

Microphone box (230 V, 50/60 Hz) 1014520

Microphone box (115 V, 50/60 Hz) 1014521

Instruction sheet

01/14 SD/ALF



- 1 Plug-in power supply
- 2 Input socket
- 3 Amplitude adjustment knob
- 4 Selector switch: Signal, Level, Pulse
- 5 Output socket

- A Channel A
B Channel B

1. Safety instructions

The microphone box conforms to all safety regulations for electrical measuring, control, monitoring and laboratory equipment, as specified under DIN EN 61010, Section 1. It is intended for operation in a dry environment, suitable for the operation of electrical equipment and systems.

Safe operation of the equipment is guaranteed, provided it is used correctly. However, there is no guarantee of safety if the equipment is used in an improper or careless manner.

If it may be assumed for any reason that non-hazardous operation will not be possible (e.g. visible damage), the equipment should be switched off immediately and secured against any unintended use.

- Use the equipment in dry rooms only.
- Only operate using the supplied plug-in power supply.
- Do not apply any external voltage to the output sockets.

2. Description

The microphone box is a universal, dual-channel amplifier for electret microphones with a band width of 10 Hz to 40 kHz. Both channels (A und B) can be switched between Signal, Level and Trigger modes. The sensitivity of the pre-amp is adjustable and allows measuring instruments and oscilloscopes to be connected directly. The threshold for the trigger is also adjustable. The microphone box is particularly suitable for use with long and short microphone probes and the micro-second counter in order to carry out experiments on the speed of sound.

The microphone box with order number 1014521 is intended for a mains voltage of 115 V ($\pm 10\%$), whereas the one numbered 1014520 is for 230 V ($\pm 10\%$).

3. Contents

- 1 Microphone box
- 1 Plug-in power supply
- 1 Instruction sheet

4. Technical data

Inputs:

Channels: 2 separate channels for electret microphones

Inputs: 3.5 mm jack plugs

Outputs: BNC socket

Output

impedance: 1 kOhm

Gain: 20 to 70x

Band width: 10 Hz to 42 kHz

Output signal: Switchable between Signal, Level and Pulse

Sensitivity using microphone 4008308:

800 mVpp approx. at 80 dB noise level, 1 kHz and minimum gain

2.5 Vpp approx. at 90dB noise level, 1 kHz and minimum gain

Outputs:

Signal: 0 - 14 Vpp max.

Level: 0 - 7 V DC max.

Puls: Low: 0 V, High: 8 V DC, length: 150 ms

General data:

Voltage supply: Plug-in power supply 12 V AC, 500 mA

Dimensions: 100 x 75 x 35 mm³ approx.

Weight: 450 g approx. incl. plug-in power supply

5. Additionally required equipment

- | | |
|---------------------------|---------|
| 1 Microphone probe, short | 4008308 |
| or | |
| 1 Microphone probe, long | 1017342 |

6. Operation

6.1 Amplifier (signal) mode

- Set the selector switch to ~ (Signal), connect an electret microphone to the input and an oscilloscope or amplifier to the output.
- Set the required gain with the amplitude knob.

6.2 Level mode

- Set the selector switch to = (level) and connect an electret microphone to the input.
- Set a measuring instrument (meter) to the required DC measuring range and connect it to the output.
- Set the required gain with the amplitude knob.

6.3 Trigger (pulse) mode/measurement of time in motion

- Set both switches to \square (Trigger or Pulse) and connect an electret microphone to the input of Channel A to detect the start pulse.
- Connect another microphone to the input of Channel B to detect the stop pulse.
- Connect the start input of the counter to the output of Channel A and the stop input of the counter to the output of Channel B. Both amplitude knobs should be set to the same gain.

Caution: the gain should be turned down enough to ensure that the trigger is not set off by noises from the surroundings.

7. Example experiment

Determining the speed of sound in Kundt's tube

Additionally required:

- | | |
|---|---------|
| 1 Microsecond counter (230 V, 50/60 Hz) | 1017333 |
| or | |
| 1 Microsecond counter (115 V, 50/60 Hz) | 1017334 |
| 1 Kundt's tube E | 1017339 |
| 1 Pulse box K | 1017341 |
| 1 Microphone probe, long | 1017342 |
| 1 Microphone probe, short | 4008308 |
| 2 HF patch cords, BNC/4-mm plugs | 1002748 |

- Place the microphone probes in the Kundt's tube and set up the apparatus. (see Fig. 1)
- Connect the long microphone probe to the Channel A input of the microphone box and connect the short one to the input for Channel B.
- Use a BNC/4-mm adapter cable to connect the output of Channel A to the Start input of the microsecond counter (plug red 4-mm plug into green socket, black 4-mm plug into black ground socket).
- Connect the output of Channel B to the Stop input of the microsecond counter (plug red

4-mm plug into red socket, black 4-mm plug into black ground socket from the side).

- Connect the pulse box to the speaker.
- Set both outputs to trigger mode and set the gain for both channels to a medium value.
- Connect the microsecond counter and microphone box to their power supplies and plug them into the mains.
- Trigger a click pulse from the pulse box and read off from the counter the time it takes for the sound to propagate from the long microphone probe to the short one.

Use the distance between the two microphones and the time measured to calculate the speed of sound in the tube at room temperature.

8. Storage, cleaning, disposal

- Keep the microphone box in a clean, dry and dust free place.
- Before cleaning the equipment, disconnect it from its power supply.
- Do not clean the unit with volatile solvents or abrasive cleaners
- Use a soft, damp cloth to clean it.
- The packaging should be disposed of at local recycling points.
- Should you need to dispose of the equipment itself, never throw it away in normal domestic waste. Local regulations for the disposal of electrical equipment will apply.

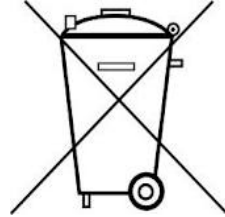


Fig. 1 Experiment set-up with Kundt's tube

