REGULATOR UNIT UN1/110

The UN1/110 is designed to deliver a constant current of required value to an AKG condenser microphone from a bulk power supplier PS2/75. Up to eight UN1/110 units can be used with one PS2/75.

The UN1/110 is connected between the bulk power supplier and the head amplifier of the microphone with which it is associated and, in addition to the current-stabilised heater supply, provides a decoupled h.t. supply. The circuit of the latter has a safety feature which ensures that the h.t. voltage is automatically reduced from 130 volts to 40 volts in the absence of a load on the heater supply. This is necessary in order to comply with BBC Safety Regulations, because when the head amplifier of a C12A microphone is unplugged from the microphone extension, open pins are exposed.

The unit is mounted on a standard CH1/18C chassis with index pegs in positions 22 and 33; eight of the units plug into a standard PA1M/64 panel. Each socket position on this panel may be wired to a universal microphone point.

The circuit of the UN1/110 is shown in Fig. 1 and the operation is as follows. Heater current at +27 volts from the PS2/75 enters the unit at terminal Pa 8 and flows back to the common terminal Pa 10 via Zener diode ZD1 and R3. Zener diode ZD1 maintains a constant voltage of 6·25 between the left-hand end of RV1 and RV2 and the base of TR1. Two alternative emitter loads are provided, to be selected according to the type of microphone in use; these alternatives are selected by a switch on the front panel of the unit, and give stabilised currents of 122 and 175 mA. For 122 mA, since the voltage drop across the load is about 6 volts, the value of resistance required is about 49 ohms and for 175 mA it is about 34 ohms. As ZD1 maintains a constant voltage, the current flowing in the emitter load and out through the collector and terminal Pa 9 must likewise remain constant.

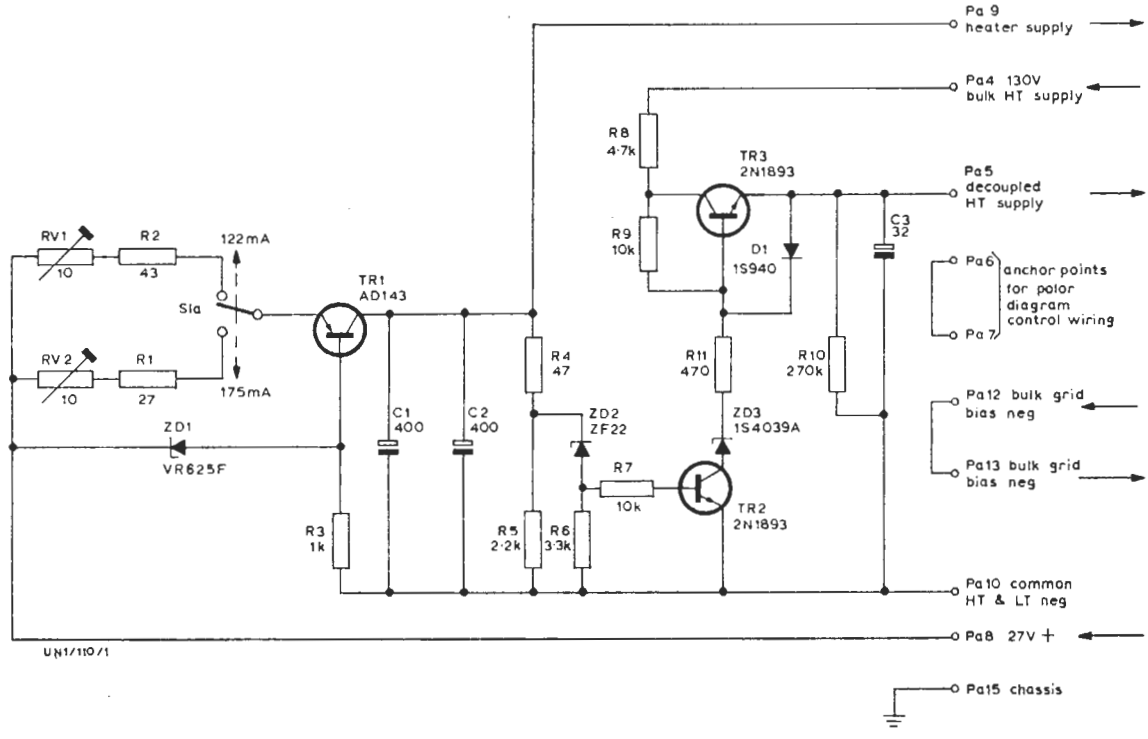

Fig. 1. Circuit of Regulator Unit UN1/110
Provided by courtesy of Sontranic Limited

C12A and C61 microphones require a heater current of 122 mA, whereas C12, C26 and C28 microphones require 175 mA. The C12A and C61 microphones can be damaged by applying the wrong value of heater current.

At the collector of TR1 the voltage has a value less than 22, which is not enough to open a path through Zener diode ZD2. The actual voltage depends on the voltage across the heater and the resistance of the microphone extension. Transistor TR2 therefore remains cut off. Bulk h.t. supply enters the unit through terminal Pa 4 and flows via the decoupling resistor R8 and TR3 collector and emitter to terminal Pa 5. C3 is the decoupling capacitor and R10 is a discharging resistor.

If for any reason the load on the heater supply connected to terminal Pa 9 disappears, the voltage at TR1 collector rises and causes ZD2 to conduct. This produces a difference of potential between TR2 base and emitter and TR2 therefore conducts. The decoupling capacitor C3 discharges through rectifier D1, R11, ZD3 and TR2, cutting off TR3. Current flows from the 130-volt supply (terminal Pa 4) via R8, R9, R11, ZD3 and TR2 to the common negative terminal Pa 10. Zener diode ZD3 ensures that the voltage at the upper end of R11 does not rise above 43 volts, so that any exposed voltage on the conductor connected to terminal Pa 5 cannot exceed this amount.

If the heater or h.t. supply to the microphone is short-circuited, no damage results and the operation of the remaining microphones fed from the same bulk power supplier is unaffected.

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