

QUASAR ELECTRONICS KIT No. 1071

4-INPUT SELECTOR

General Description

This is a hi-fi STEREO 4-input selector based on a single integrated circuit which employs electronic switching to select the different inputs. Conventional selectors use mechanical switches and pass the audio signals through them. The problem with is that with time and use mechanical contacts tend to wear and this produces unwanted noise. Besides that cables between the preamplifier board and the switches can be another source of unwanted noise and distortion. Our circuit gets away with all these problems because the switching is done electronically in the IC itself, without having to pass the signal through mechanical switches. The integrated circuit selects the various inputs by the simple application of DC voltages in its control pins.

This makes possible the use of practically any type of switch for the input selector, getting away with expensive specially designed switches for audio circuits, without at the same time having to sacrifice high quality. The switching is completely noise-free and eventual wear of the switches does not affect sound quality. The use of DC voltages for the switching has another advantage that the selector can be activated by remote control (Quasar Electronics Kit 3072) and that the switches themselves can be placed at any distance from the main selector board without having to worry about noise and interference. There is also a RIAA equalised preamplifier stage included on the printed circuit so that when the P.U. input is selected there is no need to connect a separate preamplifier. The integrated circuit which does all this is the TDA 1029 by PHILIPS and has the following characteristics:

Technical Specifications – Characteristics

Device type: TDA 1029 Signal Source switch.
Working voltage: 12-20 VDC
Maximum input level:..... 6V
Maximum output level:.....5V
Distortion (T.H.D): 0.01 % typical
Signal to noise ratio: 120 dB
Frequency response:20 Hz-20 KHz
KHz Total output noise: ... <12 mV

How it Works

There is not much to be said about the workings of this circuit as most of the work is done by the IC. The only thing that should be mentioned about the selector is that when one of the pins 17 (P.U.), 18 (TAPE 1) or 19 (TAPE 2) is grounded the corresponding input is selected and when all of them are in the air then the circuit selects automatically the fourth input (RADIO).

As we have already mentioned there is also a RIAA corrected input stage for magnetic

P.U. and this a classic preamplifier circuit with two transistors per channel and a specially calculated feedback loop which in effect adjusts the circuit's frequency response to produce the desired correction according to the RIAA standards.

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 may still remain on it.

The use of the TDA 1029 simplifies the circuit very much. The switches as we have already explained are NOT in the signal path and they can be placed anywhere with respect to the PCB. The cables used to connect them with the board can be of any type, they don't have to be shielded and they can be as long as you like. It is however necessary to follow the basic rules outlined above for the successful completion of electronic projects and although the basic directions have been given let us be a bit more specific about the circuit you are about to build. Then place the pins and the IC socket, solder in place the resistors, continue with the capacitors, taking care to insert the electrolytic the right way round, and finally solder in place the four transistors, avoiding to overheat them in the process. Finally place the IC in its socket taking care to avoid bending its pins during insertion and to align it correctly. When every thing is in its place clean the board thoroughly and make a final inspection to ensure that there is nothing missing and that there are no faults in construction.

When you are satisfied that everything is perfect make the following connections:

1 - EARTH , 2. - TAPE 2 - R IN, 3. - REC OUT - R, 4. -OUT - R, 5. - TAPE 1 -R IN, 6. - EARTH

7. -TAPE 2 (L) IN, 8. -RADIO -R IN , 9. - EARTH, 10. -TAPE 1 (L) IN, 11. - EARTH , 12. - RADIO (L) IN

13. - POWER SUPPLY (+), 14. - POWER SUPPLY (-), 15. -REC OUT (L), 16. - OUT (L), 17. - P.U. SWITCH 18. - TAPE 1 SWITCH, 19. - TAPE 2 SWITCH, 20. - EARTH, 21. -

PICK UP (L) IN , 22. - EARTH

23. -PICK UP -R IN

Adjustments

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

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.

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.

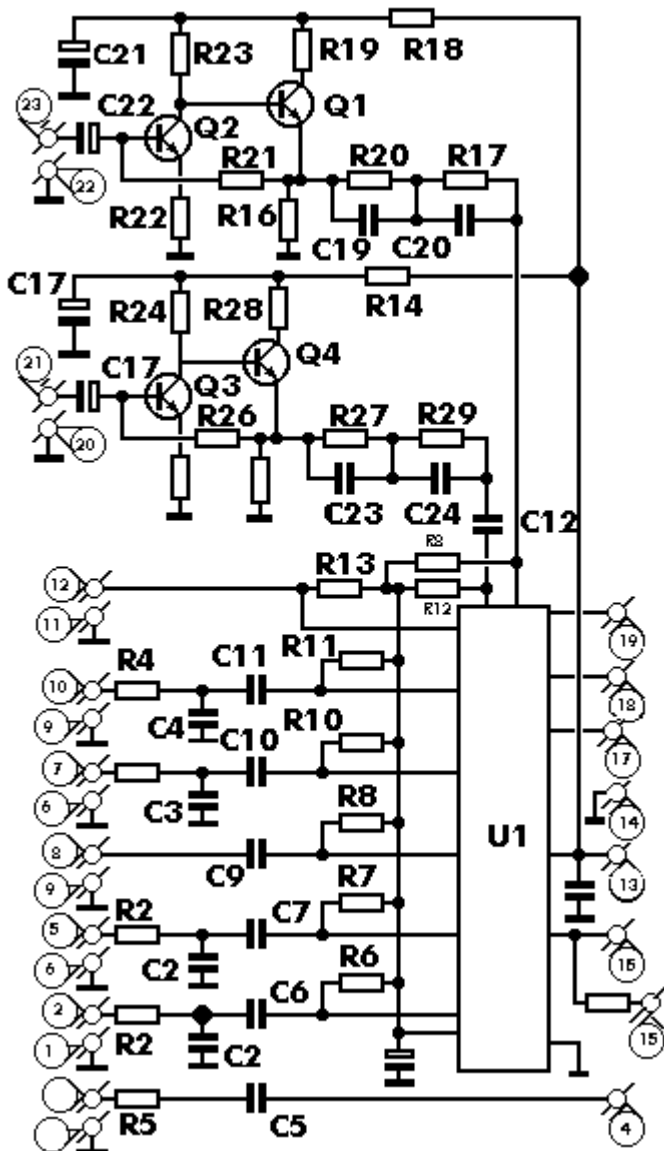
- Make sure that all the polarised components have been soldered the right way round. -

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.

Schematic Diagram



Parts List

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

Ordering

For pricing info and online ordering please visit:

<http://www.quasarelectronics.com/1071.htm>

For further info please contact us by e-mail:

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

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