SAA1020, SAA1220, SAA1121 D/A Converter IC Kit for Controlling TV Tuners (Voltage Synthesizer)

SAA1020: Storage IC in CMOS Technology (16-Pin Plastic Package)
SAA1220: Storage IC in P-Channel MNOS Technology (18-Pin Plastic Package)
SAA1121: Control IC in P-Channel Si-Gate Technology (24-Pin Plastic Package)

This IC kit consists of two highly integrated MOS circuits. It generates digitally and electronically all the data required for tuner control such as the tuning voltage, the switching voltage for band selection, and an additional fine-tuning signal. Realisation of electronic station searching with muting is possible.

In conjunction with the ultrasonic remote control system SAA1124/SAA1130 or with the infrared remote control system SAA1250/SAA 1251/SAA1271 and with the character generator SAA2008, all of which fully compatible with each other, an optimum overall solution has now been achieved to the design complex "remote control, electronic touch-buttons, channel storage, tuner control and program number display in modern CTV receivers". Because of an extremely low current consumption of the storage IC SAA1020, the channel data remain stored for one year or more even when the receiver is switched off, if a small 1,5 V battery supplies the SAA1020, as shown in the diagram below. If the non-volatile memory SAA1220 is used, no backup battery is necessary. All up to now needed mechanical-electronical solutions of channel selection, -storage and adjustment included the tuning potentiometers herewith are superfluous.

The Storage IC SAA1020 is a static 288-bit shift register capable of storing 16 channel data. It can be directly connected to the control IC SAA1121 without interface. The clock input is terminated with an integrated resistor so that the device remains insensitive also if the supply voltage of the control IC SAA1121 is switched off and its push-pull output turns high-ohmic. The likewise integrated resistor at the data input limits the voltage swing. The drain connection of an open-drain transistor is the data output. The current consumption of the SAA1020 is (with $U_B = 1.5$ V) without clock 10 µA and with clock 100 µA.

The SAA1220 is a non-volatile version of a storage IC with the same memory capability as the above described SAA1020. The storage of the digital tuning information for the control IC SAA1121 is preserved even if the supply voltage is switched off. Therefore a backup battery is not necessary. The current consumption in operation is about 20 mA.

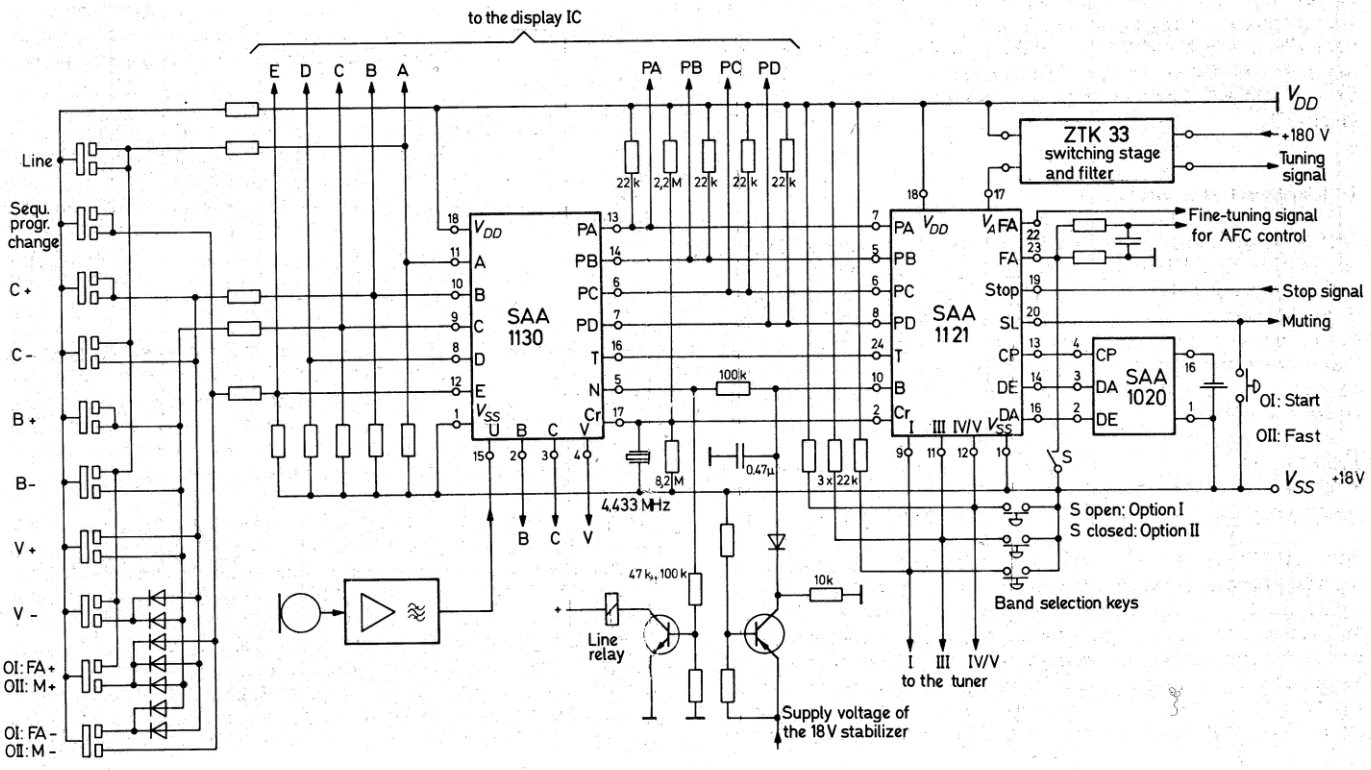
The Control IC SAA1121 is an improved version of the SAA1021. The latter is not recommended for new designs. Data sheets on request.

The designer of a TV set which is equipped with the voltage synthesizer IC kit has two possibilities concerning automatic station search and fine tuning. Hereafter, these two possibilities are called Option I and Option II. They are selected by different connection of pin 23 of the SAA1121.

Option I: The TV set can be programmed by an automatic station search operation. Stop signals for interrupting the search operation may be delivered i.e. by the ratio detector of the AFC. During normal TV operation fine-tuning may be adjusted in seven steps, even remote-controlled. The fine-tuning signal may serve as a guide signal for the AFC or it can be superimposed to the basic tuning signal. With that the user of the TV set either can alter the picture sharpness or compensate interferences at weak received stations.

Option II: In this case the TV set is programmed by a manual station search operation. This is possible with two different speeds and in single steps. The slower speed and the single steps are also remote-controllable. Therefore, a remote-controlled picture correction is also possible, but a fine-tuning signal is not yet disposable. Ratio detector or AFC respectively are not necessary. For this operation mode pin 23 must be connected to V_{SS}.

The current consumption of the SAA1121 is about 32 mA.



Control Assembly for a Remote-Controlled Color TV Receiver with SAA1121, SAA1020 and SAA1130