

MPAC208

Megger Professional Acoustic Imager



- 208 MEMS Microphone array
- 100 kHz bandwidth
- Detection range up to 200 m
- 13 MP optical camera resolution
- 8" Touchscreen
- 10 Hour battery life (2 x 5 hr battery packs)
- Gas Leak, PD and Mechanical modes
- Optional thermal imaging modules

DESCRIPTION

The Megger MPAC208 Professional Acoustic Imaging Camera is a state-of-the-art diagnostic tool designed to detect and analyse ultrasonic sound patterns, enabling quick, reliable identification of gas leaks, mechanical faults, and electrical partial discharges in a variety of industrial environments. With advanced sound localisation and processing capabilities, this device streamlines maintenance workflows and enhances safety.

FEATURES

Precise Leak Detection

Effortlessly pinpoints pressurised and vacuum gas leaks, minimizing downtime and reducing energy losses.

Advanced Electrical Inspection

Includes Phase Resolved Partial Discharge (PRPD) analysis for clear identification and discrimination between different types of partial discharge in electrical systems.

Mechanical Fault Identification

Detects mechanical deterioration in rotating equipment, valves, and bearings through ultrasound monitoring, enhancing predictive maintenance.

Quantifiable Leak Rate Assessment

Built-in analytics quantify leak rates, helping estimate energy loss and prioritise repairs based on cost impact.

Noise Suppression with Focus Function

Focus feature minimizes unwanted background interference, providing clear, actionable acoustic images, even in noisy industrial environments.

Ultrasound to Audible Sound Conversion

Converts inaudible ultrasonic emissions to audible sound for intuitive identification and pinpointing of leak sources.

SoundScan™ Directional Guidance

Proprietary SoundScan™ technology directs the user to the primary sound source, even when it is outside the camera's visual field.

Field-Upgradable Firmware

Stay current with easy firmware updates via USB-C or microSD, ensuring long-term device performance and compatibility.

Acoustic Analysis Software

Included desktop software enables comprehensive analysis, reporting, and data management post-inspection.

Time-Domain Graph Display

Visualize and analyse ultrasonic signals in real-time with the time-domain graph, helping operators identify signal patterns, duration, and transient events for enhanced diagnostic accuracy.

Acoustic Spectrogram Visualisation

The built-in acoustic spectrogram displays frequency content over time, allowing users to easily distinguish between different sound sources and track changes in frequency behaviour, especially in complex environments.

Optional Thermal Imaging Modules

Add-on thermal imaging modules enables a side-by-side view of thermal and acoustic images, allowing for simultaneous detection of temperature anomalies and acoustic events, improving fault correlation and identification.

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VERIFICATION

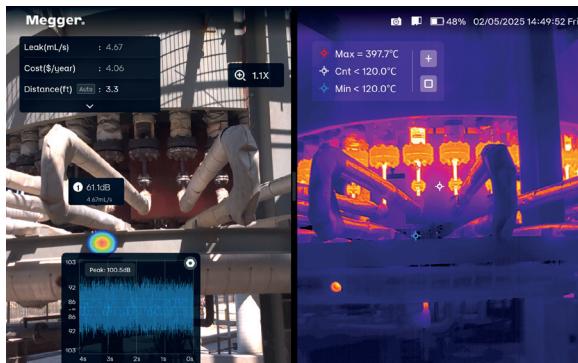
To ensure the MPAC cameras are operating within specified parameters, the Megger MPAC-V acoustic camera verifier can be used. This optional tool gives the operator the ability to verify the frequency and SPL measurements of the camera using a dedicated verification procedure. In addition, the camera can automatically check the operation of each MEMS microphone, to ensure optimum performance.

APPLICATIONS

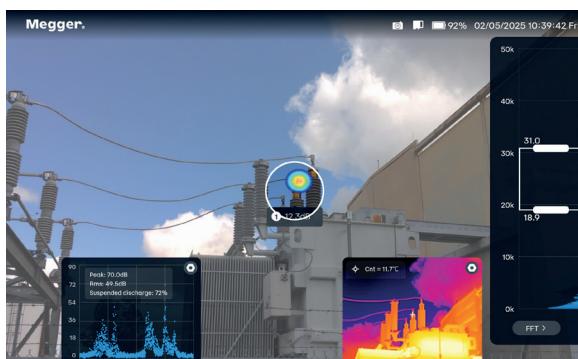
- Leak detection in compressed air and gas systems
- Predictive maintenance of mechanical systems
- High-voltage equipment inspections
- Industrial reliability and energy efficiency auditing

ACOUSTIC SPECIFICATIONS

- 208 channel MEMS microphone array
- Frequency range: 2 kHz to 100 kHz
- Detection range: 0.5 to 200 m (1 – 656 ft)
- Min leak detection rate:
0.0019 l/min @ 2.5 m 5 Bar
0.0022 l/min @ 6.0 m 5 Bar
- Leak cost quantification
- SPL Range 25.7 dBA to 132.5 dBA
- Dynamic Range 28 dB to 132 dB (adjustable)



These images shows the thermal capability with the optional thermal imaging module, MPAC-TM.



SPECIFICATIONS

Camera

| | |
|----------------------------|---------------------------------|
| Resolution | 13 MP |
| Camera Focal Length | 4.3 mm (0.17") |
| Nominal Frame Rate | 25 fps |
| Field of View (FOV) | Horizontal: 66° x Vertical: 52° |
| LED Light | 4 Ultra-bright LEDs |

Display

| | |
|--------------------------|-----------------------------|
| Resolution | 1920 x 1200 |
| Size | 8 inches |
| Brightness | 700 nits |
| Touchscreen | Capacitive touch screen |
| Zoom | 6x digital zoom |
| Standard palettes | Grayscale, Ironbow, Rainbow |

Communication and Storage

| | |
|-------------------------|---|
| Internal Storage | 64 GB |
| External Storage | 64 GB external microSD card |
| Image Format | JPG |
| Audio Format | WAV |
| Video Format | mp4 |
| Video Length | Up to 10 min |
| Digital Export | microSD (TF) card/Wi-Fi/ USB-C flash drive |
| Data Transfer | Wi-Fi, USB-C Flash drive, Bluetooth®/ USB-C Cable, microSD (TF) card |

Battery

| | |
|-------------------------|--|
| Battery Type | Li-Ion smart battery with charge indicator |
| Battery Capacity | 6600 mAH, 7.2 V Rechargeable Li-ion |
| Battery Life | 5 hours under full load state |
| Charge Time | USB Type-C port – 2.15 Hrs Charging cradle – 1.15 Hrs |

Hardware Ports

| | |
|-----------------------------|--|
| USB-C 1 | USB 3.0 for charging, HDMI, data export |
| USB-C 2 | USB 2.0, USB sensor, Thermal Module |
| 3.5 mm audio jack | Headset output |
| TF/microSD card slot | 64 GB card supplied |
| Analog input | 4 Channel external analog sensor |

Environmental

| | |
|---|------------------------------|
| Operating Temperature | -20 °C to +50 °C |
| Relative Humidity | 10% to 95% (no condensation) |
| Storage Temperature | -20 °C to +70 °C |
| Charging Temperature | 10 °C to +45 °C |
| Restriction of Hazardous Substances (RoHS) Compliant | Yes |

MPAC208

Megger Professional Acoustic Imager

General Specification

| | |
|-----------------------------|---|
| Size | 270 x 190 x 51 mm (10.6" x 7.5" x 2") |
| Weight | 1.4 kg (3 lbs) |
| Bluetooth | BT 5.2 |
| Environmental rating | IP54 |
| Warranty | 2 years |
| Supported Languages | English, Dutch, French, Simplified Chinese, German, Hungarian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Russian, Spanish, Swedish, Thai, Arabic, Macedonian, Romanian, Bulgarian |

Safety

| | |
|-----------------------|-------------|
| General Safety | IEC 61010-1 |
|-----------------------|-------------|

Electromagnetic Compatibility (EMC)

| | |
|----------------------|--|
| International | IEC 61326-1: Portable Electromagnetic Environment IEC 61326-2-2 CISPR 11: Group 1, Class A |
| Vibration | 2g, IEC 60068-2-6 |
| Shock | 25g, IEC 60068-2-27 |
| Drop test | 1.2 m |

Software

| |
|---------------------|
| Report types |
| Analysis |

Gas/Electricity, ISO 50001-compliant
Waveform, spectrum, spectrogram, leakage assessment, PRPD type, PRPD spectrum. Thermal image analysis (with optional thermal module MPAC-TM).

| ORDERING INFORMATION | | | |
|--------------------------------------|-------------|---|-------------|
| Description | Part number | Description | Part number |
| MPAC208 acoustic imaging camera | 1016-917 | Optional Accessories | |
| Included Accessories | | | |
| Hand straps | | Thermal imaging module (364 x 288 resolution) | 1016-920 |
| Shoulder strap | | Thermal imaging module (640 x 512 resolution) | 1016-921 |
| Universal mains power charger | | MPAC-V acoustic camera verifier | 1016-919 |
| USB-C charging cable | | Spare smart battery packs | 1016-924 |
| Headphones | | MPAC208 Pro Kit with MPAC208 Acoustic Camera, MPAC-V Verifier/Ultrasound Generator and Thermal Camera Module (640 x 512 resolution) | |
| Carry case | | 1016-922 | |
| 64 GB microSD card | | | |
| USB-A microSD card reader | | | |
| 8 GB USB-C/USB-A memory stick | | | |
| Cleaning tool | | | |
| Smart battery pack (x2) | | | |
| Smart battery charger | | | |
| Acoustic & Thermal Analysis Software | | | |

MPAC208_DS_EN_V02

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MPAC-V

Professional Acoustic Camera Verifier



- Sound pressure level verifier
- Frequency response verification
- Acoustic cloud image alignment verification
- Multiple preloaded sound files to verify correct camera performance
- Works with MPAC128 and MPAC208

DESCRIPTION

The Megger Professional Acoustic Camera Verifier, MPAC-V, is a compact, portable ultrasonic sound generator. It is designed to check the alignment of the acoustic cloud image, the accuracy of the SPL (Sound Pressure Level) measurement and frequency response on the Megger MPAC range of acoustic cameras.

It has button controls to power on/off the MPAC-V, play/pause an audio file, increase/decrease the volume and switch between the .wav audio files, pre-loaded onto the included MicroSD/TF card.

Key is the inclusion of a Verification sound file that automatically runs through the pre-set frequency bands that mirror the bands selected by the MPAC cameras when running in verification mode, automating the verification process.

In addition, sound files to replicate common partial discharge, using either 50 Hz or 60 Hz as the fundamental, help prove the MPAC cameras detection processor.

The MPAC-V supports a maximum signal output sampling rate of 96 kHz 24 bit, with a rated frequency range from 20 kHz to 48 kHz.

The product features a lightweight, sturdy and durable all-aluminium alloy case and can be powered by either the supplied USB-C 5 V power adaptor or four AA batteries.

FEATURES

- 8 audio files including the camera verification file, preset mechanical frequency files, white noise and gas leak, as well as samples of Suspension, Corona and Surface Partial Discharge – all at both 50 and 60 Hz.
- Used to verify the operational status of the Megger MPACs (Megger Professional Acoustic imaging Cameras).
- A dual-port USB-C power adaptor and USB-C cable are supplied as standard
- Designed to fit into the Megger MPAC cameras protective carry case.



MPAC-V

Professional Acoustic Camera Verifier

SPECIFICATIONS

ACOUSTIC SPECIFICATIONS

| | |
|---------------------|-----------------|
| Sampling rate | 96 kHz |
| Frequency range | 20 kHz – 48 kHz |
| Operating frequency | 25 kHz ± 5 kHz |
| Supported file type | .wav |

POWER SUPPLY

| | |
|---------------|---|
| Port | USB-C |
| Rated voltage | 5 V (DC) |
| Rated current | 0.5 A |
| Battery type | AA (Alkaline or Ni-Cad batteries are recommended: 4 Required) |

GENERAL SPECIFICATIONS

| | |
|-----------------------|----------------------------|
| Dimensions | 173 x 80 x 35 mm |
| Weight | 600 g |
| Tripod mounting point | 1/4-inch thread |
| Screen | LCD – 2.8 inches |
| Resolution | 320 x 240 |
| Operating conditions | -20 to +60 °C, 10 – 95 % |
| Storage conditions | -20 to +70 °C, 10 – 95 % |
| Certification | CE-EMC, CE-RoHS |
| Storage size | Maximum 64 GB MicroSD card |

ORDERING INFORMATION

| Description | Part number |
|-------------|-------------|
| MPAC-V | 1016-919 |

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MPAC-TM384 and MPAC-TM640 Thermal Modules for MPAC208



- 384 x 288 or 640 x 512 Thermal resolution
- Plug and play integration with MPAC208
- Simple USB-C keyed connection
- Thermal reporting using the Analyst software
- Robust aluminum housing

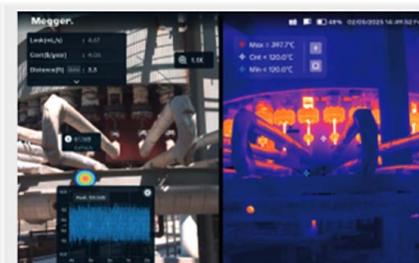
DESCRIPTION

The MPAC-TM384 and MPAC-TM640 Thermal Modules are designed to be used with Meggers MPAC208 Acoustic Imaging Camera, and give users the flexibility to perform thermal imaging alongside the existing acoustic imaging capability. The Thermal Modules are connected to the MPAC208 using a simple, keyed, USB-C port at the top of the camera. The MPAC firmware already supports the use of both modules, so no further set-up is required.

The MPAC-TM384 includes a comprehensive 384 x 288 thermal sensor, with the MPAC-TM640 stepping up to a professional 640 x 512 sensor. Both units are capable of generating high-resolution thermal images and will capture all the temperature data across the image. Through the MPAC208 user interface, relevant parameters can be set to improve the accuracy of the readings, as well as recording vital detail on the asset being measured. A x6 digital zoom is also available to aid pinpointing of issues.

All thermal images and videos captured whilst using the MPAC-TM modules can be imported into the Analyst software, along with the acoustic data, for further analysis and detailed report generation.

Example of thermal image taken with the MPAC-TM640.



Produce reports with the MPAC208 and include thermal images and results.



ORDERING INFORMATION

| Description | Part number |
|-------------------------------|-------------|
| MPAC-TM384 (384 x 288 sensor) | 1016-920 |
| MPAC-TM640 (640 x 512 sensor) | 1016-921 |

SALES OFFICE
Megger Limited

MPAC-TM384_DS_EN_V02

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MPAC-TM384 and MPAC-TM640

Thermal Modules for MPAC208

SPECIFICATIONS

| | MPAC-TM384 | MPAC-TM640 |
|---------------------------------|--|--|
| Imaging and optics | | |
| Detector type | 8 to 14 μm | 8 to 14 μm |
| Infrared resolution | 384*288 @ 17 μm | 640*512 @ 12 μm |
| NETD | 60 mK @25 °CF#1.0 | 60 mK @25 °CF#1.0 |
| Frame rate | 25 Hz | 25 Hz |
| Focal length | 13 mm | 13 mm |
| Field of view | 28.4° * 21.4° | 32.9° * 26.6° |
| IFOV | 1.79 mrad | 0.923 mrad |
| Min. object distance | 0.1 m | 0.14 m |
| D:S | 60:1 | 90:1 |
| Focusing mode | Manual | Manual |
| Digital zoom | 1x - 6x | 1x - 6x |
| Temperature range | -20 °C to +120 °C 120°C to +550°C | -20 °C to +120 °C 120°C to +550°C |
| Measurement and analysis | | |
| Measurement accuracy | $\pm 3\%$ ($\pm 3\%$ of the range, take the maximum value) | $\pm 3\%$ ($\pm 3\%$ of the range, take the maximum value) |
| Parameter settings | Temperature scale, Temperature unit, Distance, Emissivity, Thermal correction, Ambient temperature, Reflection, Humidity | Temperature scale, Temperature unit, Distance, Emissivity, Thermal correction, Ambient temperature, Reflection, Humidity |
| Image display | | |
| Thermal palette | White-hot, Black-hot, Ironbow, HC Rainbow, Rainbow, Grayscale | White-hot, Black-hot, Ironbow, HC Rainbow, Rainbow, Grayscale |
| Power | | |
| Power | DC 5 V, 0.05 A | DC 5 V, 0.05 A |
| Port | USB-C | USB-C |
| Environment parameters | | |
| Operating temperature | -20 °C to +50 °C | -20 °C to +50 °C |
| IP rating | IP53 | IP53 |
| Drop test | 1.2 m | 1.2 m |
| Certification | CE, RoHS | CE, RoHS |
| Physical parameters | | |
| Size | 35 x 50 x 42 mm | 35 x 50 x 42 mm |
| Weight | 56 g | 60 g |
| Material | Aluminium | Aluminium |