

9.6.4.2 Vertical synchronisation IC 7225-5D and the frame amplifier IC 7401

The vertical oscillator (50Hz) is controlled by the incoming video signal.

The vertical output is driven in anti-phase via the pin 46 and 47. On pin 41 the so called "Sandcastle" puls is present. The sandcastle puls is applied to several parts of the circuits for timing purposes.

9.6.4.3 Frame amplifier

In principal the frame output stage IC 7401 (TDA9302) is used for the vertical deflection. This IC is controlled on pins 1 and 3 by the vertical control signal of IC 7225-5D and a deflection current is generated on pin 5. The vertical flyback signal is generated on pin 3 of the IC.

- Protection: IC 7401 depening +13V and -13V supply to drive the vertical deflection cct. In case of supply voltage +13V or -13V drawing high current, by then the VFL pin 3 of IC 7401 voltage drop < 6.5V. As a result the VFL will feedback to pin 37 of 7600 micro processor will shut down the supply and at standby mode.

9.6.5 Sound detector (IC7225-5E, diagram A5)

Single FM-mono sound for demodulation takes place in IC7225-5E. No adjustment required as automatic PLL tuning (4.2 to 6.8 Mhz).

9.6.6 Control (Diagram A4)

Following description explains the functionality of the μ C pins anti-clockwise for the outer pinning numbers.

- Control-voltage outputs (pin 1-2, pin 4-7 and pin 9-11). These pins are PWM (Pulse Width Modulated) output pins used for volume, bass, treble and tuning control (only for VST).
 - The V-TUNE varies between 0-30V and is derived from the +95V supply from the power supply.
 - Bass and treble functionality is only used in case of sets with the "smart sound" feature.
- INT/EXT (pin 8): Output switching signal "high" for internal CVBS-mode and "low" for external mode (AV-mode so cinch mode).
- Functional switch (pin 15): For USA sets do not have a main's switch but a functional switch. If pin 15 is connected to ground by means of 1064, the set is switched to stand-by.
- Protection (pin 16): This pin is an input pin for protections. If this pin is connected to ground, the set is switched in protection. By this protection the voltages +13V is monitored to check if they become too high. If the +13V drops this is monitored by the circuit around 7608. The emitter becomes "low" (0V7 lower than the base voltage) if the +13V drops. This will force pin 16 of the μ C "low" and will switches the set in protection.
- STANDBY (pin 19): Output pin "high" for normal operation and "low" for standby.
- LED-drive (pin 20): Signal to drive the LED
 - In standby, the LED lights continuously by pulling pin 20 "low"
 - In normal operation the LED does not light by not pulling pin 20 "low"
 - During RC5 reception pin 20 is pulled "low" time by time, resulting in a pulsing LED
- Ground (pin 21): Ground of the power-supply.
- Test pin (pin 22): Used for test purposes in the SAM service mode.
- CVBS-inputs (pin 23): These pins are used as input for teletext-sources.

- TXT/OSD-signals (pin 32-33-34): These output pins are used to create TXT and OSD information in different colours.
 - BL-TXT-OSD (pin 35): Output signal (BL_TXT_OSD) used to indicate the video controller that there is OSD) used Teletext information. So this signal blanks the video information.
 - FLYBACK (pin 36): Pin inform the μ C that horizontal flyback takes place. This information is needed to place the TXT and OSD correctly on the picture.
 - VFL (pin 37): This pin is used to tell the μ C that vertical flyback takes place. This information is needed to place the TXT and OSD correctly on the picture.
 - OSD-generator (pin 38-39-40): The components connected these pins determine the frequency of the OSD-generator. This is approx. 8 MHz.
 - In a non TXT set, the OSD generator is formed by C2680, C2684
 - 12 MHz oscillator (pin 41-42): The frequency of the oscillator of the μ C is determined by this crystal 1681.
 - RESET (pin 43): At switching on the set with the mains switch the signal at pin 43 becomes "high" and holds the μ C. The μ C wait until the signal at pin 43 becomes "low". In this way the μ C knows that the supply-voltage is high enough to be to perform well.
 - TXT /no TXT (pin 44): In case jumper 4603 is present, the software "knows" as a no TXT set. In case jumper 4602 is not present, the software "knows" as a TXT set.
 - IR-input (pin 45): Input for the remote-control commands
 - Video system selections (pin 46 and 51): These two outputs can be used in different ways depending on the region where the set is produced.
 - I²C-Bus (pin 49-50): This bus is used to communicate with all used I²C devices.
 - Non Volatile Memory (EEPROM) in which the settings are stored. In case pin 1 of this NVM is shorted while switching on the set with the mains switch, the SDM (Service Default Alignment Mode): see chapter 6.
 - In case of PLL tuner, the I²C-Bus is used via the copper tracks of BS1 and BS2 (these copper tracks are used for band switching in a VST set).
- Supply voltage (pin 52) : If this voltage is present and the Power On Reset signal at pin 43 is "low" the μ C will start.

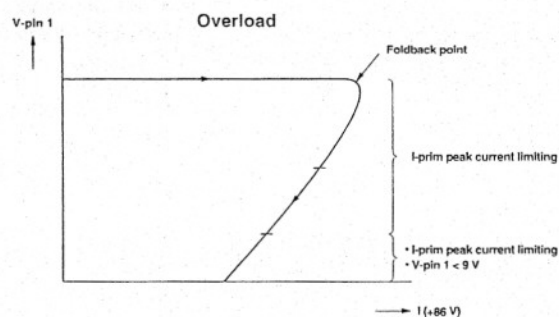


Fig. 9.1