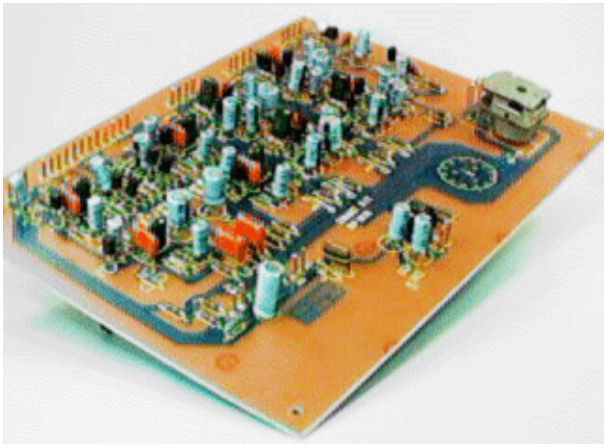
QUASAR ELECTRONICS KIT No. 1010

5-INPUT STEREO MIXER WITH MONITOR



General Description

A professional grade STEREO mixer with 5 inputs that will satisfy even the most demanding Hi-Fi listener. Its high quality makes it suitable for: DISCO's to fade in and out different music sources to give a feeling of continuity, and to let the disk-jockey speak above the program. In the studio of a STEREO FM transmitter for mixing voice and music or for smooth transition from one piece of music to the other. In a home STEREO system for high quality recordings with the possibility of mixing various sources. In live recordings in order to be able to introduce comments that we may wish to record together with the program. Finally wherever it is necessary to use a high quality STEREO mixer.

Technical Specifications – Characteristics

Stereo Inputs:2 for P.U., 2 AUX for TAPE, TUNER
Mono Inputs: 1 for dynamic microphone
Sensitivity: 3 mV/47 Kohm
P.U. 2 mV/300 ohm
MIC 150 mV
Frequency response: 20 Hz-20 KHz (-3 db)
Distortion: 0.05 %
Supply voltage: 12 VDC stabilised
Max. current: 500 mA

How it Works

The mixer consists of two STEREO preamplifiers for magnetic P.U. incorporating the RIAA correction, two STEREO preamplifiers for the AUX inputs and a MONO preamplifier for the microphone input. The circuit also incorporates a line amplifier that is used to further amplify the output signal after mixing the various sources. There is also a small amplifier that is used as a MONITOR in the output of which can be connected a pair of 8 ohm STEREO head phones. There is a rotary selector to direct any input to the monitor amplifier and its volume can be adjusted from a separate potentiometer without affecting the settings of the mixer.

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 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 can not 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 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 increase the diameter of 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 allow 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. After finishing 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.

Although the mixer looks bulky and complicated its construction is relatively easy. Start working with the connection pins and the jumper connections J1-J7. Solder in place all the resistors and the capacitors taking care not to insert any electrolytic the wrong way round. Continue by inserting the transistors in their places on the p.c. board and soldering them carefully after making sure that they are in their correct places and the right way round. Now you should also solder in its place the integrated circuit taking care not to overheat it during soldering. At this point pause and make a very thorough visual inspection of the board and your work up to this stage and only after you convince yourself that everything is OK you can go on and solder the sliding potentiometers FROM THE COPPER SIDE OF THE BOARD and in the places marked P1 to P5. First from the left is the MONO potentiometer for the micro phone input and the other four are the STEREO ones for the other inputs of the mixer. Lower and to the left is mounted the rotary potentiometer for the monitor output level and to its right is placed the rotary switch. Both these components will be mounted with their spindles protruding from the copper side of the p.c. board. If you are satisfied that everything is as it should be then you can proceed with the connections of the mixer with the input and output sockets and the power supply. To avoid any mistakes follow please the list we provide and check each step as you conclude it. The numbers correspond to the pins on the board.
CONNECTION TO DEVICE (+)
CD, TUNER 1 or TAPE 2 (L), 4 (R), 1,3 (GND)
CD, TUNER 2 or TAPE 14 (L), 16 (R), 13,15 (GND)
MAGNETIC P.U. 1 22 (L), 24 (R), 21,35 (GND)
MAGNETIC P.U. 2 18 (L), 20 (R), 19,21 (GND)
DYNAMIC MICROPHONE 28 (L), 27 (GND)
MIXER OUTPUT 6 (L), 8 (R), 7 (GND),
MONITOR OUTPUT 33 (L), 34 (R), 32,35 (GND)
P. SUPPLY 12 VDC STABILIZED 25 (GND), 26 (+)
RECORDING OUTPUT 10 (L), 12 (R), 9,11 (GND)
LOW LEVEL (50 mV) OUTPUT 37 (L), 37 (R), 36,31 (GND)
When you finish with all the above connections you can actually try your mixer in operation. Connect all the sources you are planning to use to it and supply it with 12 VDC stabilised. If everything is working properly then you should be able to hear the music from the output of the amplifier and if you change the settings of the potentiometers it should change accordingly. The output must be clear and free from noise and distortion.

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.

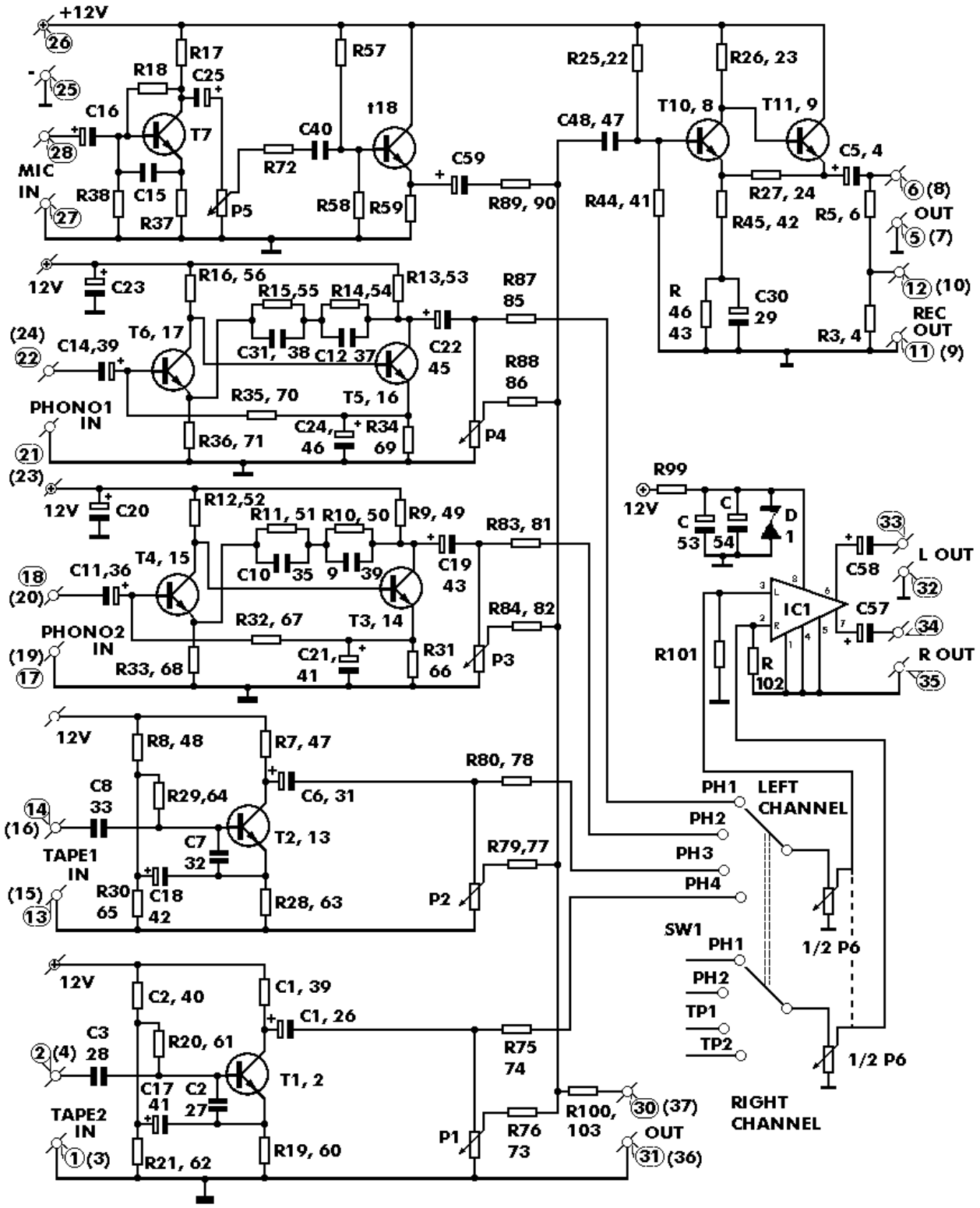
While using electrical parts, handle power supply and equipment with great care, following safety standards as described by international specs and regulations.

If it does not work

Check the power supply to make sure there are exactly 12 VDC across the circuit, and that the polarity is correct.
Make sure the transistors and the diode are connected the right way round
See that there are the right signals present in the inputs of the mixer.
Check your work for possible dry joints, bridges across adjacent tracks or soldering flux residues that usually cause problems.

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/1010.htm

For further info please contact us by e-mail:

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