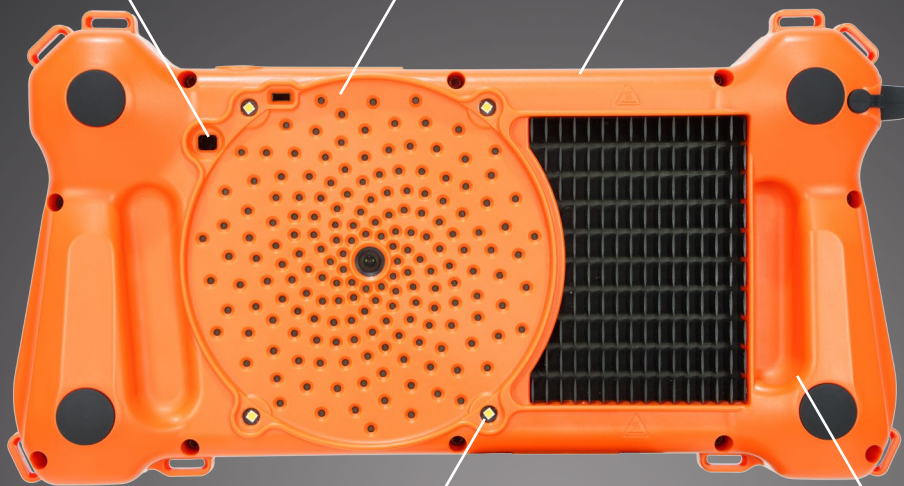
Ultrasonic camera: powerful, intuitive, versatile



Built-in thermal imaging camera

High sensitivity from 176 microphones with 200 kHz sampling rate

Additional sensors:
ToF camera, GPS, compass and position sensor



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

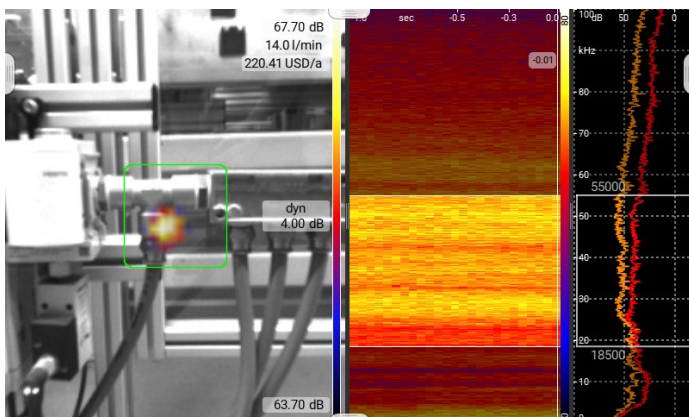
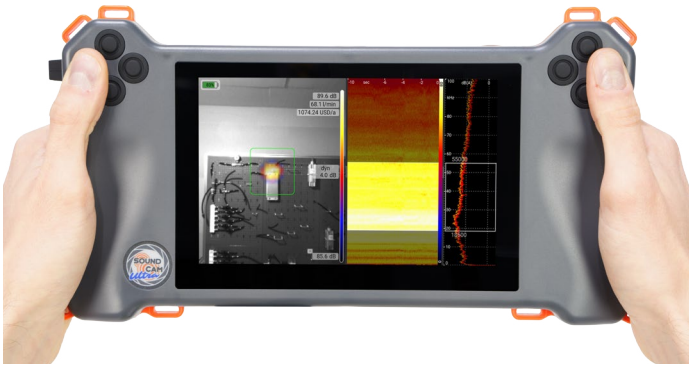


Hardware			
Microphones	Number	176 digital MEMS microphones	
	Frequency range	Up to 100 kHz	
	Sample rate	200 kHz	
	Sound pressure	Max. 120 dB	
	Resolution	24 bit	
	Beamforming	100 fps	
Optical Camera	Resolution	640 x 480 px at 56 fps	
	Illumination	4 LEDs	
	Aperture angle	70° x 55° (FoV horizontal x vertical)	
	Shutter	Global shutter	
	Night vision	Yes (external IR illumination recommended)	
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	
Additional Sensors	ToF (Time of Flight)	Distance measurement for <1,5 m*	
	GPS, compass and position sensor	Position, orientation and inclination*	
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	Li-ion battery (48 Wh)
		External battery	Li-ion-battery (88 Wh) 16 x 8,5 x 2,5 cm
		Input	20 V via USB C
Management		Smart: use and charge at the same time	

Software Comprehensive and intuitive

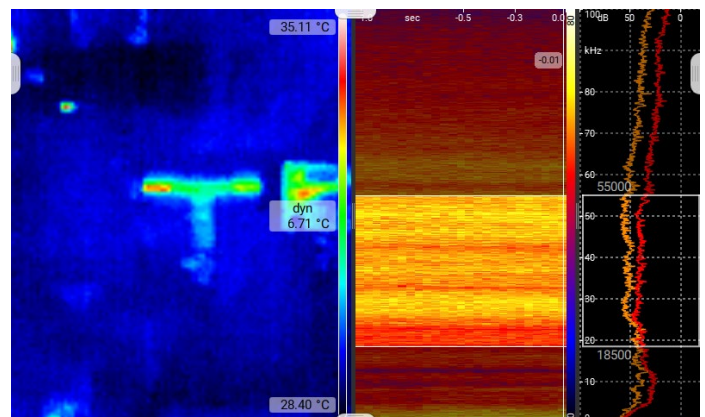
The software of the new **SoundCam Ultra 3** is intuitive and very easy to use. The structured user interface starts directly with the most important menus and very useful measurement modes for fast and efficient work. At the touch of a button, the Ultra 3 starts the measurement and finds the acoustic 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



Measurement of a compressed air leak: The leak can be clearly identified in the acoustic image.

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 10 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



The thermal image shows cooling at the leakage point compared to the surrounding component temperature.

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
- » Automatic distance measurement at close range for a more accurate assessment of leaks*
- » 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

Location of the leak

Leak details

Result for all leaks

Number of measurements	34
Overall leakage	12351.3 m³/a
Overall costs	3705,39 EUR/a
Emission	7559 kg CO2/a

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

Measurement	2021-11-19	2024-04-18
Number of measurements	34	25
Leak rate	234.994 L/min	21.474 L/min
Leak rate to be repaired	209.231 L/min	4.289 L/min
Leak rate non-repairable	4.289 L/min	0

Category	Value	Potential
Overall savings	3705 EUR/a	± 741 EUR/a
Overall potential savings	339 EUR/a	± 66 EUR/a
Overall non-repairable	3299 EUR/a	± 660 EUR/a
Overall non-repairable (CO2)	66 EUR/a	± 14 EUR/a

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, compass and position sensor for clear identification of the system*



Choose measurement data

Analyze measurements

Create report

Overview of the partial discharge

List of all partial discharges

Localization of the partial discharge

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

Table: Overview of all partial discharges

Line	Distance	PD type	Discharges	Repair recommended
np1p01dms	3,50 m	corona discharge	38.927	Yes
np1p01dms	3,50 m	corona discharge	23.847	Yes
np1p02dms	20,00 m	surface discharge	27.448	Yes
np1p02dms	1,847 m	surface discharge	28.276	No
np1p03dms	3,50 m	surface discharge	38.976	No
np1p04dms	20,00 m	surface discharge	33.853	No
np1p05dms	3,50 m	surface discharge	33.176	No
np1p06dms	20,00 m	corona discharge	20.334	No
np1p06dms	20,00 m	corona discharge	45.462	No
np1p07dms	20,00 m	corona discharge	26.451	No
np1p08dms	6,49 m	corona discharge	23.026	No
np1p07dms	6,49 m	surface discharge	20.483	No
np1p08dms	6,49 m	corona discharge	22.588	No
np1p08dms	3,50 m	surface discharge	40.510	No

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

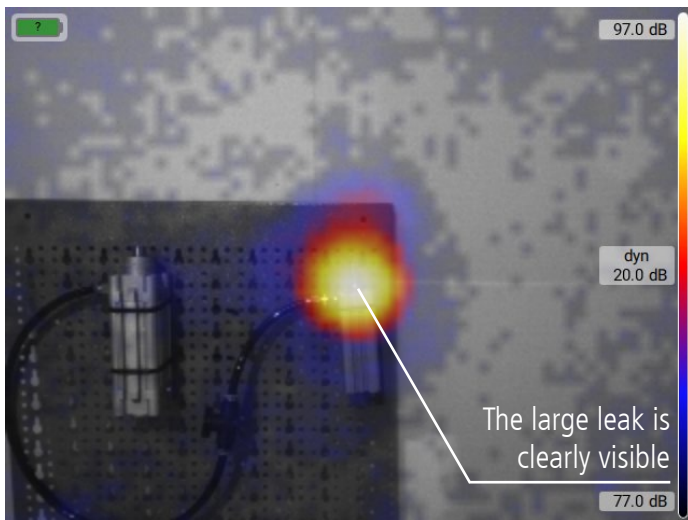


- » Very high sensitivity and dynamic range thanks to 176 microphones with 200 kHz sampling rate at 24 bit resolution
- » Live, on-screen results at 100 acoustic fps
- » Precise synchronization between acoustic and optical video for high analysis accuracy
- » Built-in thermal imaging camera, ToF camera,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

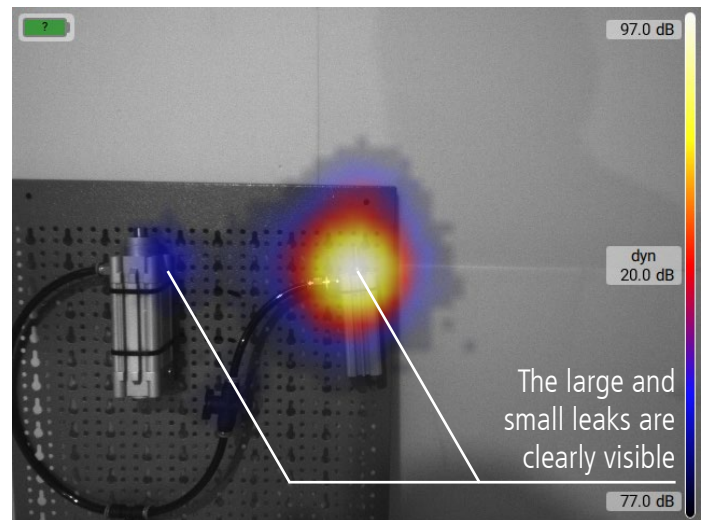


- » Ergonomic hand-held device with protection class IP54 waterproof
- » Can be used without prior knowledge thanks to intuitive software
- » Special operating modes for the localization of compressed air leaks or the detection of partial discharges give results in real time
- » Windows software for 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.

SOUNDCAM ULTRA SENSOR

Product data



Highlights

- Real-time results at 100 fps
- IP54 protection
- Audible and ultrasound range
- Streaming via Ethernet (TCP/IP)
- Analysis up to 100 kHz

Applications

- Road/traffic monitoring
- EOL testing/quality assurance
- Condition based monitoring
- Non destructive testing
- Partial discharge localization



SOUNDCAM ULTRA SENSOR

The First Sound Camera Sensor for Integration



What is SoundCam?

The SoundCam Ultra Sensor is an acoustic camera covering the audible and ultrasonic frequency ranges. It has a USB and an ethernet interface, which allow connection to a remote PC. The supplied PC software will show the location of acoustic events in real-time at up to 100fps, overlaid on the camera image.

One or more of these sensors can be combined into your own applications to form complex machine monitoring, leak detection, or animal or traffic monitoring networks, for example. Since the ultrasonic range is also included, electrical discharge or sparking can be monitored over vast networks.

The light weight, compact and waterproofed design makes it highly suitable for drone use. No other acoustic camera is so small and flexible, opening up infinite possibilities for new applications!



Hardware

Physical Properties	Dimensions	15 x 15 x 7.5 cm (5.9 x 5.9 x 2.9 inch)
	Weight	1.9 kg (4.4 lb)
	Waterproof	IP54
	Housing	Aluminium
	Mounting	4 x M6
	Operating temp	-20°C to 50°C (-4°F to 122°F)
Interfaces	Storage temp	-30°C to 60°C (-22°F to 140°F)
	USB	data streaming and firmware updates
	Ethernet	LAN for data streaming
Sensors	Microphones	72 digital MEMS
	Frequency range	Up to 100 kHz
	Sample rate	200 kHz
	Sound pressure	Max. 120 dB
	Resolution	24 bit
Optical Camera	Type	Digital
	Resolution	320x240 (50fps) or 640x480 (16fps)
	Aperture angle	70° (FoV horizontal)
	Shutter	Global shutter
Output		Acoustic map video
		Video
		Local sound
Communication		Audio spectrum
	Logical	TCP/IP
	Physical	Ethernet or USB-B
Power	Input	9 - 19V with power adapter

Software features

OS	Windows (for Laptop/PC)
HMI	Keyboard, mouse, headphones
Protection	Password (unauthorized access protection)
Online Performance	Up to 100 acoustic fps, up to 50 optical fps
	Acoustic pictures, optical pictures, FFT and spectrogram
	Listen to local sound (broadband or frequency filtered)
	Place marker while measuring
	Buffer recording, trigger recording (SPL or frequency)
	Long term measurements (average and peak-hold)
Offline Features	Time weighting: fast, slow, impulse
	View acoustic results frame by frame
	Save and reload
Export	Replay in real-time or slow motion
	Listen to local sound
Intuitive Usability	Screenshots, video, sound
	Distance settings
	Frequency filters (narrow band, 1/3-octave and octave)
	Dynamic filter and low cut-off
	3 scaling modes: off, auto, smart (crest factor)