

# QUASAR ELECTRONICS KIT No. 1066

## MOTORBIKE INTERCOM

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### General Description

This circuit is a portable two channel intercom having independent inputs and outputs for each channel. This is a very interesting feature as it makes possible to have simultaneous two way communication.

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### Technical Specifications - Characteristics

Supply voltage: ..... 3 VDC  
Output power: ..... 0.1 W per channel  
Channels: ..... 2 independent  
Input:.....Piezoelectric microphone of high impedance.  
Output:..... 8 ohm / 0.1 Watt speaker.

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### How it Works

The circuit makes very effective use of the integrated circuit TDA7050 which is a STEREO power amplifier in one single IC designed for portable STEREO radios, cassette players etc.

There is a preamplifier stage in each channel for the micro phones which consists of one transistor in common base configuration. The two circuits are identical so let us see how the one around Q1 works. The signal from the collector of Q1 is taken to the potentiometer R5 which is the volume control of the output amplifier and then through the capacitor C3 it enters the power amplifier stage. The output of the amplifier is connected to a loudspeaker.

The other channel is identical. The diode D1 is there to protect the circuit if the power supply is connected the wrong way round. It is obvious that when the circuit is used on a motor bike each person will have in his/her helmet a microphone and the loudspeaker which will be connected to the other channel's output.

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### Construction

First of all let us consider a few basics in building electronic circuits on a printed circuit board. The board is made of a thin insulating material clad with a thin layer of conductive copper that is shaped in such a way as to form the necessary conductors between the various components of the circuit. The use of a properly designed printed circuit board is very desirable as it speeds construction up considerably and reduces the possibility of making errors. Quasar Electronics Kit boards also come pre-drilled and with the outline of the components and their identification printed on the component side to make construction easier. To protect the board during storage from oxidation and assure it gets to you in perfect condition the copper is tinned during manufacturing and covered with a special varnish that protects it from getting oxidised and also makes soldering easier.

Soldering the components to the board is the only way to build your circuit and from the way you do it depends greatly your success or failure. This work is not very difficult and if you stick to a few rules you should have no problems. The soldering iron that you use must be light and its power should not exceed the 25 Watts. The tip should be fine and must be kept clean at all times. For this purpose come very handy specially made sponges that are kept wet and from time to time you can wipe the hot tip on them to remove all the residues that tend to accumulate on it. DO NOT file or sandpaper a dirty or worn out tip. If the tip cannot be cleaned, replace it. There are many different types of solder in the market and you should choose a good quality one that contains the necessary flux in its core, to assure a perfect joint every time. DO NOT use soldering flux apart from that which is already included in your solder. Too much flux can cause many problems and is one of the main causes of circuit malfunction. If nevertheless you have to use extra flux, as it is the case when you have to tin copper wires, clean it very thoroughly after you finish your work. In order to solder a component correctly you should do the following:

- Clean the component leads with a small piece of emery paper.
- Bend them at the correct distance from the component's body and insert the component in its place on the board.
- You may find sometimes a component with heavier gauge leads than usual, that are too thick to enter in the holes of the p.c. board. In this case use a mini drill to enlarge the holes slightly. Do not make the holes too large as this is going to make soldering difficult afterwards.
- Take the hot iron and place its tip on the component lead while holding the end of the solder wire at the point where the lead emerges from the board. The iron tip must touch the lead slightly above the p.c. board.
- When the solder starts to melt and flow, wait till it covers evenly the area around the hole and the flux boils and gets out from underneath the solder. The whole operation should not take more than 5 seconds. Remove the iron and leave the solder to cool naturally without blowing on it or moving the component. If everything was done properly the surface of the joint must have a bright metallic finish and its edges should be smoothly ended on the component lead and the board track. If the solder looks dull, cracked, or has the shape of a blob then you have made a dry joint and you should remove the solder (with a pump, or a solder wick) and redo it.
- Take care not to overheat the tracks as it is very easy to lift them from the board and break them.
- When you are soldering a sensitive component it is good practice to hold the lead from the component side of the board with a pair of long-nose pliers to divert any heat that could possibly damage the component.
- Make sure that you do not use more solder than it is necessary as you are running the risk of short-circuiting adjacent tracks on the board, especially if they are very close together.
- When you finish your work cut off the excess of the component leads and clean the board thoroughly with a suitable solvent to remove all flux residues that still remain on it.

In this project, especially if you are going to use it on the road you should be particularly careful in order to make a mechanically sound construction in order to avoid future problems because of the motorbike's vibrations.

As usual start building your project from the IC socket and the pins which are the components least sensitive to heat. Continue with the resistors, solder in their places the capacitors watching the polarity of the electrolytic, and finally insert in their places the transistors and the diode making sure that they are placed correctly and that you do not overheat them during soldering.

The potentiometers can be soldered in their places on the board or if the casing that you

are going to use requires it they can be connected with the rest of the circuit by means of flexible shielded cables. Use jack connectors for the inputs and outputs of the circuit and again make all the connections with shielded cables to minimise interference.

Use a small battery holder for two batteries and it is a good idea to use an ON-OFF switch for the power line in order to pro long battery life although the power consumption of the circuit is very low.

Insert the IC in its socket, make a final inspection of the circuit and connect the speakers, the microphones and the batteries. If you speak into the microphone you should be able to hear whatever you say clearly from the corresponding speaker.

Quasar Electronics also makes a plastic case for the intercom (Part No. 2066), which comes with a ready drilled front plate printed in white to identify the controls.

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## Adjustments

This kit does not need any adjustments, if you follow the building instructions.

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## Warning

Quasar Electronics kits are sold as stand alone training kits.

If they are used as part of a larger assembly and any damage is caused, our company bears no responsibility.

While using electrical parts, handle power supply and equipment with great care, following safety standards as described by international specs and regulations.

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## If it does not work

Check your work for possible dry joints, bridges across adjacent tracks or soldering flux residues that usually cause problems.

Check again all the external connections to and from the circuit to see if there is a mistake there.

- See that there are no components missing or inserted in the wrong places.

- Make sure that all the polarised components have been soldered the right way round. -

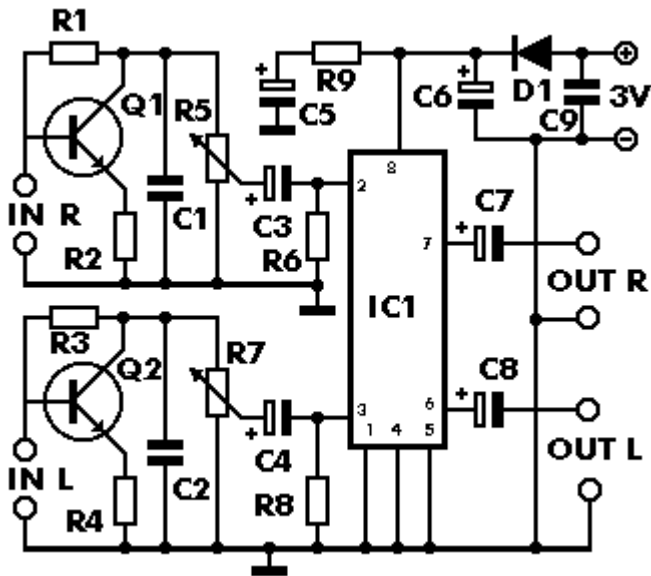
Make sure the supply has the correct voltage and is connected the right way round to your circuit.

- Check your project for faulty or damaged components.

If your project still fails to work, please contact us for information about our Get-You-Going service.

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## Electronic Diagram



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## Parts List

All components including printed circuit board, assembly instructions including schematics and detailed parts list are supplied when you purchase the kit.

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## Ordering

For pricing info and online ordering please visit:

<http://www.quasarelectronics.com/1066.htm>

For further info please contact us by e-mail:

[mailto: sales@QuasarElectronics.com](mailto:sales@QuasarElectronics.com)

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