

# Model Sounds™

## Mono Amplifier Kit – MSMAK66

Build yourself an amplifier kit that can be permanently located on your layout.

Locate it in a building or a fixed vehicle or any awkward space enhancing your layout

Just solder the jack lead, speaker & USB lead to the board and you are good to go



### Kit Contents

(Pic 1 left to right, top to bottom)

- 1m Speaker cable
- 1m USB power cable
- 0.5m 3.5mm Jack cable
- 66mm 8Ω 0.5W speaker
- 2165B Amplifier board

### Kit Requires

- USB power supply 5.5V 1A mains plug (supplied separately) or
- 2x AA batteries & clip (supplied separately)

### Tools Required

- Soldering iron
- Solder
- Wire cutters
- Wire strippers

## Model Sounds™

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## Build Instructions

Before you start, familiarise yourself with the printed circuit board (PCB). We use a KITRONIK pre-built board with the only soldering required is the connections of the various leads.

The kit is provided with three cables which need to be attached to the PCB. Each connection needs to go through the strain relief holes (Pic 2) as shown in the picture and soldered on the reverse (Pic 3).



Pic 2



Pic 3



Pic 4

### Connect the wires

Start with the connection labelled 'speaker'. The kit is supplied with a 1m length of speaker cable. This will be used to connect the PCB to the speaker and can be trimmed to suit.

Strip off the insulation on each end of the cable. Connect one end to the two terminals on the speaker (Pic 4) and the other end to the board marked 'speaker'.

The cable has a stripe printed on it denoting the negative core (-). The speaker is not polarity sensitive but you may wish to connect the stripe to the pad on the board marked stripe or '-'

\* The middle connection is for the power. The USB cable provided with the kit should be connected to the PCB. The red wire connects to terminal marked 'Red' or '+' and the black wire to the terminal marked '-'

\* The final connection is the audio input. Strip the insulation off the other end of the cable that has the audio jack plug on. Solder these wires into the PCB where it is labelled input. Connect the wire with the stripe to the pad on the board marked stripe or '-' and the remaining wire to the terminal marked '+'

\* Please note! The power and inputs are polarity sensitive and your amplifier will not work if the terminals are crossed.

## Audio equipment may be damaged if connected to an incorrectly connected amplifier

### Fault Finding

Before plugging in the amplifier check first that all terminals have a cable soldered to them, are in the correct order, the polarity is correct and any wire has not been soldered to its neighbour.

Plug in the USB power cable and connect to a music source, turn on both.

<b>1) Is the speaker making any kind of sound?</b>	
Yes <ul style="list-style-type: none"><li>• Move on to question 2</li></ul>	No <ul style="list-style-type: none"><li>• Check the power lead is connected the correct way round.</li><li>• Check the audio input is connected the correct way round</li><li>• Check for dry joints (PCB &amp; speaker)</li><li>• Check for bare wires touching together</li><li>• Try an alternative power source. The amplifier may not work when the USB power source is from a PC or laptop.</li></ul>
<b>2) Is the speaker clearly playing your chosen sounds?</b>	
Yes <ul style="list-style-type: none"><li>• Fault finding complete</li></ul>	No <ul style="list-style-type: none"><li>• Re-check above</li></ul>

### Designing the Enclosure

When deciding where you wish to locate your speaker and amplifier, you will need to consider;

- Accessibility - to maintain both the PCB and the speaker
- How to mount the speaker
- How to get the cables to the correct places
- Porting to give the best audio sound

The PCB should ideally be mounted on stand-off bolts using the four corner holes. Bolts of 3mm are suggested.

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### What is porting?

Speakers are transducers that rely on a space for the diaphragm to move air in order to create sound. So bolting a speaker against, say, a bulkhead of a boat is a recipe for very poor and muffled sound.

The speaker should ideally be mounted in a round tube or contained in a box with free air in front and behind and a way for the sound to get out, thus giving it a porting ability, and allowing enough air around the unit to produce a precise yet powerful sound.

### Power supply

- USB power supply 5.5V 1A mains plug (PC or laptop not recommended) or
- 2x AA batteries

### Important!

**Do not attempt to power this equipment from a 9V battery source as damage will occur. Absolute maximum power supply voltage is 6Volts**

### Information

This kit can be used with any MP3, personal stereo equipment, or one of our Master Speaker Units that has a 3.5mm headphone or output jack socket and uses an amplifier IC which can output 1W of power.

### Kitronik Ltd

The amplifier board (2165B) has been designed and manufactured in the UK by Kitronik Ltd.

Thanks must also go to Kitronik Ltd for letting us use their instruction booklet in the making of this information sheet.