USER GUIDE

MPAC-V

Megger Professional Acoustic Camera Verifier

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EN

This manual supersedes all previous issues of this manual. Please visit the Megger website to ensure that you are using the most recent issue of this document. Destroy any copies that are of an older issue.

Megger Instruments Limited reserves the right to alter the specification of its products from time to time without notice. Although every effort is made to ensure the accuracy of the information contained within this document it is not warranted or represented by Megger Limited to be a complete and up - to - date description.

For Patent information about this instrument refer to the following web site:

Declaration of Conformity

Hereby, Megger Instruments Limited declares the MPAC-V professional acoustic camera verifier has been built in conformity with the following European Directives where they apply:

2011/65/EU

2014/30/EU

2014/34/EUh

The full text of Megger Instruments EU declarations of conformity are available at the following internet address:

megger.com/eu-dofc

Contents

1. Introduction

This manual explains the operation and use of the Megger MPAC-V, acoustic camera verifier..

Please read this guide carefully and take note of any safety warnings before using the MPAC-V.

1.1 Product description

The MPAC-V is an ultrasound generator that can be used to verify the operational status of the MPACs (Megger Professional Acoustic Imaging Cameras).

Various audio files (gas leaks, partial discharges, white noise etc) can be loaded into the MPAC-V using a MicroSD card to check multiple operational features of the camera, the alignment between the displayed acoustic cloud image and sound source, as well as the accuracy of SPL (Sound Pressure Level) and frequency measurement.

The MPAC-V supports .wav format audio files and is powered by either four AA batteries or the supplied USB-C power adaptor.

1.2 Company website

Occasionally an information bulletin may be issued via the Megger website. This may concern new accessories or new usage instructions. Check on the Megger website for anything applicable to your Megger instruments.

2. Safety warnings and standards

These safety warnings must be read and understood before the instrument is used. Retain for future reference.
The equipment should only be operated by suitably trained and competent people.

2.1 Warnings, cautions and notes

This user guide follows the internationally recognised definition of warnings, cautions and notes. These instructions must be adhered to at all times.

Description
WARNING : Indicates a potentially dangerous situation which, if ignored, could lead to death, serious injury or health problems.
CAUTION : Indicates a situation which could lead to damage of the equipment or environment.
NOTE : Indicates important instructions to be followed to perform the relevant process safely and efficiently.

2.2 Safety warnings

- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
- There are no user-serviceable parts inside the product; all servicing must be referred to Megger approved service centres.
- Check the unit for damage before use. The product must NOT be used if any part of it is damaged.
- The product must NOT be used in the case of malfunction or abnormal heat.
- Do NOT operate this unit in explosive environments.
- Do NOT place or store the product near a heat source, flame or in a high temperature environment.

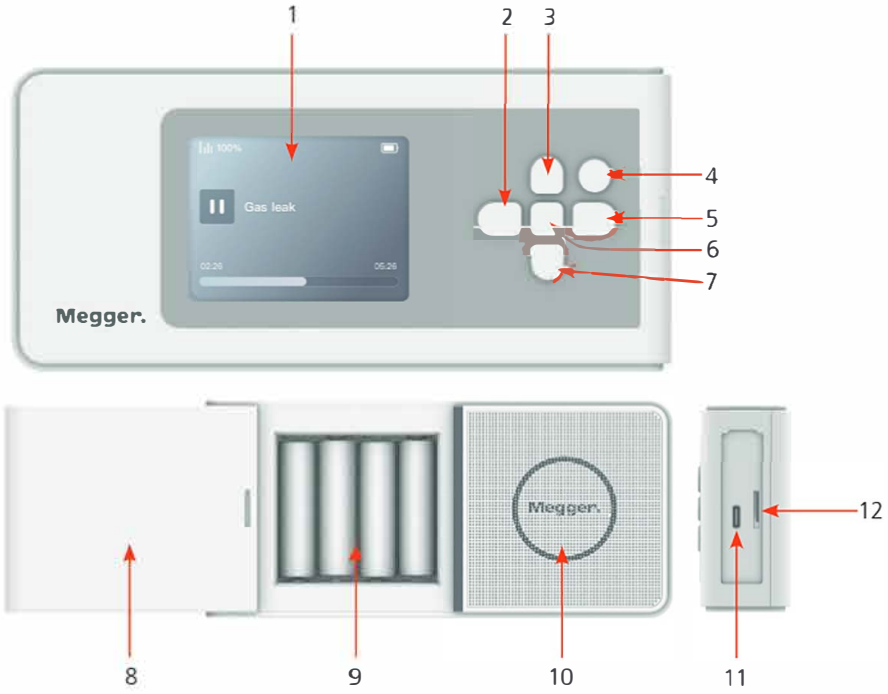
2.3 Safety, hazard and warning symbols on the instrument

This paragraph details the various safety and hazard icons on the instrument's outer case.

Icon	Description
	Caution: Refer to user guide.
	EU conformity. Equipment complies with current EU directives.
	Conforms to relevant Australian Safety and EMC standards.
	Do not dispose of to landfill, in sewage systems or by fire.

3. MPAC-V overview

3.1 MPAC-V layout



Item	Description	Item	Description
1	LCD display	7	Volume down button
2	Previous audio file	8	Battery cover
3	Volume up button	9	AA battery
4	Power button	10	Speaker
5	Next audio file	11	USB-C port
6	Play / Pause button	12	TF / MicroSD card slot

3.2 LCD Display

Item	Description	Item	Description
1	Current volume level	4	Battery level indicator
2	Play / Pause indication	5	Audio file name
3	Elapsed time	6	Total duration of the audio file

3.4 Default audio files

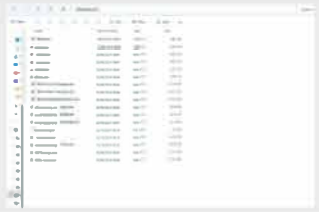
The Ultrasound Generator contains 15 default audio files.

- Gas Leak
- Corona Discharge - 50 Hz
- Surface Discharge - 50Hz
- Suspension Discharge - 50 Hz
- Corona Discharge - 60 Hz
- Surface Discharge - 60 Hz
- Suspension Discharge - 60 Hz
- Verification
- White noise
- Set frequency - 20 kHz
  - Optional Set Frequencies: 25, 30, 35, 40, 45 kHz

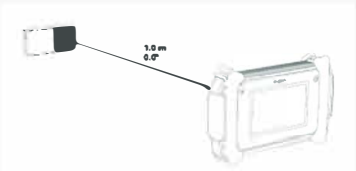
4. Operation

4.1 Setting up the MPAC-V

1. The MPAC-V comes with 15 audio files preloaded on the MicroSD card. If additional files are required, remove the MicroSD card from the MPAC-V and plug it into an SD card reader connected to a PC/ laptop. Copy and paste any new audio files into the root directory. Insert the MicroSD card back in the MPAC-V and turn on. Check the files are visible and can be played correctly.



2. Insert the batteries or plug in the USB-C charger and charging cable.
3. Place the MPAC-V on a flat surface, or use the 1/4" mounting thread on the bottom to fix to a tripod. Ensure the speaker is facing forwards toward the MPAC Acoustic Camera.



4. Press and hold the power button for 2 seconds to turn on the MPAC-V. The display will light up. Pressing and holding the power button for 2 seconds again, will turn the unit off.

5. Press the Previous file or Next file button to cycle through the available audio files, and select the file to play.

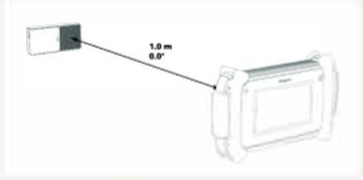
6. Press the Play/Pause button to play the selected audio file. Press the same button again to pause playback. The device only supports single-track loop mode.

7. Press the Volume up/Volume down buttons to change the volume 1% at a time. Long pressing either button will accelerate the selected % up or down.

4.2 Verifying the MPAC

1. Switch on the MPAC-V.
2. Set the volume to 100% using the volume up button.
3. Mount the MPAC-V on a tripod or place it on a table surface.
4. Select the verification audio file using either the previous or next audio file buttons.

5. Switch on the Megger Professional Acoustic Imaging Camera.
6. Place the MPAC camera at 1 m distance from the MPAC-V, ensuring the MPAC-V speaker and MPAC camera microphones are parallel to each other.



7. Make sure the verifier is positioned within the outline shown on the acoustic imager screen, and the speaker is centered within the circle.

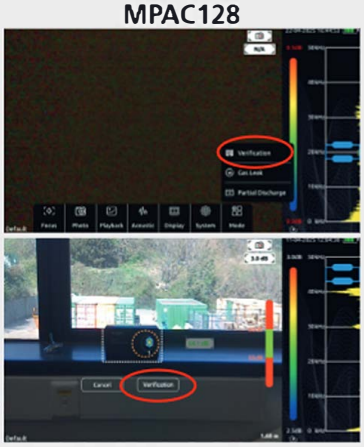
NOTE : If possible, mount the MPAC-V on a tripod (using the tripod mount) to avoid additional reflected sound effecting with the verification process.

8. Ensure the "Verification.wav" audio file is selected

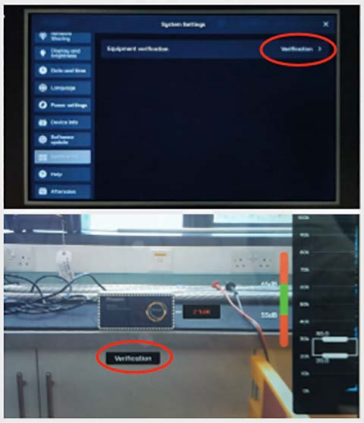
9. Follow the MPAC manual instructions to select Verification Mode to start the automatic verification process. Press the play/pause button on the MPAC-V to start the verification audio file and, within 3 seconds, press the start button on the MPAC camera to begin verification.
10. Press the play/pause button to start the playback.

NOTE : Make sure the start of audio file aligns as much as possible with the Verification start time. The MPAC-V will sequentially emit sound waves at 20 k, 25 k, 30 k, 35 k, 40 k, and 45 kHz frequency.

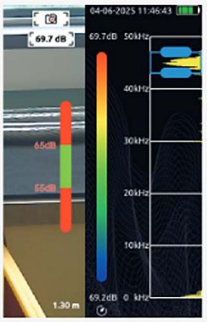
MPAC128



MPAC208



11. In verification mode, the MPAC camera displays a dB indicator bar on the right hand side of the display. This has a green "pass" band shown. Each frequency dB measurement should fall within the green pass band.
Ensure a correct frequency spike is shown on the MPAC FFT scale. If any range should fail, ensure the MPAC and MPAC-V are set up correctly and no external ultrasonic noise is interfering with the readings. If the measured value continues to fall outside the green range, the MPAC may need to be serviced and re-calibrated.



12. At the end of the verification process, the MPAC will display a table showing the measured dB values at each frequency. Any measurement that failed verification will be shown in red.

MPAC128

MPAC208

5. Specifications

Specification	Detail
Acoustic Specifications	
Sampling rate	96 kHz
Frequency range	20 k – 45 kHz
Operating frequency	25 kHz ± 5 kHz
File type	.wav
Power Supply	
USB-C 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	¼-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

6. Accessories and equipment

6.1 Included accessories

Item:
USB-C charger and multiple plug heads
USB-C Charging cable

6.2 Maintenance

NOTE : There are no user replaceable parts within this product.

6.3 General maintenance

If the MPAC-V will not be used for a long period of time, remove the AA batteries and store is a cool, dry location.

6.4 Cleaning

Disconnect the USB charger and remove the batteries before any cleaning procedure.

Wipe the instrument with a clean cloth dampened with either water or isopropyl alcohol (IPA).

Do not use abrasive cleaners as damage may occur.

Ensure the MPAC-V is dry and no moisture has penetrated the battery compartment, prior to returning to service.

7. Calibration, repair and warranty

Warranty Period: Two years from the date of purchase.

Megger operate fully traceable calibration and repair facilities to make sure your instrument continues to provide the high standard of performance and workmanship that is expected. These facilities are complemented by a worldwide network of approved repair and calibration companies, which offer excellent in-service care for your Megger products.

Within two years from the date of purchase, we provide free warranty service for abnormal, and malfunction caused by product quality. Free warranty service does not include the non-product quality problems caused by improper use, accidental drop, etc.

In case of equipment failure caused by improper use or accidental drop, we promise to provide maintenance service at cost price.

7.1 Return procedure

1. Should the MPAC-V require repair, a Returns Authorisation (RA) number must first be obtained from one of the addresses shown above. The following information is to be provided to enable the Service Department to prepare in advance for receipt of your instrument and to provide the best possible service to you:
   - Model (for example, MPAC-V).
   - Serial number (found on the display in the system/about menu, on the instrument label or on the calibration certificate).
   - Reason for return.
   - Details of the fault.
2. Make a note of the RA number. A returns label can be emailed or faxed to you if required.
3. Pack the MPAC-V carefully to prevent damage in transit. Use the original shipping box if possible.
4. Before the MPAC-V is sent to Megger, freight paid, make sure that the returns label is attached or that the RA number is clearly marked on the outside of the package and on any correspondence. Copies of the original purchase invoice and packing note should be sent simultaneously by airmail to expedite clearance through customs. In the case of instruments which require repair outside the warranty period, an immediate quotation can be provided when obtaining the RA number.
5. Track the progress on line

8. Decommissioning

8.1 WEEE directive

The crossed out wheeled bin symbol placed on Megger products is a reminder not to dispose of the product at the end of its life with general waste.

Megger is registered in the UK as a Producer of Electrical and Electronic Equipment. The Registration number is WEE/ HE0146QT.

For further information about disposal of the product consult your local Megger company or distributor or visit your local Megger website.

8.2 Battery disposal

The crossed out wheeled bin symbol placed on a battery is a reminder not to dispose of batteries with general waste when they reach the end of their usable life.

For disposal of batteries in other parts of the EU contact your local Megger branch or distributor.

Megger is registered in the UK as a producer of batteries (Registration number: BPRN00142).

For further information see _.

This instrument is manufactured in China.

The company reserves the right to change the specification or design without prior notice.

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Megger

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