CONTENTS

Contents 1
Safety Precautions 2
TV Set switched off 2
Measurements 2
PERI-TV SOCKET 2
SCART 1 2
SCART 2 2
INTRODUCTION 2
SMALL SIGNAL PART WITH TDA884X 2-3
TUNER 4
VIDEO SWITCH TEA6415C 4
SOUND OUTPUT STAGE TDA2614/TDA2615/TDA2616Q 5
VERTICAL OUTPUT STAGE WITH TDA8351/TDA8356 5
VIDEO OUTPUT AMPLIFIER TDA6107Q 5
POWER SUPPLY (SMPS) 5
MICROCONTROLLER SDA545X OTP 5
SERIAL ACCESS CMOS 8K (1024*8) EEPROM ST24C08 6
CLASS AB STEREO HEADPHONE DRIVER TDA1308 6
SAW FILTERS 6
IC DESCRIPTIONS AND INTERNAL BLOCK DIAGRAM 7
- TDA8840/TDA8842/TDA8844 6-7
- PLL 8
- TEA6415C 8
- TDA2614/TDA2615 9
- TDA6107Q 10
- MC44604 10
- SDA545X 11
- ST24C08 12
- TDA1308 13
- G1965M 13

AK25 CHASSIS MANUAL ADJUSTMENT PROCEDURE 13
- For Option Settings 13
- OPTION 00 14
- OPTION 01 14
- OPTION 02 14
- OPTION 03 14
- OPTION 04 14
- OPTION 05 14
- OPTION 06 14
- OPTION 07 14-15
- OPTION 08 15
- OPTION 09 16
- OPTION 10 16
- OPTION 11 16
- OPTION 12 16-17
- OPTION 13 17
- OPTION 14 17
- OPTION 15 17
- OPTION 16 18
- OPTION 17 18
- OPTION 18 18
- OPTION 19 18
- OPTION 20 19
- OPTION 21 19
- OPTION 22 19
- OPTION 23 19
- OPTION 24 19
- OPTION 25 20
- OPTION 26 20
- OPTION 27 20
- OPTION 28 20
- OPTION 29 20
- OPTION 30 21

AK25 CHASSIS ADJUST SETTING
- ADJUST 00-24 21

AK25 TECHNICAL FEATURES AND DIFFERENCES 22
GENERAL BLOCK DIAGRAM OF CHASSIS AK25 23

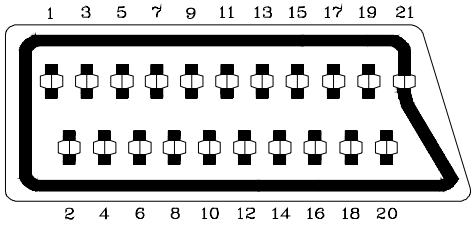
DO NOT CHANGE ANY MODULE UNLESS THE SET IS SWITCH OFF
The mains supply side of the switch mode power supply transformer is live.
Use an isolating transformer.
The receivers fulfill completely the safety requirements.

Safety precautions:
Servicing of this TV should only be carried out by a qualified person.
- Components marked with the warning symbol on the circuit diagram are critical for safety and must only be replaced with an identical component.
- Power resistor and fusable resistors must be mounted in an identical manner to the original component.
- When servicing this TV, check that the EHT does not exceed 28kV.

TV Set switched off:
Make short-circuit between HV-CRT clip and CRT ground layer.
Short C804 (150mF) before changing IC802 or other components in primary side of SMPS.

Measurements:
Voltage readings and oscilloscope traces are measured under following conditions.
Antenna signal 60dB from colourbar generator. (100% white, 75% colour saturation)
Brightness, contrast, colour set for a normal picture.
Mains supply, 220VAC, 50Hz.

PERI-TV SOCKET



	SCART 1 (SC050)			SCART 2 (SC051)	
1	Audio right output	0.5Vrms / 1K	1	Audio right output	0.5Vrms / 1K
2	Audio right input	0.5Vrms / 10K	2	Audio right input	0.5Vrms / 10K
3	Audio left output	0.5Vrms / 1K	3	Audio left output	0.5Vrms / 1K
4	Ground AF		4	Ground AF	
5	Ground Blue		5	Ground Blue	
6	Audio left input	0.5Vrms / 10K	6	Audio left input	0.5Vrms / 10K
7	Blue input	0.7Vpp / 75ohm	7	Blue input	0.7Vpp / 75ohm
8	AV switching input	0-12VDC /10K	8	AV switching input	0-12VDC /10K
9	Ground Green		9	Ground Green	
10	-		10	-	
11	Green input	0.7Vpp / 75ohm	11	-	
12	-		12	-	
13	Ground Red		13	Ground Red	
14	Ground Blanking		14	Ground Blanking	
15	Red input	0.7Vpp / 75ohm	15	-	
16	Blanking input	0-0.4VDC, 1-3VDC / 75ohm	16	-	
17	Ground CVS output		17	Ground CVS output	
18	Ground CVS input		18	Ground CVS input	
19	CVS output	1Vpp / 75ohm	19	CVS output	1Vpp / 75ohm
20	CVS input	1Vpp / 75ohm	20	CVS input	1Vpp / 75ohm
21	Ground		21	Ground	

1. INTRODUCTION
11AK25 is a 90ø chassis capable of driving 14”-20-21” tubes at appropriate currents.
The chassis is capable of working in both PAL and SECAM. The sound system is capable of giving 6watts RMS output into a load of 8ohms.
One 8 page simple TELETEXT, TOPTEXT and FASTEXT is provided.
The chassis is equipped with 21-pin scart connectors which can accept via scart the SVHS format from VCRs so equipped.
. SMALL SIGNAL PART WITH TDA884X
The TDA8840/8842 combine all small signal functions required for a colour TV receiver, except tuning.
2.1. Vision IF amplifier
The IF-amplifier contains 3 AC-coupled control stages with a total gain control range which is higher than 66dB.
The sensitivity of the circuit is comparable with that of modern IF-IC’ s. The video signal is demodulated by means of a PLL carrier regenerator. This circuit contains a frequency detector and a phase detector. The AFC output is obtained by using the VCO control voltage of the PLL and can be read via the I²C-bus. For fast search tuning systems the window of the AFC can be increased with a factor 3. The setting is realised with the AFW bit.
Depending on the type the AGC-detector operates on top-sync level (single standard versions) or on top sync and top white-level (multi standard versions). The demodulation polarity is switched via the I²C-bus. The AGC detector time-constant capacitor is connected externally. This mainly because of the flexibility of the application. The time-constant of the AGC system during positive modulation is rather long to avoid visible variations of the signal amplitude. To improve the speed of the AGC system a circuit has

been included which detects whether the AGC detector is activated every frame period. When during 3 frame periods no action is detected the speed of the system is increased. For signals without peak white information the system switches automatically to a gated black level AGC. Because a black level clamp pulse is required for this way of operation the circuit will only switch to black level AGC in the internal mode.
The circuits contain a video identification circuit which is independent of the synchronisation circuit. Therefore search tuning is possible when the display section of the receiver is used as a monitor. The ident output is supplied to the tuning system via the I²C-bus. The video ident circuit can be made less sensitive by means of the STM bit. This mode can be used during search tuning to avoid that the tuning system will stop at very weak input signals.

2.2. Video Switches

The circuits have two CVBS inputs (internal and external CVBS) and Y/C input. When the Y/C input is not required the Y input can be used as third CVBS input. The selection of the various sources is made via the I²C-bus. The circuit has one CVBS output.

2.3. Sound Circuit

The sound band pass and trap filters have to be connected externally. The filtered intercarrier signal is fed to a limiter circuit and is demodulated by means of a PLL demodulator. This PLL circuit tunes itself automatically to the incoming carrier signal so that no adjustment is required.
The volume is controlled via the I²C-bus. The deemphasis capacitor has to be connected externally. The non-controlled audio signal can be obtained from this pin. The FM demodulator can be muted via the I²C-bus. This function can be used to switch-off the sound during a channel change so that high output peaks are prevented. The TDA8840/8842 contain an automatic volume levelling (AVL) circuit which automatically stabilises the audio output signal to a certain level which can be set by the viewer by means of the volume control. This function prevents big audio output fluctuations due to variations of the modulation depth of the transmitter. The AVL function can be activated via the I²C-bus.

2.4. Synchronisation circuit

The sync seperator is preceded by a controlled amplifier which adjusts the sync pulse amplitude to a fixed level. These pulses are fed to the slicing stage which is operating at 50% of the amplitude. The separated sync pulses are fed to the first phase detector and to the coincidence detector. This coincidence detector is used to detect whether the line oscillator is synchronised and can also be used for transmitter identification. The first PLL has a very high statical steepness so that the phase of the picture is independent of the line frequency.
The horizontal output signal is generated by means of an oscillator which is running at twice the line frequency. Its frequency is divided by 2 to lock the first control loop to the incoming signal. The time-constant of the loop can be forced by the I²C-bus (fast or slow). If required the IC can select the time-constant depending on the noise content of the incoming video signal.
To protect the horizontal output transistor, the horizontal drive is immediately switched off when a power-on-reset is detected. The drive signal is switched-on again when the normal switch-on procedure is followed.
Via the I²C-bus, adjustments can be made of the horizontal and vertical geometry. The vertical sawtooth generator drives the vertical output drive circuit which has a differrential output current. For the EW drive a single ended current output is available.
When the horizontal scan is reduced to display 4 : 3 pictures on a 16 : 9 picture tube an accurate video blanking can be switched on to obtain well defined edges on the screen.
Overvoltage conditions can be detected via the EHT tracking pin.When an overvoltage condition is detected the horizontal output drive signal will be switched-off via the slow stop procedure but it is also possible that the drive is not switched-off and that just a protection indication is given in the I²C-bus output byte. The choice is made via the input bit PRD.

2.5. Chroma and Luminance processing

The circuits contain a chroma bandpass and trap circuit. The filters are realised by means of gyrator circuits and they are automatically calibrated by comparing the tuning frequency with the X-tal frequency of the decoder.
The luminance delay line and the delay for the peaking circuit are also realised by means of gyrator circuits.
The centre frequency of the chroma bandpass filter is switchable via the I²C-bus so that the performance can be optimised for “front-end” signals and external CVBS signals.
During SECAM reception the centre frequency of the chroma trap is reduced to get a better suppression of the SECAM carrier frequencies.

2.6. Colour Decoder

The decoder contains an alignment-free X-tal oscillator, a killer circuit and two colour difference demodulators. The 90° phaseshift for the reference signal is made internally.
The IC contains an automatic colour limiting (ACL) circuit which prevents that oversaturation occurs when signals with a high chroma-to-burst ratio are received. The ACL circuit is designed such that it only reduces the chroma signal and not the burst signal. This has the advantage that the colour sensitivity is not affected by this function.
The base-band delay line is integrated in the PAL/SECAM IC’ s.
The demodulated colour difference signals are internally supplied to the delay line. The matrixed signals are externally available.
The colour difference matrix switches automatically between
PAL/SECAM and NTSC, however, it is also possible to fix the matrix in the PAL standard.
Which colour standard the IC can decode depends on the external X-tals. The X-tal to be connected to pin 34 must have a frequency of 3.5 MHz (NTSC-M, PAL-M or PAL-N) and pin 35 can handle X-tals with a frequency of 4.4 and 3.5 MHz. To prevent calibration problems of the horizontal oscillator the external switching between the 2 X-tals should be carried out when the oscillator is forced to pin 35. For a reliable calibration of the horizontal oscillator it is very important that the X-tal indication bits (XA and XB) are not corrupted. For this reason the X-tal bits can be read in the output bytes so that the software can check the I²C-bus transmission.

2.7. RGB output circuit and black-current stabilisation

The colour-difference signals are matrixed with the luminance signal to obtain the RGB-signals. The TDA 884X device has one linear RGB input. This RGB signal can be controlled on contrast and brightness.
The output signal has an amplitude of about 2 volts black-to-white at nominal input signals and nominal settings of the controls.
To increase the flexibility of the IC it is possible to insert OSD and/or teletext signals directly at the RGB outputs.
This insertion mode is controlled via the insertion input (pin 26 in the S-DIP 56- and pin 38 in the QFP-64 level). This blanking action at the RGB outputs has some delay which must be compansated externally.
To obtain an accurate biasing of the picture tube a “Continuous Cathode Calibration” circuit has been developed.
This function is realised by means of a 2-point black level stabilisation circuit.
When the TV receiver is switched-on, the RGB output signals are blanked and the black current loop will try to set the right picture tube bias levels.Via the AST bit a choice can be made between automatic start-up or a start-up via the m-processor.

3. TUNER
Either a PLL tuner is used as a tuner.

Channel coverage of PLL:

BAND	OFF-AIR CHANNELS		CABLE CHANNELS	
	CHANNELS RANGE (MHz)	FREQUENCY	CHANNELS	FREQUENCY RANGE (MHz)
Low Band	E2 to C	48.25 to 82.25 **(1)**	S01 to S08	69.25 to 154.25
Mid Band	E5 to E12	175.25 to 224.25	S09 to S38	161.25 to 439.25
High Band	E21 to E69	471.25 to 855.25 **(2)**	S39 to S41	447.25 to 463.25

(1). Enough margin is available to tune down to 45.25 MHz.
(2). Enough margin is available to tune up to 863.25 MHz.

Noise	Typical	Max.	**Gain**	Min.	Typical	Max.
Low band	: 5dB	9dB	All channels	: 38dB	44dB	52dB
Mid band	: 5dB	9dB	Gain Taper (of-air channels)	: -	-	8dB
High band	: 6dB	9dB				

4.VIDEO SWITCH TEA6415C
In case of three or more external sources are used, the video switch IC TEA6415C is used. The main function of this device is to switch 8 video input sources on the 6 outputs.
Each output can be switched on only one of each input. On each input an alignment of the lowest level of the signal is made (bottom of sync. top for CVBS or black level for RGB signals).
Each nominal gain between any input and output is 6.5dB.For D2MAC or Chroma signal the alignment is switched off by forcing, with an external resistor bridge, 5VDC on the input. Each input can be used as a normal input or as a MAC or Chroma input (with external resistor bridge). All the switching possibilities are changed through the BUS.
Driving 75ohm load needs an external resistor.
It is possible to have the same input connected to several outputs.
Sound IF Input:
The sound IF amplifier consists of three AC-coupled differential amplifier stages each with approximately 20dB gain.
At the output of each stage is a multiplier for gain controlling. The overall control range is approximately -6 to +60dB and the frequency response (-3dB) of the IF amplifier is approximately 6 to 70MHz. The steepness of gain control is approximately 10mV/dB.
IF AGC:
The automatic gain control voltage to maintain the AM demodulator output signal at a constant level is generated by a mean level detector.The AGC-detector charges and discharges the capacitor at pin 3 controlled by the output signal of the AM-demodulator compared to an internal reference voltage.The maximum charge/discharge current is approximately 5 mA.
AM-demodulator
The IF amplifier output signal is fed to a limiting amplifier (two stages) and to a multiplier circuit.
However the limiter output signal (which is not any more AM modulated) is also fed to the multiplier, which provides AM demodulation (in phase demodulation). After lowpass filtering (fg @ 400kHz) for carrier rejection and buffering, the demodulator output signal is present at pin 6.
Audio Switch
This circuit is an operational amplifier with three input stages and internal feedback network determining gain (0dB) and frequency response (fg @ 700kHz). Two of the input stages are connected to pin 7 and pin 9, the third input stage to an internal reference voltage. Controlled by the switching pins 10 and 12, one of the three input stages can be activated and a choice made between two different AF signals or mute state. The selected signal is present at pin 8. The decoupling capacitors at the input pins are needed, because the internally generated bias voltage for the input stages must not be influenced by the application in order to avoid DC-plop in case of switching.
Reference Circuit:
This circuit is a band gap stabiliser in combination with a voltage regulation amplifier, which provides an internal reference voltage of about 3.6V nearly independent from supply voltage and temperature. This reference voltage is filtered by the capacitor at pin 4 in order to reduce noise. It is used as a reference to generate all important voltages and currents of the circuit.
For application in 12V power supply concepts, there is an internal voltage divider in combination with a Darlington transistor in order to reduce the supply voltage for all IC function blocks to approximately 6V.
Description of the demodulator and decoder section:
SIF Input:
Two input pins are provided, SIF1 e.g. for terrestrial TV and SIF2 e.g. for a satellite tuner. The selected signal is passed through an AGC circuit and then digitized by an 8-bit ADC operating at 24.576MHz.
AGC:
The gain of the AGC amplifier is controlled from the ADC output by means of a digital control loop employing hysteresis.
The AGC has a fast attack behaviour to prevent ADC overloads and slow decay behaviour AGC oscillations.
For AM demodulation AGC must be switched off.
Mixer
The digitized input signal is fed to the mixers, which mix one or both input sound carriers down to zero IF. A 24-bit control word for each carrier sets the required frequency.

FM and AM Demodulation
An FM or AM input signal is fed via a band-limiting filter to a demodulator that can be used for either FM or AM demodulation. Apart from the standard (fixed) de-emphasis characteristic, an adaptive de-emphasis is available for encoded satellite programs. A stereo decoder recovers the left and right signal channels from the demodulated sound carriers.
FM Identification:
The identification of the FM sound mode is performed by AM synchronous demodulation of the pilot signal and narrow-band detection of the identification frequencies. The result is available via the I²C-bus interface.
NICAM Demodulation:
The NICAM signal is transmitted in a DQPSK code at a bit rate of 728 kbit/s. The NICAM demodulator performs DQPSK demodulation and feeds the resulting bitstream and clock signal onto the NICAM decoder and, for evaluation purposes, to PCLK (pin 1) and NICAM (pin 2).
NICAM Decoder:
The device performs all decoding functions in accordance with the “EBU NICAM 728 specification”. After locking to the frame alignment word, the data is descrambled by applying the defined pseudo-random binary sequence; the device will then synchronise to the periodic frame flag bit C0.
The status of the NICAM decoder can be read out from the NICAM status register by the user. The OSB bit indicates that the decoder has locked to the NICAM data. The VDSP bit indicates that the decoder has locked to the NICAM data and that the data is valid sound data.

5. SOUND OUTPUT STAGE TDA2614/TDA2615
TDA2614 is used as the AF output amplifier for mono applications. It is supplied by ±12VDC coming from a separate winding in the SMPS transformer. An output power of 2*6W (THD=0.5%) can be delivered into an 8ohm load.
TDA2615 is used as the AF output amplifier for stereo applications. It is supplied by ±12VDC coming from a separate winding in the SMPS transformer. An output power of 2*6W (THD=0.5%) can be delivered into an 8ohm load.

6. VERTICAL OUTPUT STAGE WITH TDA8356
The TDA8356 vertical deflection circuit can be used in 90° deflection systems with field frequencies from 50 up to 120Hz. With its bridge configuration the deflection output can be DC coupled with few external components. Only a single supply voltage for the scan and a second supply for the flyback are needed.
The drive voltage is amplified by an amplifier and fed to two amplifiers, one is inverting and the other is a non inverting amplifier. The outputs (pins 7 and 4) are connected to the series connection of the vertical deflection coil and feedback resistor Rsense (R702//R703). The voltage across Rsense is fed via pin 9 to correction amplifier, to obtain a deflection current which is proportional to the drive voltage. The supply voltage for the TDA8356 is 15VDC at pin 3. The supply voltage generator has a separate supply voltage of 45VDC at pin 6.

7. VIDEO OUTPUT AMPLIFIER TDA6107Q
The TDA6107Q consists of three monolithic video output amplifiers. The amplifier can be seen as an operational amplifier with negative feedback.
The advantage of negative feedback is that the amplifier characteristics do not play an important role up to certain frequencies.
The internal flash diodes protect the amplifiers against flash over in the picture tube.
The only protections required at the cathode outputs are a flash resistor and a sparkgap.
The TDA6107Q has an internal thermal protection circuit which gives a decrease of the slew rate at high temperatures.
Furthermore, the device needs only one power supply voltage (Vdd).
In contrast to previous types of DMOS video amplifiers, all the external resistors (Rf, Ri and Ra) are integrated, so the gain is fixed and saves 9 resistors.
Furthermore, the reference voltage is integrated, it saves a resistor divider and a decoupling capacitor. So, the replacement value of the TDA6107Q is very high.
The TDA6107Q is provided with a black current data pin. Since TDA884X is used as drive device, no adjustments are required for gain and black setting, as the TDA884X has I²C white point adjustment and black current set-up.

8. POWER SUPPLY (SMPS)
The DC voltages required at various parts of the chassis are provided by an SMPS transformer controlled by the IC MC44604 which is designed for driving, controlling and protecting switching transistor of SMPS. The transformer produces 150/115V for FBT input, ±14V for audio output IC, S+5V for microcontroller, +15V for vertical output (field scan) and +33V for tuner and some other ICs and transistors.

9. MICROCONTROLLER SDA545XOTP
The device is TV TEXT tuning and control system based on the SDA 525X TV TEXT microcontroller. It is designed for a low cost mono TV-SET with analogue picture and sound control. Neverthless the system offers an on screen display (OSD) and IR remote control of all functions.
SDA545X has the following features:
- Display of program number, channel number, TV standard, analogue values, sleep timer, parental control, and mute is done by OSD.
- Single LED for IR active, standby and on mode indication.
- 1 Control line to select external source.
- 3 Control lines for TV standard selection.
- Frequency synthesis tuning (62.5 kHz steps)
- 192 step fine tuning
- Channels corresponding to standards B/G, OIRT, L and I (I+)
- Mono sound control by analogue voltage
- System configuration with service mode

10. SERIAL ACCESS CMOS 8K (1024*8) EEPROM ST24C08

The ST24C08 is a 8Kbit electrically erasable programmable memory (EEPROM), organised as 4 blocks of 256*8 bits.
The memory is compatible with the I²C standard, two wire serial interface which uses a bi-directional data bus and serial clock.
The memory carries a built-in 4 bit, unique device identification code (1010) corresponding to the I²C bus definition.
This is used together with 1 chip enable input (E) so that up to 2*8K devices may be attached to the I²C bus and selected individually.

11. CLASS AB STEREO HEADPHONE DRIVER TDA1308

The TDA1308 is an integrated class AB stereo headphone driver contained in a DIP8 plastic package.
The device is fabricated in a 1 mm CMOS process and has been primarily developed for portable digital audio applications.

16. SAW FILTERS

Saw filter type	:	Model:
G1965M	:	PAL-SECAM B/G MONO
G3962M	:	PAL-SECAM B/G GER&NIC STEREO, PAL I' NIC STEREO, INT-1
G1984	:	PAL-SECAM B/G GER&NIC STEREO INT-2
J1951M	:	PAL-I MONO
J3950M	:	PAL-I NIC STEREO
J1956M	:	PAL-I' MONO
K2955M	:	PAL-SECAM B/G-D/K MONO, PAL-SECAM B/G-D/K-I', MONO, PAL-SECAM B/G-D/K-L MONO
K2958M	:	PAL-SECAM B/G-D/K (38) MONO
K2962M	:	PAL-SECAM B/G-L/L' MONO
G3957M	:	PAL-SECAM B/G-L/L' GER&NIC BG/L STEREO
K6256K	:	PAL-SECAM B/G-D/K-I-L/L' MONO, PAL-SECAM B/G-D/K-I, L/L' GER&NIC BG/L STEREO, PAL-SECAM B/G-D/K-I-L/L' I, NICAM STEREO, PAL-SECAM B/G-D/K-I-L/L' GER&NIC I'-B/G-L, STEREO
K6259K	:	PAL-SECAM B/G-D/K-I-M/N (EURO) MONO
M1963M	:	PAL M/N MONO, NTSC M MONO, PAL M/N-NTSC M MONO

IC DESCRIPTIONS AND INTERNAL BLOCK DIAGRAM

- TDA8840/8842
- TUNER
- TEA6415C
- TDA2614/2615
- TDA8356
- TDA6107Q
- MC44604
- SDA545X
- ST24C08
- TDA1308

TDA8840/8842

The TDA884X is IýC-bus controlled single chip TV processor which is intended to be applied in PAL, NTSC, PAL/NTSC and multi-standard television receivers. These IC' s are nearly pin compatible with the TDA837X TV processors but have a higher degree of integration because the delay line (TDA4665 function) and the SECAM decoder have been integrated. In addition to these functions some additional features have been added like "Continuous Cathode Calibration" (2-point black current loop which results in an accurate biasing of the 3 guns), adjustable luminance delay time, blue stretching and dynamic skin tone control.

Features:

- Vision IF circuit with PLL demodulator
- Alignment-free multi-standard FM sound demodulator (4.5 MHz to 6.5 MHz)
- Audio switch
- Flexible source selection with CVBS switch and Y(CVBS)/C input so that a comb filter can be applied
- Integrated chrominance trap circuit
- Integrated luminance delay line
- Asymmetrical peaking in the luminance channel with a noise coring function
- Black stretching of non-standard CVBS or luminance signals
- Integrated chroma band-pass filter with switchable center frequency
- Blue stretch circuit which offsets colours near white towards blue
- RGB control circuit with "Continuous Cathode Calibration" and white point adjustment
- Linear RGB inputs and fast blanking
- Possibility to insert a "blue black" option when no video signal is available
- Horizontal synchronisation with two control loops and alignment-free horizontal oscillator
- Vertical count-down circuit
- Vertical driver optimised for DC-coupled vertical output stages
- IýC-bus control of various functions
- Low dissipation (850 mW)

Functional Differences between the 8840/8842 :

IC VERSION (TDA)	8840	8842
Multi-standard IF		X
Automatic Volume Limiting	X	X
PAL Decoder	X	X
SECAM Decoder		X
NTSC Decoder		X
Dynamic Skin Control		
Colour Matrix PAL/NTSC (Japan)		X
Colour Matrix NTSC Japan/USA		
YUV interface		
Base-band delay line	X	X
Adjustable luminance delay time		
Horizontal geometry		
Horizontal and vertical zoom		
Vertical scroll		

PINNING	PIN VALUE
1. Sound IF input	: 1mVrms
2. External audio input	: 500mVrms
3. IF demodulator tuned circuit 1	
4. IF demodulator tuned circuit 2	
5. IF-PLL loop filter	: Min:32-Max:60 MHz
6. IF video output	: 4.7V (Negative Modulation), 2V (Positive Modulation)
7. Serial clock input	: Low level max:1.5 V, High level min 3.5V
8. Serial data input/output	: Low level max:1.5 V, High level min 3.5V
9. Bandgap decoupling	
10. Chrominance input (S-VHS)	: 1Vpp, Max:1.4Vpp
11. External CVBS/Y input	: 1Vpp, Max:1.4Vpp
12. Main supply voltage 1	: 8V, Min:7.2V, Max:8.8V
13. Internal CVBS input	: 1Vpp, Max:1.4Vpp
14. Ground 1	
15. Audio output	: 700mVrms, Min:500mVrms, Max:900mVrms
16. SECAM PLL decoupling	
17. External CVBS input	: Vpp, Max:1.4Vpp
18. Black-current input	: Amplitude of “low” reference current : 8mA Amplitude of “high” reference current : 20mA
19. Blue output	: 2Vpp
20. Green output	: 2Vpp
21. Red output	: 2Vpp
22. Beam current limiter input/V-guard input	
23. Red input for insertion	: 0.7Vpp, Max:0.8Vpp
24. Green input for insertion	: 0.7Vpp, Max:0.8Vpp
25. Blue input for insertion	: 0.7Vpp, Max:0.8Vpp
26. RGB insertion input	: Max:0.3V
27. Luminance input	: 1.4Vpp
28. Luminance output	: 1.4Vpp
29. (B-Y) signal output	: 1.05Vpp
30. (R-Y) signal output	: 1.05Vpp
31. (B-Y) signal input	: 1.05Vpp
32. (R-Y) signal input	: 1.05Vpp
33. Subcarrier reference output	: 3.58/4.43 MHz
34. 3.58 MHz crystal connection	
35. 4.43/3.58 MHz crystal connection	
36. Loop filter phase detector	
37. 2nd supply voltage 1	: 8V, Min:7.2V, Max:8.8V
38. CVBS output	: 1Vpp, Max:1.4Vpp
39. Decoupling digital supply	: 1.8V
40. Horizontal output	: Max: 0.3V
41. Flyback input/sandcastle output	: Min:100ma, Max:300mA
42. Phase-2 filter	: 150 ms/ms
43. Phase-1 filter	: ±0.9 kHz, Max: ±1.2 kHz
44. Ground 2	
45. East-west drive output	
46. Vertical drive A output	: 0.95mA
47. Vertical drive B output	: 0.95mA
48. IF input 1	
49. IF input 2	
50. EHT/overvoltage protection input	: Min:1.2V, Max : 2.8V
51. Vertical sawtooth capacitor	: 3Vpp
52. Reference current input	: 3Vpp
53. AGC decoupling capacitor	
54. Tuner AGC output	: Max:9V (Maximum tuner AGC Output voltage), 300mV (Output saturation voltage)
55. Audio deemphasis	: 500mVrms
56. Decoupling sound demodulator	

General description of PLL :

The PLL tuner belongs to the UV 1300 family of tuners, which are designed to meet a wide range of applications.
It is a combined VHF, UHF tuner suitable for CCIR systems B/G, H, L, L', I and I'. The low IF output impedance has been designed for direct drive of a wide variety of SAW filters with sufficient suppression of triple transient.

- Member of the UV1300 family small sized UHF/VHF tuners
- Systems CCIR: B/G, H, L, L', I and I'; OIRT: D/K
- Digitally controlled (PLL) tuning via IýC-bus
- Off-air channels, S-cable channels and Hyperband
- World standardized mechanical dimensions and world standard pinning
- Compact size
- Complies to "CENELEC EN55020" and "EN55013"

PINNING	PIN VALUE
1. Gain control voltage (AGC)	: 4.0V, Max:4.5V
2. Tuning voltage	
3. I²C-bus address select	: Max:5.5V
4. I²C-bus serial clock	: Min:-0.3V, Max:5.5V
5. I²C-bus serial data	: Min:-0.3V, Max:5.5V
6. Not connected	
7. PLL supply voltage	: 5.0V, Min:4.75V, Max:5.5V
8. ADC input	
9. Tuner supply voltage	: 33V, Min:30V, Max:35V
10. Symmetrical IF output 1	
11. Symmetrical IF output 2	

TEA6415C:

General Description:

The main function of the TEA6415C is to switch 8 video input sources on the 6 outputs.
Each output can be switched to only one of the inputs whereas but any same input may be connected to several outputs.
All switching possibilities are controlled through the IýC-bus.

Features:

- 20 MHz Bandwith
- Cascadable with another TEA6415C (Internal address can be changed by pin 7 voltage)
- 8 inputs (CVBS, RGB, Mac, CHROMA, …)
- 6 Outputs
- Possibility of MAC or chroma signal for each input by switching-off the clamp with an external resistor bridge
- Bus controlled
- 6.5dB gain between any input and output
- -55dB crosstaljk at 5MHz
- Fully ESD protected

PINNING	PIN VALUE				
1. Input	: Max	: 2Vpp, Input Current	: 1mA,	Max	: 3mA
2. Data	: Low level	: -0.3V Max:1.5V, High level	: 3.0V	Max	: Vcc+0.5V
3. Input	: Max	: 2Vpp, Input Current	: 1mA,	Max	: 3mA
4. Clock	: Low level	: -0.3V Max:1.5V, High level	: 3.0V	Max	: Vcc+0.5V
5. Input	: Max	: 2Vpp, Input Current	: 1mA,	Max	: 3mA
6. Input	: Max	: 2Vpp, Input Current	: 1mA,	Max	: 3mA
7. Prog					
8. Input	: Max	: 2Vpp, Input Current	: 1mA,	Max	: 3mA
9. Vcc	: 12V				
10. Input	: Max	: 2Vpp, Input Current	: 1mA,	Max	: 3mA
11. Input	: Max	: 2Vpp, Input Current	: 1mA,	Max	: 3mA
12. Ground					
13. Output	: 5.5Vpp,	Min : 4.5Vpp			
14. Output	: 5.5Vpp,	Min : 4.5Vpp			
15. Output	: 5.5Vpp,	Min : 4.5Vpp			
16. Output	: 5.5Vpp,	Min : 4.5Vpp			
17. Output	: 5.5Vpp,	Min : 4.5Vpp			
18. Output	: 5.5Vpp,	Min : 4.5Vpp			
19. Ground					
20. Input	: Max : 2Vpp, Input Current		: 1mA,	Max	: 3mA

TDA2614/TDA2615 :

General Description of TDA2614:

The TDA2614 is a power amplifier in a 9-lead single-in-line (SIL9) plastic medium power package. It has been especially designed for mains fed applications.

Features:

- Requires very few external components
- No switch-on/switch-off clicks
- Input mute during switch-on and switch-off
- Low offset voltage between output and ground
- Hi-fi in accordance with IEC 268 and DIN 45500
- Short-circuit proof and thermal protected
- Mute possibility

PINNING	PIN VALUE
1. Not connected	
2. Mute input	: 300mA (For mute to activate)
3. Ground	
4. Not connected	
5. Supply voltage (negative)	: -12VDC
6. Output	: 6.9Vrms
7. Supply voltage (positive)	: +12VDC
8. Inverting input (Ground)	: 0V
9. Non-inverting input	: 700mVrms, Min : 500mVrms, Max : 900mVrms

General Description of TDA2615:

The TDA2615 is a dual power amplifier in a 9-lead single-in-line (SIL9). It has been especially designed for mains fed applications.

Features:

- Requires very few external components
- No switch-on/switch-off clicks
- Input mute during switch-on and switch-off
- Low offset voltage between output and ground
- Excellent gain balance of both amplifiers
- Hi-fi in accordance with IEC 268 and DIN 45500
- Short-circuit proof and thermal protected
- Mute possibility

PINNING	PIN VALUE
1. Non-inverting input 1	: 700mVrms, Min :500mVrms, Max : 900mVrms
2. Mute input	: 300mA (For mute to activate)
3. Ground	
4. Output 1	: 6.9Vrms
5. Supply voltage (negative)	: -12VDC
6. Output 2	: 6.9Vrms
7. Supply voltage (positive)	: +12VDC
8. Inverting inputs 1 and 2 (Ground)	: 0V
9. Non-inverting input 2	: 700mVrms, Min : 500mVrms, Max : 900mVrms

TDA8356 :

General Description:

The TDA8356 is a power circuit for use in 90ø colour deflection system for field frequencies of 50 to 120 Hz.
The circuit operates as a highly efficient class G system.

Features:

- Few external components
- Highly efficient fully DC-coupled vertical output bridge circuit
- Vertical flyback switch
- Guard circuit
- Protection against:
  - short-circuit of the output pins (7 and 4)
  - short-circuit of the output pins to Vp
- Temperature (thermal) protection
- High EMC immunity because of common mode inputs
- A guard signal in zoom mode

PINNING	PIN VALUE
1. Input power-stage (positive); includes li(sb) signal bias	: 400mA, Min : 50mA, Max : 500mA
2. Input power-stage (negative); includes li(sb) signal bias	:400mA, Min : 50mA, Max : 500mA
3. Operating supply voltage	: +15VDC
4. Output voltage B	: Max : 52V Output current : 2App (TDA8356) 3App (TDA8351)
5. Ground	
6. Input flyback supply voltage	: Min : Vp, Max : 50V
7. Output voltage A	: Max : 52V Output current : 2App (TDA8356) 3App (TDA8351)
8. Guard output voltage	: Max:5.5V (Io:100mA)
9. Input feedback voltage	: Max:52V

TDA6107Q:

The TDA6107Q includes three video output amplifiers in a SIL 9 MP (Single In Line 9 pins Medium Power) package SOT111BE, using high-voltage DMOS technology, and is intended to drive the three cathodes of a colour picture tube.
In contrast to previous types of DMOS video amplifiers, all external resistors (Rf, Ri and Ra) are integrated, so the gain is fixed and it saves 9 resistors.
To obtain maximum performance, the amplifier should be used with black-current control and mounted on the CRT panel.

Features:

- Bandwith: 4.0 MHz typ at 100Vpp (Measured in appli,cation set-up, with Rfl=1K5 and Cl=Ctube+Cpcb=10pF)
- Slewrate: 950V/ms
- Fixed gain of 50 times
- No external components, only the well known supply decoupling
- Very simple application with a variety of colour decoders
- Black-current measurement output for automatic black current stabilization
- Only one supply voltage needed
- Internal protection against positive appearing CRT flash-over discharges
- Protection against ESD
- Internal reference voltage
- Thermal protection
- Controllable switch-off behaviour
- Very small PCB dimensions
- Very high replacement value

PINNING	PIN VALUE
1. Inverting input 1	: 2Vpp
2. Inverting input 2	: 2Vpp
3. Inverting input 3	: 2Vpp
4. Ground	
5. BSC-output	: Max:7V
6. Supply voltage	: 200VDC
7. Cathode output 3	: 20mA, 100Vpp
8. Cathode output 2	: 20mA, 100Vpp
9. Cathode output 1	: 20mA, 100Vpp

MC44604:

General description:

The MC44604 is an enhanced high performance controller that is specifically designed for off-line and DC-to-DC converter applications. It offers a really safe and reliable power management thanks particularly to its protection features (foldback, overvoltage detection, soft start, accurate demagnetization detection). Its high current totem pole output is also ideally suited for driving a power MOSFET, but can also be used for driving a bipolar transistor in low power converters. In addition to these features, the MC44604 offers an efficient stand-by mode.

Features:

Current Mode Controller

- Operation up to 250 kHz Output Switching Frequency
- Inherent Feed Forward Compensation
- Latching PWM for Cycle-by-Cycle Current Limiting
- Oscillator with Precise Frequency Control

High Flexibility

- Externally Programmable Reference Current
- Secondary or Primary Sensing
- High Current Totem Pole Output
- Undervoltage Lockout with Hysteresis

Safety/Protection Features

- Overvoltage Protection Facility against Open Loop
- Protection against Short Circuit on Oscillator Pin
- Fully Programmable Foldback
- Soft-Start Feature
- Accurate max Duty Cycle Setting
- Demagnetization (Zero Current Detection) Protection
- Internally Trimmed Reference

"Green Controller"

- Low Start-Up and Operating Current
- Patented Stand-by Pulsed Mode for low stand-by losses
- Low dV/dT for Low EMI radiations

PINNING	PIN VALUE		
1. Output Supply Voltage (Vcc)	: 12VDC		
2. Output Supply Voltage (Vc)	: 12VDC		
3. Output voltage	: LOW Level Drop Voltage	1VDC,	Max : 1.2VDC (Isink=100mA)
		1.4VDC,	Max : 2VDC (Isink=500mA)
	HIGH Level Drop Voltage	1.5VDC,	Max : 2VDC (Isource=200mA)
		2VDC,	Max : 2.7VDC (Isource=500mA)
4. Ground			
5. Foldback input	: 0.9VDC, Min:-0.3VDC, Max : Vcc+0.3VDC		

6. Overvoltage protection (OVP) : 0.78VDC, Min:-0.3VDC, Max : Vcc+0.3VDC
7. Current sense input : Min:-0.3VDC, Max : Vcc+0.3VDC
8. Demagnetization detection input : Idemag-ib (source):-4mA Idemag-ib (sink) : 10mA
9. Standby current set : Ipeak-stby/Iref : 0.40 Min : 0.37 Max : 0.43
10. Oscillator voltage swing : 2Vpp
11. Soft start/Dmax/Voltage mode : Idischarge : 5mA, Min : 1.5mA (Vsoft start=1V)
12. Clamp E/A input : 4.7VDC, Min : 4.5VDC Max : 4.9VDC
13. E/A output : HIGH State: 6.5VDC, Min : 5.5VDC, Max : 7.5VDC LOW State : 1.0VDC, 1.1VDC
14. E/A input : 2.5VDC, Min : 2.4VDC, Max : 2.6VDC
15. Stand-by management : Stand-by On Detection current ratio : Idet/Iref : 0.38, Min : 0.34, Max : 0.42
Stand-by regulation current ratio : Ireg/Iref : 20.5, Min : 18, Max : 23
16. Rref input : 2.5VDC, Min : 2.4VDC, Max : 2.6VDC

SDA545X :

General description:

The SDA545X is designed for a low cost mono TV-set with analogue picture and sound control. IN SDA545X the following IC' s are used and supported:

Non-volatile memory : SDA 2526 or SDA2546
PLL : SDA 3202-3, SDA 3302
IR transmitter : SDA 2208-3 or SDA 2218
IR preamplifier : SFH 506-32

Features:

General:

- Display of program number, channel number, TV standard, analogue values, sleep timer, parental control, and mute is done by OSD
- Single LED for IR active, standby and on mode indication
- Local control (8 keys)
- IR remote control
- Control of volume, contrast, brightness, and saturation by analogue voltages
- Non-volatile memory for 50 or 100 programs, optimum analogue values and system parameters
- Individual delta volume for each program
- 1 control line to select external source
- 3 control lines for TV standard selection
- Automatic muting if no carrier detected
- Automatic switch-off when carrier disappears for more than 5 minutes
- Software protection against tube flashovers with internal watchdog timer
- Sleep timer
- Parental control
- IF 38 MHz or 38.9 MHz selectable

Tuning:

- Frequency synthesis tuning (62.5 kHz steps)
- 192 step fine tuning
- Channels corresponding to standards
- 100 programs selectable by directly entering a program number or by up/down function depending on the NVM size
- Channel selection by directly entering a channel number or by up/down function
- Channel search function in two directions

Sound:

- Mono sound control by analogue voltage

Service Mode:

- System configuration with service mode

PINNING	**PIN VALUE**
1. Crystal selection output 1	: LOW level : 0V HIGH level : 4.2V
2. Volume + switch input	: LOW level : 0V HIGH level : 5V
3. Volume - switch input	: LOW level : 0V HIGH level : 5V
4. Program - switch input	: LOW level : 0V HIGH level : 5V
5. Program + switch input:	: LOW level : 0V HIGH level : 5V
6. LED output	: LOW level : 0V HIGH level : 4.2VDC
7. Filter (sound standard) selection output 1	: LOW level : 0V HIGH level : 4.2V
8. Filter (sound standard) selection output 2	: LOW level : 0V HIGH level : 4.2V
9. Mod-switch selection output	: LOW level : 0V HIGH level : 4.2V
10. Ground	
11. Supply voltage	: +5V
12. 18 MHz crystal connection 1	: 2Vpp
13. 18 MHz crystal connection 2	: 2Vpp

14. L-ACC output	:	LOW level : 0V HIGH level : 3.6V
15. RESET output		LOW level : 0V HIGH level : 5V
16. Comb filter PAL/SECAM selection output	:	LOW level : 0V HIGH level : 5V
17. Tuning output	:	LOW level : 0V HIGH level : 3.4V
18. Audio switch transistor selection 1	:	LOW level : 0V HIGH level : 5V
19. Audio switch transistor selection 2	:	LOW level : 0V HIGH level : 5V
20. Audio switch transistor selection 3	:	LOW level : 0V HIGH level : 5V
21. Audio switch transistor selection 4	:	LOW level : 0V HIGH level : 5V
22. Comb filter standard selection 1	:	LOW level : 0V HIGH level : 5V
23. Comb filter standard selection 2	:	LOW level : 0V HIGH level : 5V
24. Analogue ground		
25. Filter 3		
26. Filter 2		
27. Filter 1		
28. Analogue supply voltage	:	5VDC
29. Reference current input		
30. CVBS input	:	1Vpp
31. Service output	:	LOW level : 0V HIGH level : 5V
32. AV2-status input	:	LOW level : 0V HIGH level : 5V
33. AV1-status input	:	LOW level : 0V HIGH level : 5V
34. AFC output	:	600mVpp
35. Ground		
36. IR-input	:	LOW level : 0V HIGH level : 5V
37. Supply voltage	:	5V
38. LC input	:	5Vpp
39. LC output	:	5Vpp
40. Mute output	:	LOW level : 0V HIGH level : 4.2V
41. St-by output	:	LOW level : 0V HIGH level : 1.4V
42. Clock signal output		
43. Data output		
44. Local connection	:	LOW : 0V HIGH : 5V
45. SAND input	:	4Vpp
46. ODD/EVEN output	:	1.8V
47. OSD-red output	:	LOW level : 0V HIGH level : 5V
48. OSD-green output	:	LOW level : 0V HIGH level : 5V
49. OSD-blue output	:	LOW level : 0V HIGH level : 5V
50. OSD-blanking output	:	LOW level : 0Vh HIGH level : 5V
51. COR output	:	LOW level : 0V HIGH level : 5V
52. Crystal selection output 2	:	LOW level : 0V HIGH level : 4.2V

ST24C08:

General description:

The ST24C08 is a 8Kbit electrically erasable programmable memory (EEPROM), organized as 4 blocks of 256 * 8 bits.
The memory operates with a power supply value as low as 2.5V. Both Plastic Dual-in-Line and Plastic Small Outline packages are available.

Features:

- Minimum 1 million ERASE/WRITE cycles with over 10 years data retention
- Single supply voltage:4.5 to 5.5V
- Two wire serial interface, fully IýC-bus compatible
- Byte and Multibyte write (up to 8 bytes)
- Page write (up to 16 bytes)
- Byte, random and sequential read modes
- Self timed programming cycle

PINNING		**PIN VALUE**
1. Write protect enable (Ground)	:	0V
2. Not connected (Ground)	:	0V
3. Chip enable input (Ground)	:	0V

4. Ground : 0V
5. Serial data address input/output : Input LOW voltage : Min : -0.3V, Max : 0.3*Vcc
   Input HIGH voltage: Min : 0.7*Vcc, Max : Vcc+1
6. Serial clock : Input LOW voltage : Min: -0.3V, Max : 0.3*Vcc
   Input HIGH voltage: Min : 0.7*Vcc, Max : Vcc+1
7. Multibyte/Page write mode : Input LOW voltage : Min: -0.3V, Max :0.5V
   Input HIGH voltage: Min : Vcc-0.5, Max : Vcc+1
8. Supply voltage : Min : 2.5V, Max : 5.5V

TDA1308:

Features:
- Wide temperature range
- No switch ON/OFF clicks
- Excellent power supply ripple rejection
- Low power consumption
- Short-circuit resistant
- High performance
  - high signal-to-noise ratio
  - high slew rate
  - low distortion
- Large output voltage swing

PINNING **PIN VALUE**
1. Output A (Voltage swing) : Min : 0.75V, Max : 4.25V
2. Inverting input A : Vo(clip) : Min : 1400mVrms
3. Non-inverting input A : 2.5V
4. Ground : 0V
5. Non-inverting input B : 2.5V
6. Inverting input B : Vo(clip) : Min : 1400mVrms
7. Output B (Voltage swing) : Min : 0.75V, Max : 4.25V
8. Positive supply
   : 5V, Min : 3.0V, Max : 7.0V

G1965M:

Features:
- TV IF filter with Nyquist slope and sound shelf at typ. 20.4dB
- High colour carrier level at typ. 1.0dB
- Constant group delay
- Insertion attenuation typ. 15.0dB

PINNING
1. Input
2. Input-ground
3. Chip carrier-ground

AK25 CHASSIS MANUAL ADJUSTMENTS PROCEDURE

In order to enter the service menu, first enter the installation menu and then press the digits 4, 7, 2 and 5 respectively.

For ADJUST settings:

Select **Adjust** using ▽or△ button and press ▷or◁ button to enter it. To select different adjust parameters, use ▽or△ button. To change the selected parameter, use ▷ or ◁ button.

OPTION 00

B7:	**Ina**	**=**	**0**
B6:	**Inb**	**=**	**0**
B5:	**Inc**	**=**	**0**
B4:	**Akb**	**=**	**0**
B3:	**Foa**	**=**	**0**
B2:	**Fob**	**=**	**0**
B1:	**Xa**	**=**	**note1**
B0:	**Xb**	**=**	**note1**

note 1:

Xa,Xb

0,1 : Pal M, Pal N, Ntsc M
Pin 34 : 3.58 (1, 2 or 3 crystals)
Pin 35 : No crystal

1,0 : Pal BG, Pal DK, Pal I/I+, Secam BG, Secam DK, Secam L/L', Secam K1
Pin 34 : No crystal
Pin 35 : 4.43 (1 crystal)

1,1 : Pal BG, Pal DK, Pal I/I+, Secam BG, Secam DK, Secam L/L', Secam K1, Pal M, Pal N, Ntsc M
Pin 34 : 3.58 (1, 2 or 3 crystals)
Pin 35 : 4.43 (1 crystal)

OPTION 01

B7:	Frf	=	1
B6:	Frs	=	1
B5:	Dl	=	0
B4:	Stb	=	0
B3:	Poc	=	0
B2:	Cm2	=	0
B1:	Cm1	=	0
B0:	Cm0	=	0

OPTION 02

B7:	Oso	=	0
B6:	Vsd	=	0
B5:	Cb	=	0
B4:	Bls	=	0
B3:	Bks	=	0
B2:	Ie1	=	0
B1:	Afw	=	0
B0:	Bb	=	0

OPTION 03

B7:	Hob	=	0
B6:	Bps	=	0
B5:	Acl	=	0
B4:	Cmb	=	0
B3:	Ast	=	0
B2:	Cl2	=	1
B1:	Cl1	=	1
B0:	Cl0	=	0

OPTION 04

B7:	Ifs	=	0
B6:	Mod	=	0
B5:	Vsw	=	0
B4:	Sm	=	0
B3:	Ds	=	0
B2:	Dsa	=	0
B1:	Fav	=	0
B0:	Lfa	=	0

OPTION 05

B7:	Avl	=	1
B6:	Hbl	=	0
B5:	Vim	=	0
B4:	Gai	=	0
B3:	Nci	=	0
B2:	Stm	=	0
B1:	Vid	=	0
B0:	Lbm	=	1

OPTION 06

B7:	Hco	=	1
B6:	Evg	=	1
B5:	Sbl	=	1
B4:	Prd	=	1
B3:	Mat	=	note 1
B2:	Rbl	=	1
B1:	Cor	=	1
B0:	Aen	=	note 2

note 1:

0	=	If only PAL
1	=	Else

note 2:

0	=	APS diasbled >> Preset
1	=	APS enabled >> APS

OPTION 07

B7:	C3	=	note 1
B6:	C2	=	note 1
B5:	C1	=	note 1
B4:	C0	=	note 1
B3:	CL	=	note 2
B2:	Tr	=	note 3
B1:	L1	=	note 4
B0:	L0	=	note 4

note 1:

C3,C2,C1,C0	=	Country	
0,0,0,0	=	?	Not allowed
0,0,0,1	=	D	Germany
0,0,1,0	=	A	Austria
0,0,1,1	=	CH	Switzerland
0,1,0,0	=	I	Italy
0,1,0,1	=	F	France
0,1,1,0	=	B	Belgium
0,1,1,1	=	DK	Denmark
1,0,0,0	=	S	Sweden
1,0,0,1	=	N	Norway
1,0,1,0	=	SF	Finland
1,0,1,1	=	GB	Great Britain
1,1,0,0	=	NL	Netherlands
1,1,0,1	=	P	Portugal
1,1,1,0	=	E	Spain
1,1,1,1	=	TR	Turkey

note 2:

CL	=	Child Lock	
0	=	Off	
1	=	On (Active)	

note 3:

Tr	=	Turkish Language	
0	=	Disabled	(3 Languages : German, English, Italian)
1	=	Enabled	(4 Languages : German, English, Italian, Turkish)

note 4:

L1,L0	=	Language
0,0	=	German
0,1	=	English
1,0	=	Italian
1,1	=	Turkish

OPTION 08

B7:	Tub	=	note 1
B6:	Z.Def	=	note 2
B5:	IfD	=	note 3
B4:	Ifl	=	note 4
B3:	IfM	=	note 5
B2:	Aps	=	note 6
B1:	Hp	=	note 7
B0:	Hue	=	note 8

note 1:

Tub

0	=	16:9 Tube size
1	=	4:3 Tube size

note 2:

Z.Def

0	=	16:9 mode default
1	=	4:3 mode default

note 3:

IfD

0	=	IF DK 38.0 MHz
1	=	IF DK 38.9 MHz

note 4:

Ifl

0	=	IF I 39.5 MHz	Great Britain I	, Only UHF Tuner
1	=	IF I 38.9 MHz	Ireland I+	, Standard Tuner

note 5:

IfM

0	=	IF M,N 45.75 MHz	S&N American Models	, Tuner UV1336 (Only Pal M/N, Ntsc M)
1	=	IF M,N 38.9 MHz	Euro M,N Models , Standard Tuner	

Note 6:

Aps

0	=	A.P.S. done
1	=	A.P.S. set

note 7:

Hp

0	=	No headphone
1	=	Headphone available

note 8:

Hue

0	=	No hue
1	=	Hue available

OPTION 09

B7:	NM	=	note 1
B6:	PN	=	note 1
B5:	PM	=	note 1
B4:	K1	=	note 1
B3:	L	=	note 1
B2:	I	=	note 1
B1:	DK	=	note 1
B0:	BG	=	note 1

note 1:

0	=	Standard not supported
1	=	Standard available

OPTION 10

B7:	Cine	=	note 1
B6:	WEu	=	note 2
B5:	E/T	=	note 2
B4:	Com	=	0
B3:	Svh	=	0
B2:	Fro	=	note 3
B1:	Sc2	=	note 4
B0:	Sc1	=	note 5

note 1:

0	=	Cinema Mode Not Supported
1	=	Cinema Mode Enable

note 2:

Weu,E/T Teletext character set table selection

0,0	=	West Europe + Turkish
0,1	=	East Europe
1,0	=	West Europe
1,1	=	West Europe

note 3:

0	=	Front AV (AV-3) not supported
1	=	Front AV (AV-3) available

note 4:

0	=	Scart 2 not supported
1	=	Scart 2 available

note 5:

0	=	Scart 1 not supported
1	=	Scart 1 available

OPTION 11

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

PII tuner control 1 byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316MK2	1	0	0	0	1	1	1	0
Alps	TELE9X062A	1	0	0	0	1	1	1	0
Samsung	TEXX2949PG28A	1	0	0	0	1	1	1	0
Siel	PT060	1	0	0	0	1	1	1	0
Temic	5001PH5-3X0003	1	0	0	0	1	1	1	0
Thomson	CTT5020	1	0	0	0	1	1	1	0

OPTION 12

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :
Pll tuner control 2 low byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	**UV1316MK2**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**1**
Alps	**TELE9X062A**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
Samsung	**TEXX2949PG28A**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
Siel	**PT060**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**
Temic	**5001PH5-3X0003**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**
Thomson	**CTT5020**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**

OPTION 13

B7:	**b7**	**=**	**note 1**
B6:	**b6**	**=**	**note 1**
B5:	**b5**	**=**	**note 1**
B4:	**b4**	**=**	**note 1**
B3:	**b3**	**=**	**note 1**
B2:	**b2**	**=**	**note 1**
B1:	**b1**	**=**	**note 1**
B0:	**b0**	**=**	**note 1**

note 1 :
Pll tuner control 2 mid byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316MK2	**1**	**0**	**0**	**1**	**0**	**0**	**1**	**0**
Alps	TELE9X062A	0	0	0	0	0	0	1	0
Samsung	TEXX2949PG28A	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**
Siel	PT060	**1**	**1**	**0**	**1**	**0**	**0**	**0**	**0**
Temic	5001PH5-3X0003	0	0	0	0	0	1	0	0
Thomson	CTT5020	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**

OPTION 14

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :
Pll tuner control 2 high byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316MK2	**0**	**0**	**1**	**1**	**0**	**1**	**0**	**0**
Alps	TELE9X062A	0	0	0	0	1	0	0	0
Samsung	TEXX2949PG28A	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**
Siel	PT060	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	1
Thomson	CTT5020	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**1**

OPTION 15

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :
Pll tuner VHF LOW - VHF HIGH crossover low byte

		b7	b6	b5	b4	b3	b2	b1	b0	
Philips	UV1316MK2	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	(0A hex)
Alps	TELE9X062A	0	0	0	0	0	0	0	0	
Samsung	TEXX2949PG28A	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	
Siel	PT060	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	0	
Thomson	CTT5020	**1**	**0**	**1**	**0**	**1**	**0**	**1**	**0**	(AA hex)

OPTION 16

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner VHF LOW - VHF HIGH crossover high byte

		b7	b6	b5	b4	b3	b2	b1	b0	
Philips	UV1316MK2	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	(0C hex)
Alps	TELE9X062A	0	0	0	0	0	0	0	0	
Samsung	TEXX2949PG28A	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**1**	
Siel	PT060	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**1**	
Temic	5001PH5-3X0003				0	0	0	0	0	0 0 0
Thomson	CTT5020	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	(09 hex)

OPTION 17

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner VHF HIGH - UHF crossover low byte

		b7	b6	b5	b4	b3	b2	b1	b0	
Philips	UV1316MK2	**1**	**1**	**1**	**0**	**0**	**0**	**1**	**0**	(E2 hex)
Alps	TELE9X062A	0	0	0	0	0	0	0	0	
Samsung	TEXX2949PG28A	**1**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	
Siel	PT060	**1**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	
Temic	5001PH5-3X0003				0	0	0	0	0	0 0 0
Thomson	CTT5020	**1**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	(A2 hex)

OPTION 18

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner VHF HIGH - UHF crossover high byte

		b7	b6	b5	b4	b3	b2	b1	b0	
Philips	UV1316MK2	**0**	**0**	**0**	**1**	**1**	**1**	**1**	**0**	(1D hex)
Alps	TELE9X062A	0	0	0	0	0	0	0	0	
Samsung	TEXX2949PG28A	**0**	**0**	**0**	**1**	**1**	**1**	**1**	**0**	
Siel	PT060	**0**	**0**	**0**	**1**	**1**	**1**	**1**	**0**	
Temic	5001PH5-3X0003				0	0	0	0	0	0 0 0
Thomson	CTT5020	**0**	**0**	**0**	**1**	**1**	**0**	**1**	**1**	(1B hex)

OPTION 19

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 : ?

b6- Nicam On=1, Nicam Off=0

	b7	b6	b5	b4	b3	b2	b1	b0	
SCART PRESCALE	**0**	**?**	**0**	**0**	**1**	**1**	**1**	**1**	(**AVL On**)

OPTION 20

B7: b7 = note 1
B6: b6 = note 1
B5: b5 = note 1
B4: b4 = note 1
B3: b3 = note 1
B2: b2 = note 1
B1: b1 = note 1
B0: b0 = note 1

note 1 :

	b7	b6	b5	b4	b3	b2	b1	b0	
NICAM PRESCALE	**0**	**0**	**1**	**1**	**1**	**1**	**1**	**1**	(**AVL On**)

OPTION 21

B7: b7 = note 1
B6: b6 = note 1
B5: b5 = note 1
B4: b4 = note 1
B3: b3 = note 1
B2: b2 = note 1
B1: b1 = note 1
B0: b0 = note 1

note 1 :

	b7	b6	b5	b4	b3	b2	b1	b0	
FM PRESCALE	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	(**AVL On**)

OPTION 22

B7: b7 = note 1
B6: b6 = note 1
B5: b5 = note 1
B4: b4 = note 1
B3: b3 = note 1
B2: b2 = note 1
B1: b1 = note 1
B0: b0 = note 1

note 1 :

Dual Identification Limit related to reading DFP Register 0018h –Stereo Detection Register of MSP 34xxD in German dual transmissions.

	b7	b6	b5	b4	b3	b2	b1	b0	
DUAL LIMIT	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	(**AVL On and Off**)

OPTION 23

B7: b7 = note 1
B6: b6 = note 1
B5: b5 = note 1
B4: b4 = note 1
B3: b3 = note 1
B2: b2 = note 1
B1: b1 = note 1
B0: b0 = note 1

note 1 :

Stereo Identification Limit related to reading DFP Register 0018h – Stereo Detection Register of MSP34xxD in German Stereo Transmissions.

	b7	b6	b5	b4	b3	b2	b1	b0	
STEREO LIMIT	**1**	**1**	**1**	**1**	**0**	**0**	**0**	**0**	(**AVL ON and Off**)

OPTION 24

B7: b7 = note 1
B6: b6 = note 1
B5: b5 = note 1
B4: b4 = note 1
B3: b3 = note 1
B2: b2 = note 1
B1: b1 = note 1
B0: b0 = note 1

ote 1 :

Auto FM_AM : FP Register 21h Automatic switching with external threshold
B2, B1, B0 : Bit10, Bit9,Bit8 of the register
B7, B6, B5, B4,B3 : Bit7,Bit6, Bit5, Bit4, Bit3 of the register
(Bit2,Bit1 of the register is always 0 and Bit0 of the register is always 1.)

	b7	b6	b5	b4	b3	b2	b1	b0	
AUTO SWITCH THRESHOLD	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**1**	(**AVL On and off, Threshold 800**)

OPTION 25

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Write to any of the DFP Registers when the power is on: If this byte or option is zero, you do not use this option. If you input a number to this option, you write the following bytes to the register addressed by that number.

	b7 b6 b5 b4 b3 b2 b1 b0	
DFP ADDRESS	**0 0 0 0 0 0 0 0**	(Under normal conditions)

OPTION 26

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

If option 25 is set to zero, this option is not available. If option 25 is nonzero, DATA HIGH gives the high byte to be written to the register that is addressed by Option 25.

	b7 b6 b5 b4 b3 b2 b1 b0
DATA HIGH	**0 0 0 0 0 0 0 0**

OPTION 27

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

If option 25 is set to zero, this option is not available. If option 25 is nonzero, DATA LOW gives the low byte to be written to the register that is addressed by Option 25.

	b7 b6 b5 b4 b3 b2 b1 b0
DATA LOW	**0 0 0 0 0 0 0 0**

OPTION 28

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

	b7 b6 b5 b4 b3 b2 b1 b0	
SCART PRESCALE	**0 0 0 0 1 0 1 1**	(**AVL Off**)

OPTION 29

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

	b7 b6 b5 b4 b3 b2 b1 b0	
NICAM PRESCALE	**0 0 0 1 0 1 0 1**	(**AVL Off**)

OPTION 30

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

	b7	b6	b5	b4	b3	b2	b1	b0	
FM PRESCALE	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	(**AVL Off**)

AK25 CHASSIS ADJUST SETTING
ADJUST 00-42

ADJUST 00	**=**	**White Point RED**	
ADJUST 01	**=**	**White Point GREEN**	
ADJUST 02	**=**	**White Point BLUE**	
ADJUST 03	**=**	**AGC**	
ADJUST 04	**=**	**IF-PLL Negative (STEP 80)**	
ADJUST 05	**=**	**IF-PLL Positive (STEP 80)**	
ADJUST 06	**=**	**Y-Delay PAL . . . . . NO FUNCTION**	
ADJUST 07	**=**	**Y-Delay SECAM . . . . . NO FUNCTION**	
ADJUST 08	**=**	**Y-Delay NTSC . . . . . NO FUNCTION**	
ADJUST 09	**=**	**Y-Delay OTHER. . . . . NO FUNCTION**	
ADJUST 10	**=**	**4:3 Vertical Zoom . . . . . NO FUNCTION**	
ADJUST 11	**=**	**4:3 Vertical Scroll . . . . . NO FUNCTION**	
ADJUST 12	**=**	**4:3 Horizontal Shift**	
ADJUST 13	**=**	**4:3 Vertical Slope**	
ADJUST 14	**=**	**4:3 Vertical Amplitude**	
ADJUST 15	**=**	**4:3 S-correction**	
ADJUST 16	**=**	**4:3 Vertical Shift**	
ADJUST 17	**=**	**4:3 EW Width . . . . . NO FUNCTION**	
ADJUST 18	**=**	**4:3 EW Parabola Width . . . . . NO FUNCTION**	
ADJUST 19	**=**	**4:3 EW Corner Parabola . . . . . NO FUNCTION**	
ADJUST 20	**=**	**4:3 EW Trapezium . . . . . NO FUNCTION**	
ADJUST 21	**=**	**16:9 Vertical Zoom . . . . . NO FUNCTION**	
ADJUST 22	**=**	**16:9 Vertical Scroll . . . . . NO FUNCTION**	
ADJUST 23	**=**	**16:9 Horizontal Shift**	
ADJUST 24	**=**	**16:9 Vertical Slope**	
ADJUST 25	**=**	**16:9 Vertical Amplitude**	
ADJUST 26	**=**	**16:9 S-correction**	
ADJUST 27	**=**	**16:9 Vertical Shift**	
ADJUST 28	**=**	**16:9 EW Width . . . . . NO FUNCTION**	
ADJUST 29	**=**	**16:9 EW Parabola Width . . . . . NO FUNCTION**	
ADJUST 30	**=**	**16:9 EW Corner Parabola . . . . . NO FUNCTION**	
ADJUST 31	**=**	**16:9 EW Trapezium . . . . . NO FUNCTION**	
ADJUST 32	**=**	**Cinema Vertical Zoom . . . . . NO FUNCTION**	
ADJUST 33	**=**	**Cinema Vertical Scroll . . . . . NO FUNCTION**	
ADJUST 34	**=**	**Cinema Horizontal Shift**	
ADJUST 35	**=**	**Cinema Vertical Slope**	
ADJUST 36	**=**	**Cinema Vertical Amplitude**	
ADJUST 37	**=**	**Cinema S-correction**	
ADJUST 38	**=**	**Cinema Vertical Shift**	
ADJUST 39	**=**	**Cinema EW Width . . . . . NO FUNCTION**	
ADJUST 40	**=**	**Cinema EW Parabola Width . . . . NO FUNCTION**	
ADJUST 41	**=**	**Cinema EW Corner Parabola. . . . NO FUNCTION**	
ADJUST 42	**=**	**Cinema EW Trapezium . . . . . NO FUNCTION**	
ADJUST 43	**=**	**OSD Position**	

Ak25 Technical Features and differences.

• Ak25 chassis is an extension of the AK19 chassis, and it does not support 110° option.
• Ak25 is designed to support satellite TV.
• Operating voltage is 170/270 V.

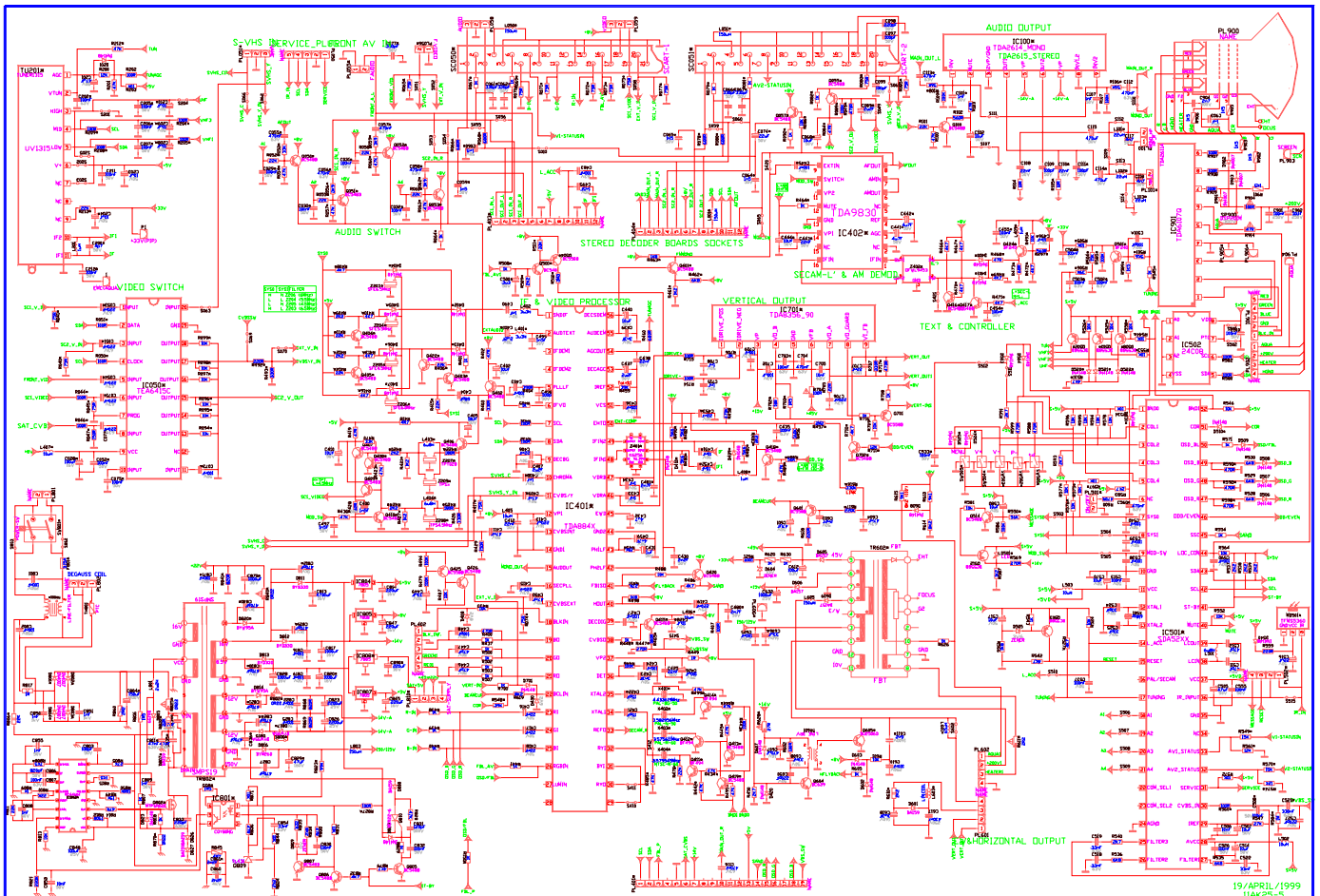
Ak25 has the following extra components that are not found in AK19; the 5V SMPS card, PL401 Socket and the 22Voutput voltage in the SMT secondary side (D820). This 22 V output diode is added as it is use by the Sat card. Moreover, another 5V and 45V Dc come to the satellite card; these voltages are supplied from PL810 socket in the second Scart region on the chassis. As to the 5V it is supplied by IC808 near the PL810 socket, while the 45V is supplied from the 45 output of the FBT (high voltage transformer).

• The communication between the main board and the SAT card(SDA & SCL) is carried out by the CVBS and +14V connections through PL401 socket.

The SDA545X controller is used in AK25 unlike AK19, while all other Tuner, IF, vertical, horizental, and CRT parts are the same as those in AK19

The Sat card should not be operated unless all the voltages (0V, 22V, 45V, 5V) are correctly available at PL810.

Both plugging and unplugging of the SAT card should not be done unless the TV is totally off .


S-VHS SERVICE_PLUG
FRONT AV IN
AUDIO SWITCH
STEREO DECODER BOARDS SOCKETS
AUDIO OUTPUT
IC100
TDA8944_MONO
TDA8615_STEREO
PL900
NAME
IC402
DA9830
SECAM-L' & AM DEMOD
TEXT & CONTROLLER
IC502
24C08
IC501
STA52X
VIDEO SWITCH
IC050
TEA6415C
IF & VIDEO PROCESSOR
IC401
TDA884X
VERTICAL OUTPUT
IC701
TDA8356_90
TR662
FBT
FOCUS
G2
45V
H&V HORIZONTAL OUTPUT
DEGAUSS COIL
IC801
IC802
IC803
IC804
IC805
IC806
IC807
IC808
IC809
IC810
IC811
IC812
IC813
IC814
IC815
IC816
IC817
IC818
IC819
IC820
IC821
IC822
IC823
IC824
IC825
IC826
IC827
IC828
IC829
IC830
IC831
IC832
IC833
IC834
IC835
IC836
IC837
IC838
IC839
IC840
IC841
IC842
IC843
IC844
IC845
IC846
IC847
IC848
IC849
IC850
IC851
IC852
IC853
IC854
IC855
IC856
IC857
IC858
IC859
IC860
IC861
IC862
IC863
IC864
IC865
IC866
IC867
IC868
IC869
IC870
IC871
IC872
IC873
IC874
IC875
IC876
IC877
IC878
IC879
IC880
IC881
IC882
IC883
IC884
IC885
IC886
IC887
IC888
IC889
IC890
IC891
IC892
IC893
IC894
IC895
IC896
IC897
IC898
IC899
IC900
19/APRIL/1999
IIAK25-5

VESTEL ELEKTRONİK A.Ş.	CHANGE BULLETIN (TCN)	**CHANGE NO**: 78 **REF NO :** UMB 0203

AFFECTED MODELS: ALL MODELS WITH 11AK25 CHASSIS.

START DATE : 29.03.2000

REASONS OF CHANGE: TO IMPROVE PICTURE PERFORMANCE.

NO	PCB CODE	VESTEL CODE	COMPONENT NAME	POSITION NUMBER	QUANTITY
1	11AK25	30002016	FIXED COIL 150UH Q60 K	J649	1

IN

NO	PCB CODE	VESTEL CODE	COMPONENT NAME	POSITION NUMBER	QUANTITY
1	11AK25	30002583	JUMPER WIRE 0.6MM	J649	1

APPLICATION ENGINEER	APPLICATION ENGINEERING CHIEF	APPLICATION ENGINEERING MANAGER
-	YILDIRAY BAŞKURT	BEYHAN DAĞITAN

NOTES



This Service Manual are Manufacturer intellectual propriety. The design and the way the documents are selected, placed and related in this data base are the author's intellectual propriety

© E. TURUTA