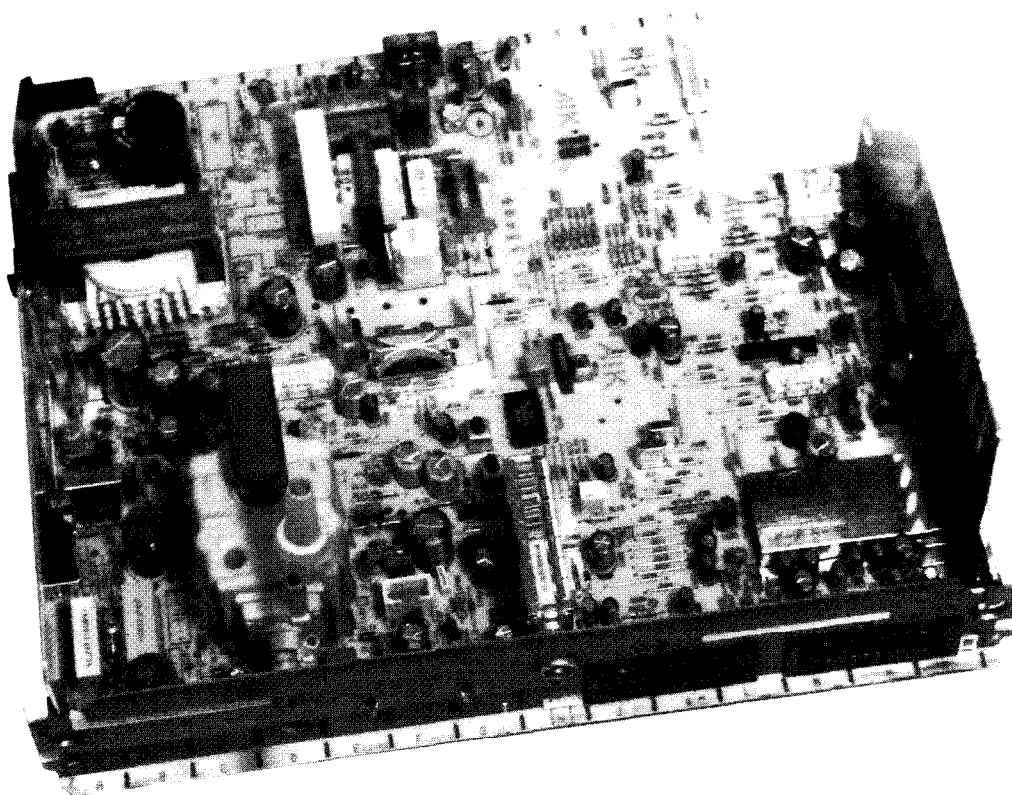




SERVICE MANUAL
DOCUMENTATION TECHNIQUE
TECHNISCHE DOKUMENTATION
DOCUMENTAZIONE TECNICA
DOCUMENTACION TECNICA

ICC17

CLICK HERE FOR INDEX OF PAGES



A !

WARNING : Before servicing this chassis read the safety recommendations.
ATTENTION : Avant toute intervention sur ce châssis, lire /es recommandations de sécurité.
ACHTUNG : Vor jedem Eingriff auf diesem Chassis, die Sicherheitsvorschriften lesen.
ATTENZIONE : Prima di intervenire sullo chassis, leggere le norme di sicurezza.
IMPORTANTE : Antes de cualquier intervención, leer las recomendaciones de seguridad.

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TUNER CTT5010

KEYBOARD AND FRONT CONN BOARD

DOLBY PROLOGIC BLOCK DIAGRAM

LIST OF ABBREVIATIONS

CONTROL SECTION DIAGRAM

POWER SUPPLY DIAGRAM

SCANNING CIRCUIT DIAGRAM

**RF/IF SCART INTERFACE
VIDEO SIGNAL PROCESSING
DIAGRAMS NO1 NO2**

VIDEO AMPLIFIER BOARD DIAGRAM

AMPLIFIER DIAGRAMS

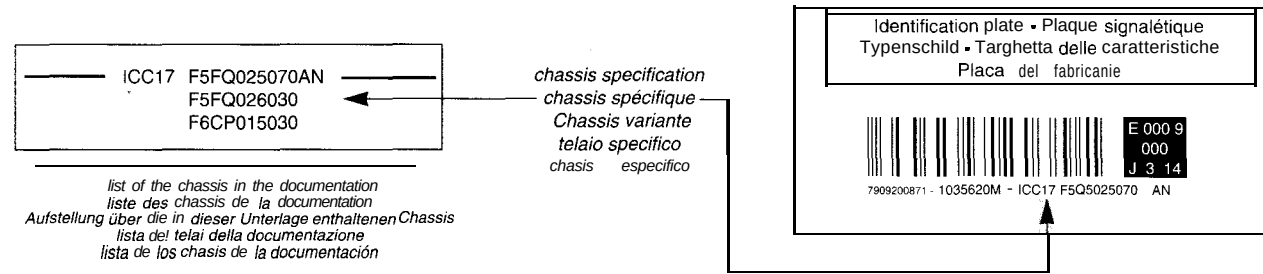
DOLBY PROLOGIC DIAGRAMS

CHASSIS LAYOUT P.C.B

ICC17 CHASSIS DETAILED STUDY

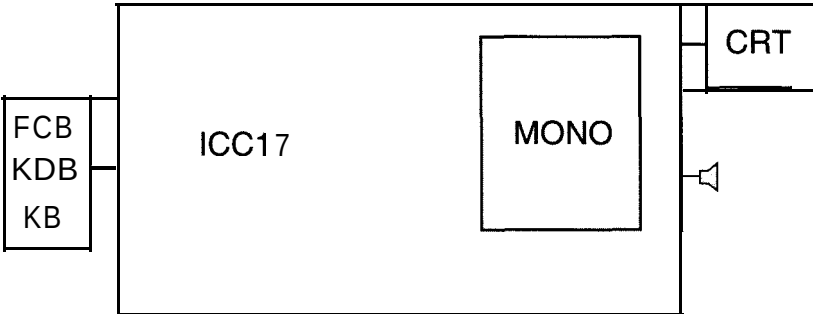
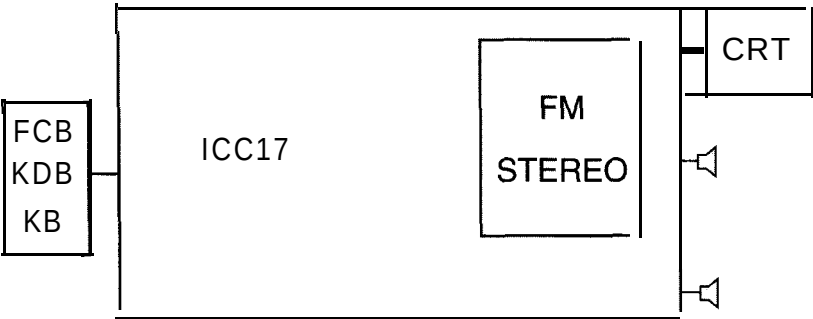
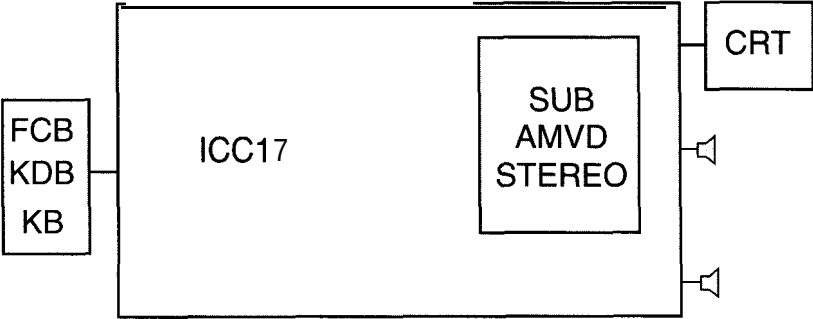
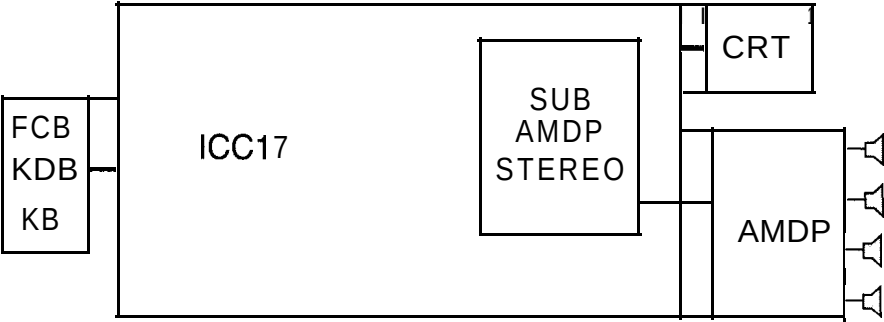
INFORMATION - INFORMATIONS - INFORMATIONEN
INFORMAZIONE - INFORMACIONES

- (GB)** Chassis group table
- 1 - The electronic chassis configuration (modules) and schematic diagram page numbers.
 - 2 - The chassis configuration.
- (F)** Le tableau ci-dessous regroupe :
- 1 - L'environnement électronique de chaque chassis (modules) et le numéro de page où il est décrit.
 - 2 - La designation des chassis
- (D)** Die nachstehende Tabelle umfaßt:
- 1 - Die elektronischen Baugruppen (Module) der Chassis varianten und die Seiten auf der sie beschrieben werden
 - 2 - Die Chassisbezeichnung
- (I)** La tabella qui di seguito contiene:
- 1 - l'ambiente elettronico di ogni telaio (moduli) e il numero di pagina nella quale è descritto.
 - 2 - La descrizione dei telai
- (E)** El cuadro siguiente agrupa:
- 1 - El entorno electrónico de cada chasis (módulos) y el número de página donde está descrito.
 - 2 - La designación de los chasis

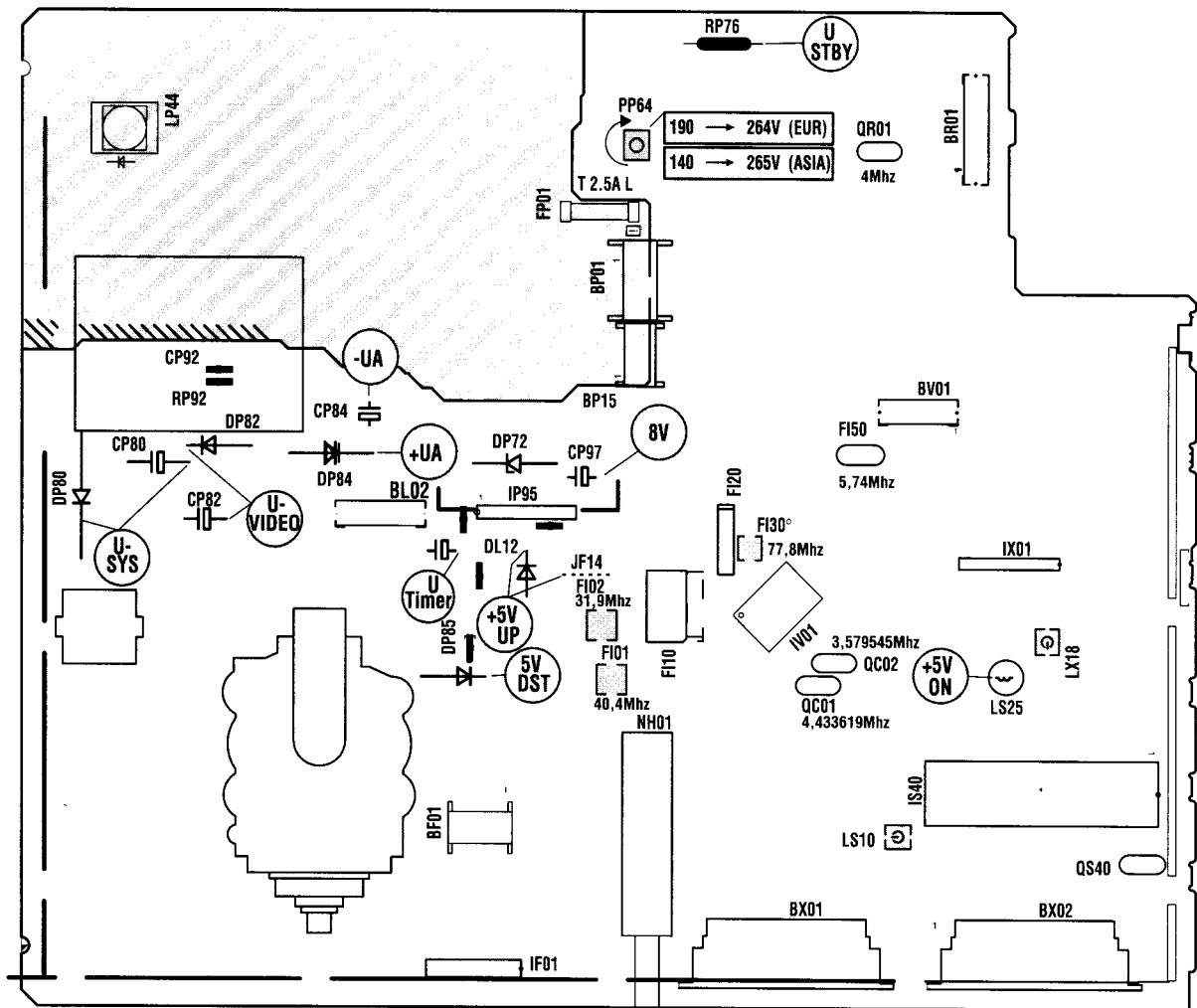


Chassis ICC17

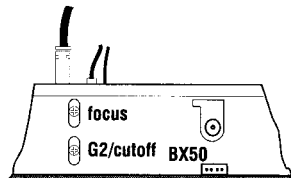
DESCRIPTION	ADJUST.	MICRO.	POWER	DEFLECTION	ONE-CHIP SIGNALS	CRT	AUDIO	DOLBY	FCB I KDB	MAIN PCB
		(RP)	(PP)	(DP)	(OS)	--	(AP)	--	--	
IC17 F5RQ026070	5to6/7to14	15to16	17to1a	19to20	21to22	23to24	27to28		4 4	37to42
IC17 F5FQ026030	"	"	"	"	"	"	"		"	"
IC17 F5CP026030	"	"	"	"	"	"	"		"	"
IC17 F5H3026070	"	"	"	"	"	"	"		"	"
IC17 F5H3026030	"	"	"	"	"	"	"		"	"
IC17 F6CP015030	"	"	"	"	25to26	"	"		"	"
IC17 F6FQ015030	"	"	"	"	21to22	"	"		"	"
IC17 F5FQ026070	"	"	"	"	"	"	"		"	"
IC17 F5RQ056070	"	"	"	"	"	"	35to36		"	"
IC17 F6H3015030	"	"	"	"	"	"	"		"	"
IC17 F5CP026070	"	"	"	"	"	"	"		"	"



LOCATION OF CONTROLS - EMBLACEMENT DES REGLAGES - SERVICE LAGEPLAN - POSIZIONE REGOLATORI DI SERVIZIO - SITUACIÓN DE LOS AJUSTES



° it is not necessary , to adjust F130 by after sales



Part of board connected to mains supply.
Partie du châssis reliée au secteur.
Primärseite des Netzteils.
Parte dello chassis collegata alla rete.
Parte del chassis conectada a la red.



Use isolating mains transformer -
Utiliser un transformateur isolateur du secteur -
Trenntrafo verwenden -
Utilizar un transformador aislador de red -
Utilizzare un trasformatore per isolarvi dalla rete

ADJUSTMENTS - REGLAGES - EINSTELLUNGEN - REGOLAZIONI - AJUSTES

U Sys	PP 64			<table><tr><th>Tube</th><th>Format</th><th>Usys</th><th>Jumper</th><th>RL65</th></tr><tr><td>A51EFS83X191</td><td>4:3</td><td>126V+/-0.5V</td><td>JL80</td><td>4k7</td></tr><tr><td>A59EHJ43X15</td><td>4:3</td><td>132V+/-0.5V</td><td>JL81</td><td>24k</td></tr><tr><td>A66EHJ43X15</td><td>4:3</td><td>132V+/-0.5V</td><td>JL81</td><td>24k</td></tr><tr><td>A59EGD048X30</td><td>4:3</td><td>126V+/-0.5V</td><td>JL80</td><td>4k7</td></tr><tr><td>A68EGD038X30</td><td>4:3</td><td>126V+/-0.5V</td><td>JL80</td><td>4k7</td></tr><tr><td>A68AGAZ5X01</td><td>4:3</td><td>126V+/-0.5V</td><td>JL80</td><td>4k7</td></tr><tr><td>A80AEJ15X01</td><td>4:3</td><td>126V+/-0.5V</td><td>JL80</td><td>4k7</td></tr><tr><td>W56EGV023X015</td><td>16:9</td><td>138V+/-0.5V</td><td>JL82</td><td>47k</td></tr><tr><td>W66EGV023X015</td><td>16:9</td><td>138V+/-0.5V</td><td>JL82</td><td>47k</td></tr><tr><td>W76EGV023X015</td><td>16:9</td><td>138V+/-0.5V</td><td>JL82</td><td>47k</td></tr></table>	Tube	Format	Usys	Jumper	RL65	A51EFS83X191	4:3	126V+/-0.5V	JL80	4k7	A59EHJ43X15	4:3	132V+/-0.5V	JL81	24k	A66EHJ43X15	4:3	132V+/-0.5V	JL81	24k	A59EGD048X30	4:3	126V+/-0.5V	JL80	4k7	A68EGD038X30	4:3	126V+/-0.5V	JL80	4k7	A68AGAZ5X01	4:3	126V+/-0.5V	JL80	4k7	A80AEJ15X01	4:3	126V+/-0.5V	JL80	4k7	W56EGV023X015	16:9	138V+/-0.5V	JL82	47k	W66EGV023X015	16:9	138V+/-0.5V	JL82	47k	W76EGV023X015	16:9	138V+/-0.5V	JL82	47k
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IF Alignment Alignement FI	trap 40,4Mhz FI 01	Switch set to standard BG Commuter le TV au standard BG		Adjust FI01 for minimum value at 40,4Mhz																																																							
	trap 31,9Mhz FI 02	IF Signal 40,4MHz (BG) 31,9MHz (BG) 		Adjust FI20 for minimum value at 31,9Mhz																																																							
U G2 / cutoff	SCREEN	 AV (no Signal, black screen)																																																									
FOCUS	FOCUS LL05	 Test pattern (standard values)		Sharp picture																																																							

I - ENTER/EXIT SERVICE MODE - ENTREE/SORTIE DU MODE SERVICE

1 ACCESSING THE SERVICE MODE

TV Control Panel Access

- Switch the TV into "Standby" mode by pressing the Standby button on the RCU.
- Switch "OFF" the mains supply to the TV and wait for the LED to extinguish.
- Whilst holding depressed the **PR** - and **VOL-** (8s), switch "ON" the mains supply to the TV.
- Once initialised, the **Main Service Menu** will appear on the screen of the TV.

Soft-Ver. V1.00-0 0080
Config. A5- - - N
Serial-No. 103465071

▶ QUIT
TUBE
SETUP
GEOMETRY
VIDEO
IF

Please Note:

In the service mode :

- The CHILD LOCK function is re-initialised. The LOCK function (PIN number) is ignored.
- All Wake-up/Sleep timer settings are CLEARED.
- SCART socket pin 8 switching voltages are ignored.
- AV-Link, WSS Detection, EPG and TELETEXT functions are disabled.
- Automatic standby mode switching functions (no signal conditions) are disabled.
- Brightness, Colour and Contrast are set to factory defaults.
- Sharpness settings are set to MID position.
- Contrast Expand is set to LOW.
- Automatic INSTALL mode is disabled.
- FORMAT and ZOOM are reset to factory defaults.

2 TEMPORARY EXIT FROM SERVICE MODE

- Press the "EXIT" button on the RCU.
- Pressing the "MENU" button on the RCU will activate the customer menus.

- The Service Menu can be re-entered by pressing the "BLUE" button on the RCU.

3 EXITING FROM SERVICE MODE

Remote Control

TV Control Panel

ON/OFF key or "Stand-by" buttons

- Select the "QUIT" line of the "Main Service Menu".

- Press "<<," "OK" or ">>" button

- Press "VOL.+" button

- TV mode.

Values or adjustment not "STORED" before exiting the service mode will **NOT** be "SAVED" in the NVM.

1 ACCES AU MODE SERVICE

Accès avec le clavier du téléviseur

- Commuter le téléviseur en position de veille avec la télécommande. Eteindre le téléviseur par l'interrupteur secteur (attendre l'extinction complète du voyant).
- Tout en appuyant sur les touches **PR** - et **VOL -** , mettre le TV en service à l'aide de la touche **M/A**.
- Maintenir enfoncées les touches **PR** - et **VOL -** . (8s)
Le menu suivant apparaît.

Soft-Ver. V1.00-0 0080
Config. A5- - - N
Serial-No. 103465071

▶ QUIT
TUBE
SETUP
GEOMETRY
VIDEO
IF

Note :

En mode service:

- Le verrouillage parental est effacé (réinitialisé).
- La fonction de verrouillage (Pin number) est ignorée.
- La programmation des heures «réveille/matin» est annulée.
- Possibilité de passer en mode service avec commutation lente active.
- AV- Link , la détection WSS, l'EPG et le Vidéotexte ne sont pas validés.
- La fonction de stand-by automatique en cas d'absence de signal d'antenne n'est pas validée.
- Les valeurs de réglages usine sont affectées au contraste, à la couleur et à la lumière.
- Le contour est appelé à sa valeur moyenne.
- L'expansion contraste est au niveau bas.
- Le mode ambiance «Light sensor» n'est pas valides.
- Zoom et format ignorées.

2 SORTIE TEMPORAIRE DU MODE SERVICE

- Utiliser la touche Exit de la télécommande.
- Le menu utilisateur peut être accessible via la touche «Menu».

- Pour entrer à nouveau dans le mode service utiliser la touche bleue.

3 SORTIE DEFINITIVE DU MODE SERVICE

télécommande

clavier du téléviseur

Inter M/A ou Stand-by

- Aller au point «QUIT» dans le menu principal du mode service.

- Appuyer sur "<<," "OK" ou ">>"

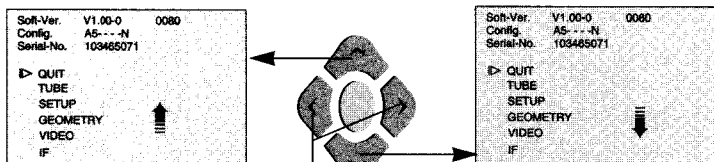
- Appuyer sur "VOL.+"

- Mode TV.

Les valeurs ou réglages non mémorisées avant la sortie ne seront pas écrites en NVM.

II - NAVIGATION INSIDE THE SERVICE MODE - DEPLACEMENT DANS LE MODE SERVICE FUNCTIONS WALLIN SERVICE MODE - OPZIONI NEL SERVICE MODE - BUSQUEDA EN MODO SERVICIO

1 REMOTE CONTROL - TELECOMMANDE - FERNBEDIENUNG TELECOMANDO - MANDO A DISTANCIA

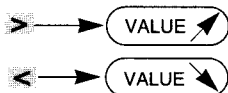


Navigation up

Navigation down

- Select option
- Option anwählen
- Selezionare l'opzione
- Seleccionar opción

- "Change" value
- Wert "ändern"
- "Cambiare" valore
- "Cambiar" valor



2 TV CONTROL PANEL - CLAVIER TV - TASTATUR DES FERNSEHGERÄTS - COMANDI DEL TELEVISORE -

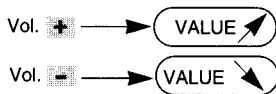


Navigation down

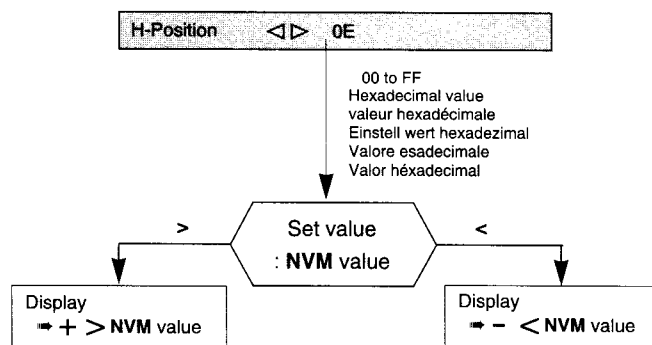
Navigation up

- Select option
- Option anwählen
- Selezionare l'opzione
- Seleccionar opción

- "Change" value
- Wert "ändern"
- "Cambiare" valore
- "Cambiar" valor



3 DISPLAYING THE VALUE OF THE SETTING - AFFICHAGE DES VALEURS - ANZEIGE DES EINSTELL WERTS VISUALIZZAZIONE DEL VALORE DELLA REGOLAZIONE - VISUALIZACION DEL VALOR DE AJUSTE



4 TOGGLE FUNCTIONS - VALIDATION DES FONCTIONS EIN-UND AUSSCHALT FUNKTIONEN - FUNZIONI DI COMMUTAZIONE - FUNCION CONMUTACION

To enable a function check (tick) ☒ the box.

Pour valider une fonction cocher ☒ la case correspondante

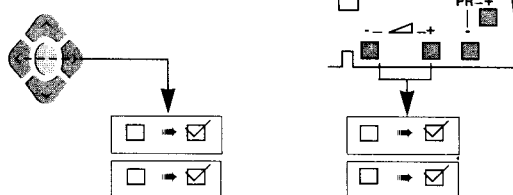
Zum Implementieren einer Funktion das Kontrollkästchen ☒ aktivieren (ankreuzen)

Per implementare una funzione di verifica, (vistare) ☒ la casella

Para poner en funcionamiento una función verifique (señale) ☒ la casilla

☒ : Enable function

☐ : Disable function



5 STORING VALUES IN MEMORY - MEMORISATION DES VALEURS - SPEICHERN DER WERTE - MEMORIZZAEZ I VALORI - VALORES ALMACENADOS EN LA MEMORIA

After setting, the values are stored in NVM.

Après réglages les valeurs sont mémorisées en NVM.

Nach dem Einstellen werden die Werte im NVM gespeichert.

Dopo la regolazione i valori vengono memorizzati in NVM.

Después del ajuste, los valores son almacenados en NVM

The box ☐ becomes ☒

During alignment, values are temporarily stored in RAM.

En cours d'alignement les valeurs sont mémorisées temporairement en RAM

Während des Abgleichs werden die Werte vorübergehend im RAM gespeichert

Durante l'allineamento i valori vengono memorizzati provvisoriamente sulla RAM

Durante el ajuste, los valores son almacenados temporalmente en RAM

Store

- Copies RAM values into NVM
- Copie la valeur RAM en NVM
- Kopieren des Werts von RAM nach NVM
- Copiare i valori RAM in NVM
- Copiar valores RAM en NVM

Restore

- Copies all values from NVM into RAM.
- Copie toutes les valeurs des données NVM en RAM
- Kopiert alle NVM-Datenwerte in den RAM
- Copiare tutti i valori da NVM sulla RAM
- Copia todos los valores de NVM a RAM

ROM Default

- All the default values of a page in use are stored in RAM.
- L'ensemble des valeurs par défaut d'une page courante est chargé en RAM.
- Sämtliche Standardwerte der aktuellen Seite werden im RAM geladen
- Tutti i valori di default di una pagina in uso vengono memorizzati sulla RAM
- Todos los valores por defecto de la página en curso están almacenados en RAM.

III - LITE-MENU FOR FIELD SERVICE MODE - MENUS DU MODE SERVICE

1 MAIN MENU - MENU PRINCIPAL

		Software Version Version software Software Version Versione software Versión software	Counter Compteur Betriebsstundenzähler Contador Contatore
Chassis Configuration codes. Configuration du récepteur Gerätekonfiguration Composizione del ricevitore Composición del Receptor		Soft-Ver. V1.00-0	0080
		Config. A5- - -N	
		Serial-No. 103465071	
Serial Number N° de série Serien-Nr. Numero seriale N° Serie		QUIT TUBE SETUP GEOMETRY VIDEO IF	
SELECT	Navigation inside the Service Mode Navigation dans le Service Mode		
UP	Funktionen im Service Mode Opzioni del Service Mode		
DOWN	Búsqueda en el Modo Servicio		
Alignment Alignement Abgleich Regolazione Alineacion			

TV CONFIGURATION - CONFIGURATION DU TV - GERÄTEKONFIGURATION - CONFIGURAZIONE DEL TV - CONFIGURACIÓN DEL TV

Config.	A1Z-DKC
Character 1 : Tube type : «A»= 4/3 , «W» =16/9 Character 2 : Chassis type : «5» = 50Hz, Character 3 : Zoom available : «Z»=yes, «-»=not Character 4 : Ambient Sensor : «S»= detected, «-»= not Character 5 : Dolby : «D»=detected, «-»= not Character 6 : AV Link detected : «K»=IR link detected, «-»= not Character 7 : Chassis Variant: «N»= Nicam, «S»=Stereo	
Serial-N0.	A16-----
Character 1 : Factory : «A»= Angers , «C» =Celle, «T» =Tarancon Character 2 : Year : «G» = 1996, «H»= 1997 etc.. Character 3 : Month, from : «1»=January to «C»=December Character 4-9 : Serial N0.	

TIME COUNTER - COMPTEUR DE TEMPS - BETRIEBSSTUNDENZÄHLER - CONTATORE - CONTADOR

The counter indicates the TV's number of service hours. It counts from 0 to 65535 hours.
The display is hexadecimal.

Le compteur de temps indique le nombre d'heures de service du TV. Il compte de 0 à 65535 heures. L'affichage est en hexadécimal.

Der Zähler zeigt an, wieviele Stunden der Fernseher in Betrieb ist. Die Anzeige ist hexadezimal.

Il contatore indica il numero di ore di servizio del TV. Può contare da 0 a 65535. La visualizzazione è esadecimale.

El contador indica el número de horas de servicio de la TV. Cuenta de 0 a 65535 horas. El visualizador es hexadecimal.

2 SUBMENU - SOUS-MENU

Navigation inside the Service Mode Navigation dans le Service Mode Funktionswahl im Service Mode Opzioni del Service Mode Búsqueda en el Modo Servicio		Hexadecimal value Valeur hexadécimale de réglage Abgleichwerte hexadezimal Valore di regolazione esadecimale Valor del ajuste en hexadecimal
VIDEO	PAL BG	
Return Norm. Factory	☒	
Drive Adjust.	☐	
R-Drive	9C	
G-Drive	9C	
B-Drive	9C	
Peak-White		
Scale Bright	70	
Scale Colour	5C	
Scale Contr.	CC	
Default	☐	
Store	☐	
Restore	☐	

Enable a function
Case de validation - Fonction validée si "cochée"
Zum Implementieren einer Funktion
Per inserire la Funzione
Activar una función

ALIGNMENT PROCEDURE - PROCESSUS DE REGLAGES - ABGLEICH - VISUALIZZAZIONE

TUBE

Return

Tube type

Store

Restore

A66ECY...

☒

☐

SETUP

Return

Clear

Progs.

Kbd.

Config.

Default

WSS

Default

Store

Restore

☐

☐

☐

☐

GEOMETRY

Return

V- Slope

V-Amplitude

V-Position

Blanking On

S - Correction

H-Position

H-Amplitude

EW-Amplitude

EW-Trapezium

Default

Store

Restore

7C

6C

7C

☐

54

94

70

78

98

☐

☐

☐

Test Pattern Signal used: 4/3 with geometric circle.

TUBE

Return

Closes the sub-menu and returns to the "Main Service Menu". Press </> on the RCU or VOL+/VOL- on TV front panel.

Retourne au menu principal.

Verlassen des Untermenüs, das Hauptmenü des service Modes erscheint

Chiude il sottomenu e fa apparire il menu principale Field Service Mode.

Cierra el submenú. El menú Field Service Mode aparece.

Press </>: remote control; Vol. +/- : TV keyb.

Tube type

After replacing the NVM, the correct tube type number must be entered (6 characters). Once entered, the tubes geometry and video default vales are immediately activated. Variable geometry and video parameters are written to the NVM when the "STORE" line is selected. See table below for tube type numbers.

Definit le tube exact après changement de NVM.

Les nouvelles valeurs de tubes (avec video et géométrie) sont actives de suite. Les paramètres de vidéo et de géométrie sont chargés en NVM lorsque STORE est sélectionné. Voir liste ci-dessous.

Nach Tausch des NVM den bildröhrentyp (6 Ziffern) auswählen. Die neuen Geometrie- und Video-defaultwerte werden sofort aktiv. Variable Geometrie- und Videowerte werden durch Speichern mit "STORE" ins NVM geschrieben. Bildröhrauflistung : siehe unten.

Scegliere il tubo appropriato dopo aver sostituito la NVM; i 6 caratteri che indicano il nuovo tipo di tubo, richiamano i valori video e geometria di default. I parametri per video e geometria vengono caricati nella NVM

Definir el tubo correcto después de haber cambiado el NVM.6 caracteres.Los nuevos valores de tipo de tubo (con la video y la geometría por defecto) se activan inmediatamente. Los parámetros variables de geometría y video se graban en el NVM al seleccionar la función Store. Vea más abajo la lista de tubos.

SETUP

Return

Closes the sub-menu and returns to the "Main Service Menu".

Retourne au menu principal.

Verlassen des Untermenüs

Chiude il sottomenu e fa apparire il menu principale Field Service Mode.

Cierra el submenú. El menú Field Service Mode aparece.

Press </>: remote control; Vol. +/- : TV keyb.

Clear Prog.

Clears all programmes STORED in memory and RESETS all PICTURE and SOUND settings to the factory default values.

The AUTO INSTALL (out of factory) mode can be initialised by a long press (> 5sec.) of the selection button.

Efface tous les programmes mémorisés. valeurs SON et IMAGES: valeurs usines.

Pour sortir des valeurs usine : Selection : Long press:2,5s

Löscht alle Programme und ersetzt alle Ton- und Bildeinstellungen durch Fabrikwerte. Nach erneutem Einschalten erscheint das Installationsmenü.

Anwahl: 2,5s drücken

Clear Prog.

Cancella tutti i programmi in memoria.I Valori analogici SUONO E IMMAGINE vengono riportati a livello di default. Per ristabilire le condizioni di uscita fabbrica, selezionare la funzione e premere per 2,5sec

Programa de borrado.

Borra todos los programas almacenados en la memoria.Valores analógicos de SOUND PICTURE: valores de fábrica.Regreso a la TV para "salir del modo fábrica".Selección: Presión larga igual a 2,5 s.

☒ active-aktiv ☐ No active-inaktiv

Kbd. Config

Factory adjusted

Reserve au reglage usine

Reserviert für fabrikenstellungen

Riservato alla regolazione di fabbrica

Kbd. Config

Default

WSS Automatic detection of DOLBY surround sound and 16/9 Format pictures via Teletext line number 23 is valid on all programmes.

Sélection du process WSS valid pour tous programmes

WSS (nur bei 16:9 oder Dolby)

Auswertung der Zeile 23 zur automatischen Format umschaltung und Dolby umschaltung

Identificazione "auto-surround" e "format" tramite il televideo, decodificando la riga 23. La selezione di WSS è valida per tutti i programmi.

Detección "auto-surround" y "format" a través de la línea 23 de Teletext.La selección del procesamiento WSS es válida para todos los programas.

☒ detect.enable- aktiv ☐ disable-inaktiv

GEOMETRY

Return

Closes the sub-menu and returns to the "Main Service Menu".

Retourne au menu principal.

Verlassen des Untermenüs

Chiude il sottomenu e fa apparire il menu principale Field Service Mode.

Cierra el submenú. El menú Field Service Mode aparece.

Press </>: remote control; Vol. +/- : TV keyb.

V-Blanking

Press </> on the RCU or VOL+/VOL- on TV front panel.

1.Select the standard 4:3 format and zoom mode 0.

1.Sélectionner le mode zoom standard 4/3 pour tube 4/3

1Wählen Sie den Standard-Zoom 4:3 bei 4:3 Bildröhren.

1.Selezionare il modo zoom standard 4/3 per tubo 4/3

1.Seleccione el modo de zoom estándar 4/3 para tubo 4/3.

2.Apply a test pattern signal to the TV with a single horizontal and vertical line on the screen.

2 appliquez une MIRE de BARRE avec seulement une ligne blanche horizontale en milieu de l'ecran

2.Speisen Sie ein Testbild mit nur einem horizontalen Strich in der Bildmitte ein.

2.Applicare un monoscopio con un'unica linea bianca orizzontale al centro dello schermo

2.Aplique una plantilla de prueba con sólo una línea blanca horizontal en el centro de la pantalla.

3.Select "Blanking On" line of the menu and ENABLE (tick) the function, the bottom half of the screen will go black.

3.Positiner dans le mode Service Blanking On la moitié basse de l' ecran devient noire

3.Schalten Sie den Blanking-Mode ein. Die untere Hälfte des Bildschirms wird schwarz.

3.Posizionarsi in modo Service Blanking on; la parte inferiore dello schermo diventa nera

3.Pase al modo Service Blanking On. La mitad inferior de la pantalla se vuelve negra.

4.Select the "V_Slope" line of the menu and adjust its value until the centre line of the pattern is just invisible.

4.Aligner "Vertical - Slope" pour que la ligne mediane soit a peine non visible

4.Regeln Sie "V-Slope" so ein, daß die Mittellinie nahezu verschwindet.

4.Allineare la "Vertical Slope" in modo che la linea centrale sia appena visibile

4.Alinee "Vertical-Slope" para que la línea mediana sea casi invisible.

5.Return to the "Blanking On" line of the menu and DISABLE (un-tick) the function.

5 Revenir à Blanking On et mettre ☐

5.Schalten Sie den Blanking-Mode wieder ein und ☐

5.Ritornare in modo Blanking on e porre ☐

5.Vuelva a "Blanking on" y poner ☐

6.Switch the test pattern signal to the crosshatch geometry pattern.

6.Positioner la mire de quadrillage

6.Speisen Sie ein Gittertestbild ein.

6 Posizionare il monoscopio

6.Coloque la plantilla cuadriculada.

7.Perform the geometry adjustments described below.

7.Effectuer les réglages de géométrie d'écrits ci-dessous

7.Nehmen Sie die Geometrieeinstellung wie unten beschrieben vor:

7.Effettuare le regolazioni di geometria descritte in precedenza

7.Efectúe los ajustes geométricos descritos más abajo.

8.Store /Memoriser /Speichern /Memorizzare /Almacene

→ After setting → Store (+) ☒		
Tube Name	LIST name	Description
A51EF583X191	A51EFS	4:3; 21" OT; AK-Mask; Coty-M
A59EHJ43X15	A59EHJ	4:3; 25" MP; AK-Mask; Vector
A66EHJ43X15	A66EHJ	4:3; 28" MP; AK-Mask; Vector
A68EGD038X30	A68EGD	4:3; 29" SF; Invar; Vector
A80AEJ13X01	A80AEJ	4:3; 33" MP AK-Mask; Coty-M
A59EGD048X30	A59EGD	4:3; 25" SF; Invar-Mask; Vector
A66AGA25X01	A68AGA	4:3; 29" VHP; AK-Mask; Coty-M
W56EGV023X015	W56EGV	16:9; 24" SF; Invar-Mask; Vector
W66EGV023X015	W66EGV	16:9; 28" SF; Invar-Mask; Vector
W76EGV023X015	W76EGV	16:9; 32" SF; Invar-Mask; Vector

E DEL VALORE DELLA REGOLAZIONE - PROCEDIMENTO DE ALINEACION

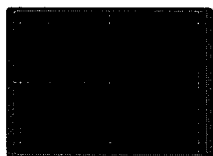
VIDEO	PAL	BG
Return Norm.	☒	
Drive Adjust.	☒	
R-Drive	9C	
G-Drive	9C	
B-Drive	9C	
Peak-White		
Scale Bright	70	
Scale Colour	5C	
Scale Contr.	CC	
Default Store	☐	
Restore	☐	

IF	
Return	
AGC Take Over	☒ 88
FFI - Bit	☐
Default Store	☒
Restore	☒

Just separate for 4/3 and 16/9 format. See annexed

The signals colour standard is auto detected and displayed opposite the main menu line.

GEOMETRY		
9. Adjust position H.		
9 Regler la position H		
9) Korrigieren Sie Horizontale Lage.		
9 Regolare la posizione H		
9. Ajuste la posición H		
10. Ajuster l'amplitude H		
10. Adjust amplitude H.		
10. Korrigieren Sie Horizontal-Amplitude		
10 Regolare l'ampiezza H		
10. Ajuste la amplitud H		
11-12. Correction of EW pincushion distortion.		
11/12 Correction de coussin EW		
11/12) Korrektur der Ost/West Kissenverzerrung.		
11/12 Correzione della distorsione a cuscino EW		
11/12. Corrección de la distorsión de cojín EW.		
13. Correction of corners (Shape).		
13 Correction de coins (Shape)		
13) Korrektur der Ecken.		
13. Correzione degli angoli (Forma)		
13. Corrección de esquinas (Shape)		
14. Trapeze. / Trapèze		
14 Trapez-Verzerrung.		
14. Trapezio / Trapecio		
"These adjustments are not necessary for 4:3 tubes in 16:9 mode"		
"Pour les tubes 4/3 en mode 16/9, ces réglages ne sont pas nécessaire"		
"Diese Einstellungen sind nicht für 4:3 Bildröhren im 16:9 Betrieb erforderlich."		
"Queste regolazioni non sono necessarie per tubi 4/3 in modo 16/9"		
"Estos ajustes no son necesarios para los tubos 4/3 en modo 16/9"		
V-Amplitude		
V-Position		
H-Position		
S-Correction		
H-Amplitude		
EW - Amplitude		
EW - Trapezium		
EW - Shape		



Correct

incorrect

VIDEO	PAL
Return	
Closes the sub-menu and returns to the "Main Service Menu". Press </> on the RCU or VOL+/VOL- on TV front panel.	
Retourne au menu principal.	
Verlassen des Untermenüs	
Chiude il sottomenu e fa apparire il menu principale Field Service Mode.	
Cierra el submenú. El menú Field Service Mode aparece.	
Press </>: remote control; Vol. +/- : TV keyb.	
Normalise User Settings	
Recalls the factory settings for colour, brightness, contrast and sharpness and sets contrast expand to "low".	
☒ Factory settings recalled	
☐ User settings kept.	
R-Cut off*	=nom. Grey scale test pattern white =100%
G-Cut off*	grey
R - Drive	=nom. Grey scale test pattern white =100%
G - Drive	white
B - Drive	white
Peak-White**	=nom. Peek white test pattern white =100%
Blue cathode	
Blue cathode	
Tube Type	[init]
A51EFS	420 (600max)
A59EHJ	380 (540max)
A59EGD	400 (470max)
A66EHJ	300 (430max)
A68EGD	350 (410max)
Tube Type	[init]
A80AEJ	240 (340max)
W56EGV	520 (610max)
W66EGV	480 (560max)
W76EGV	300 (350max)
Scal. Brightness	= 50% = 100% Grey scale test pattern white =100%
Scal. Colour	=nom. PAL (then SECAM +RGB) 75% Colour bar test pattern via RF. Blue Cathode
Scal. Contrast	factory settings.

IF	
AGC	- Minimum noise- Minimum de bruit - Minimum Rauschen- Rumore minimo - Minimo ruido
FFI - Bit	☐
Fast filter (IF /PLL)	
Filtre rapide (FI /PLL)	
Schnelles filter (ZF/PLL)	
Filtro rapido (IF /PLL)	
☒ Asie	
☐ Europ	
→ After setting → Store (+) ☒	

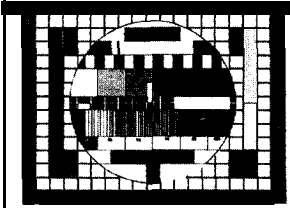
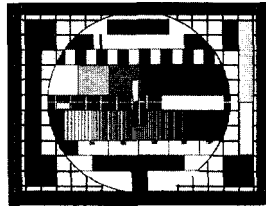
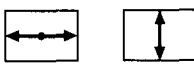
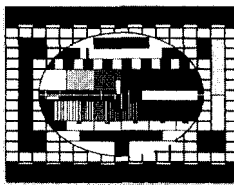
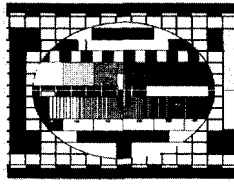
Note :

* adjust separate for PAL/NTSC/SECAM and RGB/AV
getrennte Einstellung für PAL/SECAM und RGB/AV
* After PEAK white adjustment control cut off setting.
Repeat the adjustments if necessary.
Nach der Einstellung von "Peak white" die "Cut off"-
Einstellungen wiederholen.

GEOMETRY MODE ALIGNMENT

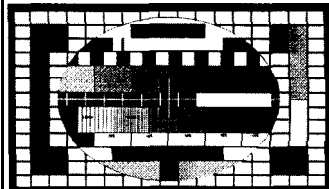
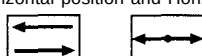
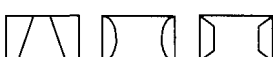
4/3 picture tube

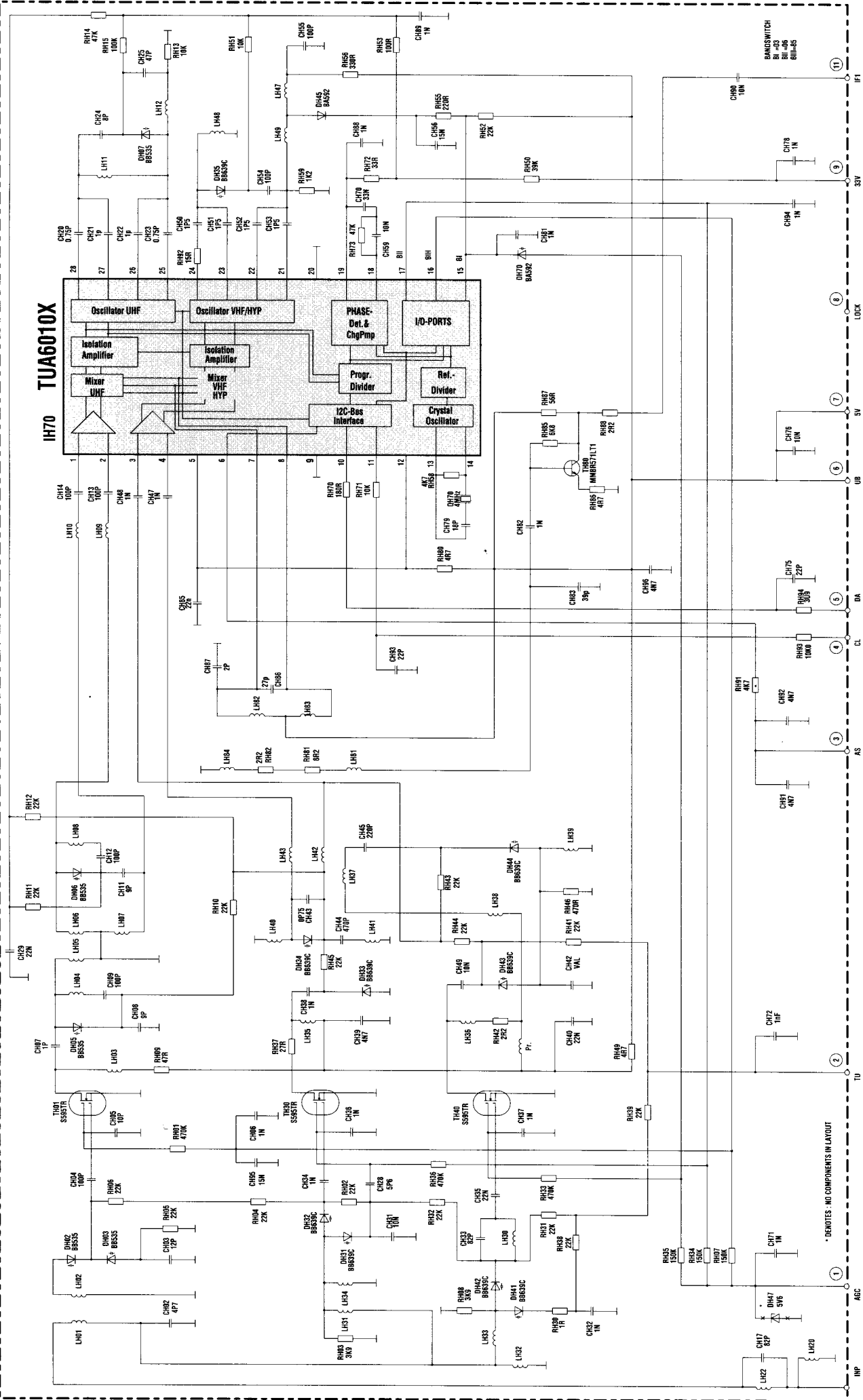
Signal : 4/3 test pattern

4 / 3 standard mode zoom 0		overscan V=107% , H=107% 1- Adjust Vertical position and Vertical amplitude 2- Adjust Vertical Blanking and linearity  3- Adjust Horizontal position and Horizontal amplitude  4-Adjust EW Amplitude ,EW Shape and Trapezium 
<4/3> zoom 1		overscan V=120% . H=120% 
16 / 9 standard mode zoom 0		Adjust the vertical height until V = 80% 
<16 / 9> zoom 1		Adjust the vertical height : V =90% 

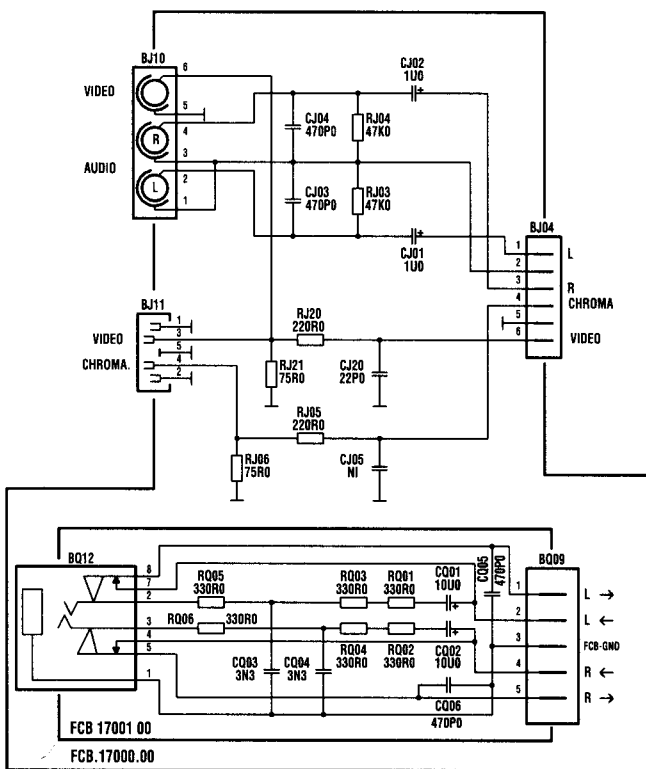
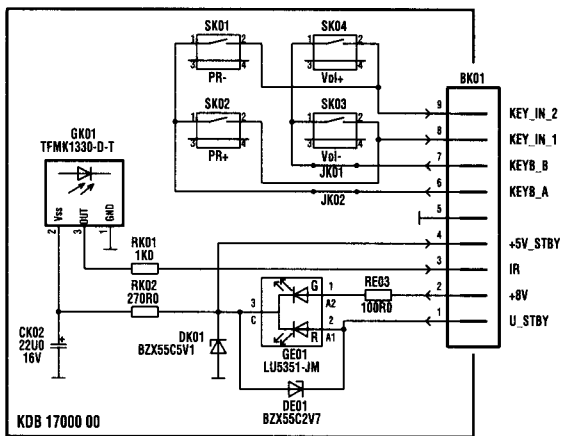
16/9 picture tube

Signal : 4/3 test pattern

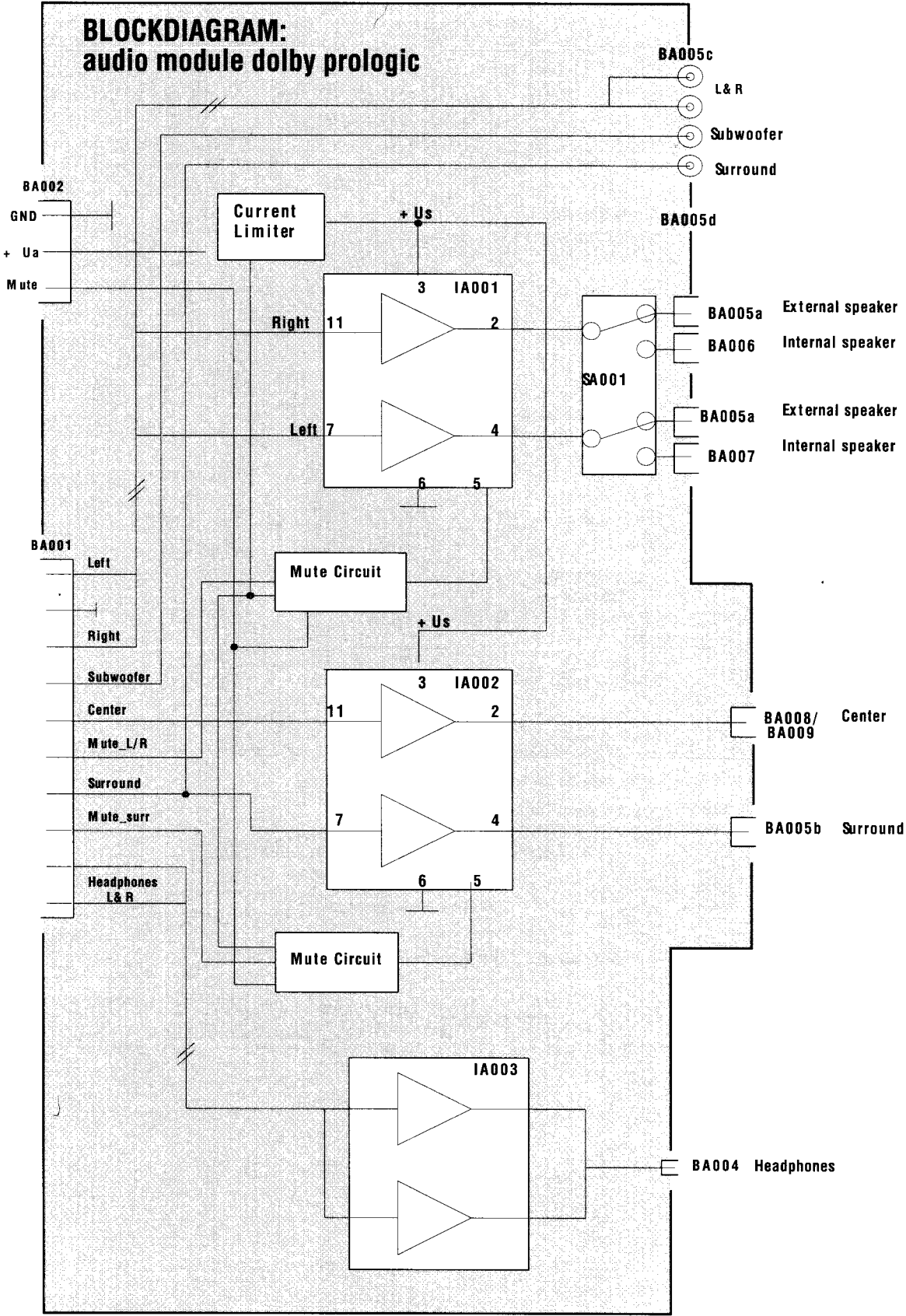
16 / 9 standard mode zoom 0		overscan V=107%, H =107% 1- Adjust Vertical position and Vertical amplitude 2- Adjust Vertical Blanking and linearity  3- Adjust Horizontal position and Horizontal amplitude  4-Adjust EW Amplitude ,EW Shape and Trapezium 
---	---	---



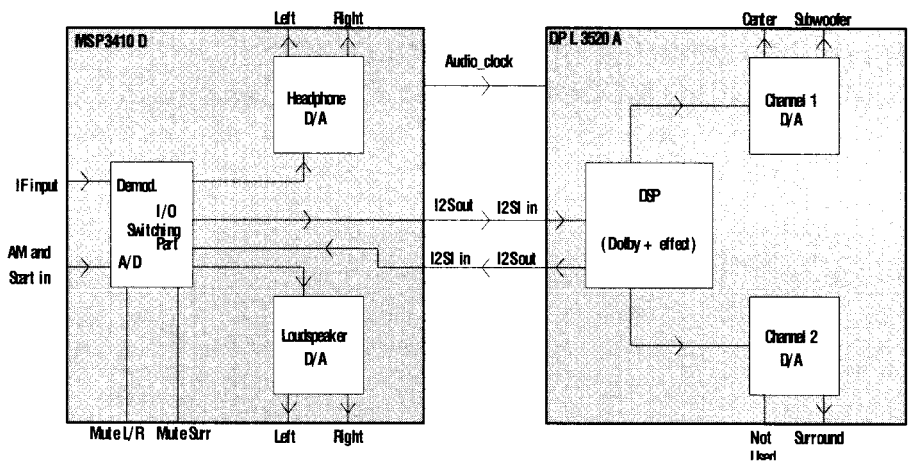
**KEY BOARD AND FRONT CONNECTOR BOARD
MODULE PRISE EN FACADE ET INTERCONNEXION DU CLAVIER
TASTATUR UND FRONT ANSCHLUSSPLATTE - PIASTRA CONNESSIONE
PLACA TECLADO Y CONECTORES FRONTALES**



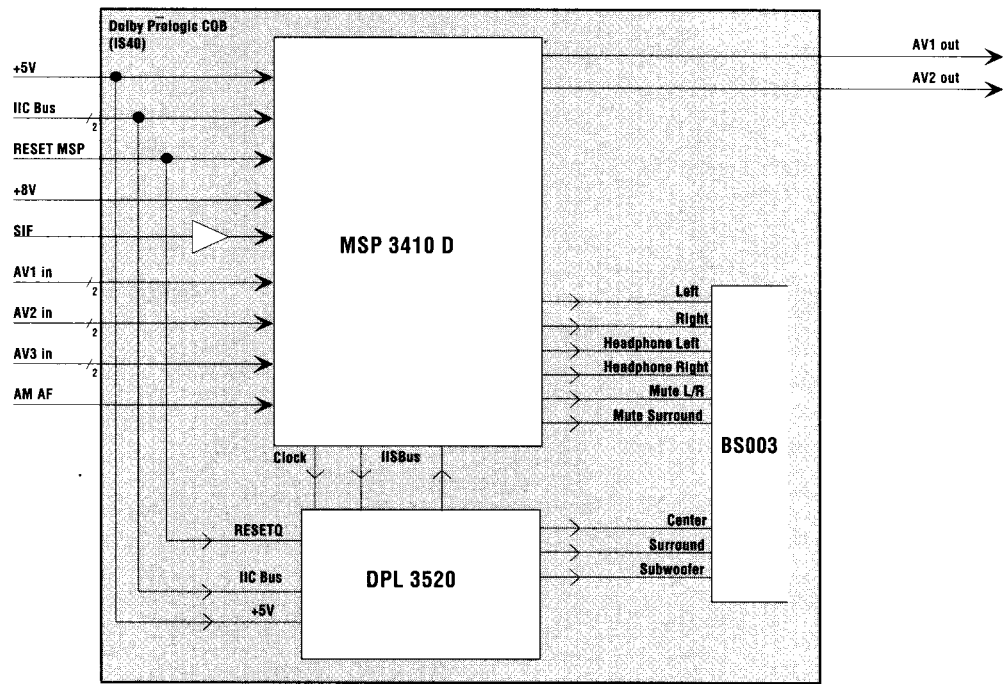
BLOCK DIAGRAM (AUDIO MODULE DOLBY PROLOGIC)
 SCHEMA SYNOPTIQUE (AUDIO MODULE DOLBY PROLOGIC)
 BLOCKSCHALTBIID (AUDIO MODULE DOLBY PROLOGIC)
 SCHEMA A BLOCCI (AUDIO MODULE DOLBY PROLOGIC)
 ESQUEMA DE BLOQUES (AUDIO MODULE DOLBY PROLOGIC)



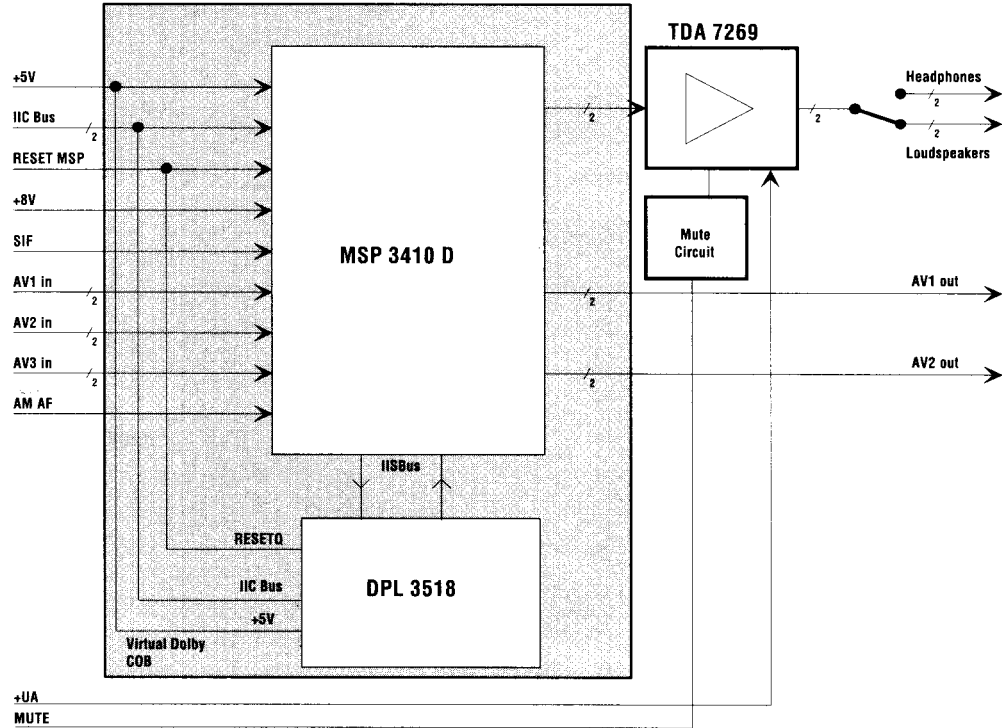
Interface requirement audio part with Dolby Prologic



Block diagram Dolby Prologic

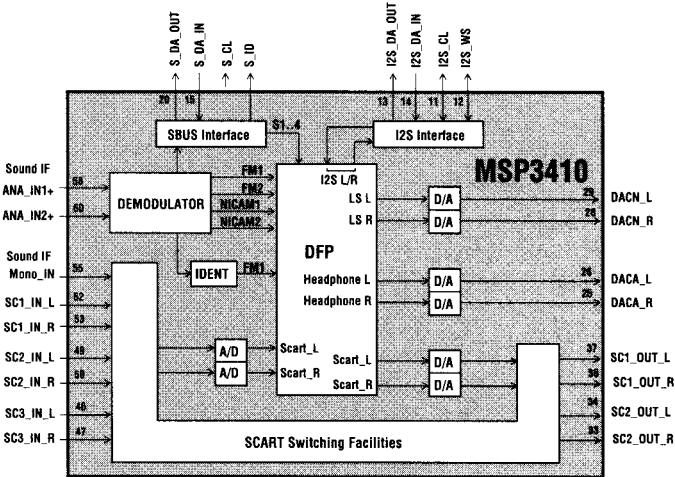
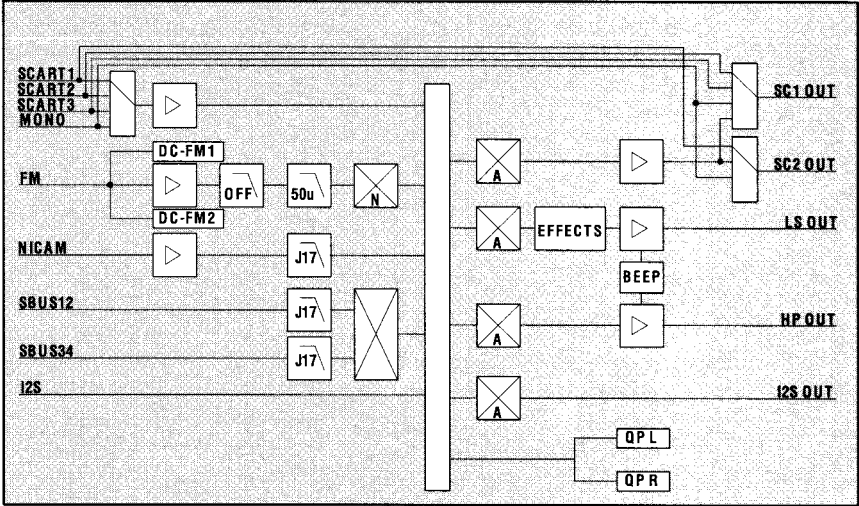


Block diagram Virtual Dolby

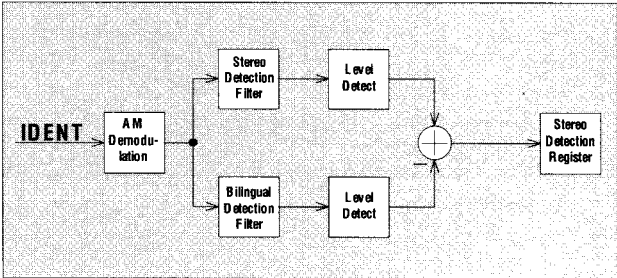


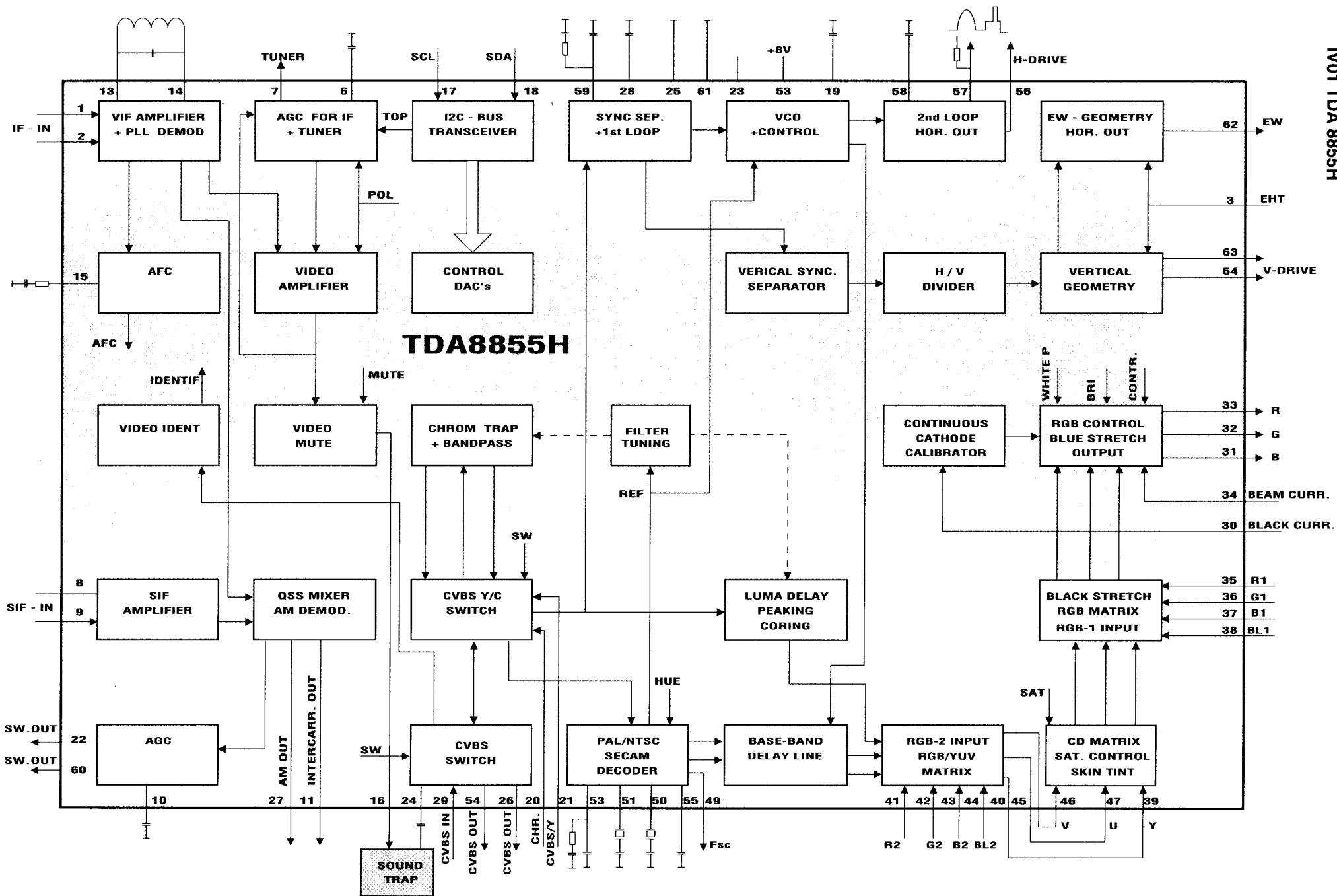
INTEGRATED CIRCUITS BLOCK DIAGRAMS -
 SYNOPTIQUES INTERNES DES CIRCUITS INTEGRES -
 INTEGRIERTE SCHALTUNGEN BLOCKSCHALTBIlder
 SCHEMA A BLOCCHI DEI CIRCUITI INTEGRATI -
 VISTA INTERNA DE LOS CIRCUITOS INTEGRADOS

Audio baseband processing of the MSP3410



Detection part of the MSP 3410





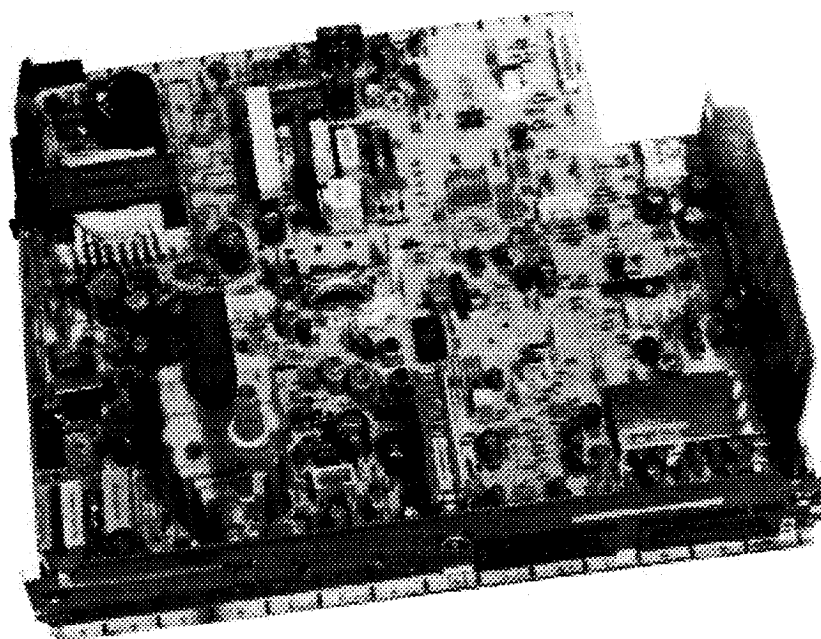
LIST OF ABBREVIATIONS - LISTE DES ABREVIATIONS- ABKÜRZUNGEN LISTA DELLE ABBREVIAZIONI - LISTA DE ABREVIACIONES
--

● +USYS:	System voltage
● +U_VIDEO:	Video drive voltage for the CRT board
● + STDBY_ ON:	Standby data (OV standby , 0.6v switched ON)
● +5V DST:	5v unregulated voltage from the DST to supply the tuner and audio MSP device
● +5V ON:	5v regulated voltage from the DST to supply the tuner and audio MSP device
● +5V UP:	Microprocessor supply voltage
● BCL:	Beam current limiting information
● CVBS:	Composite video / luminance signal
● CVBS_OUT:	Composite video output
● CVBS_TXT:	Composite video for teletext extraction
● DEGAUSS:	Degauss signal
● EW:	East / West
● FORMAT / BC:	Full white control DATA depending on 16/9 selected format
● HDRV:	Horizontal deflection signal
● HTR1 / HTR2:	Heater voltage from the DST to CRT PCB
● LFB:	Line Fast Blanking
● MUTE:	Mutes audio amplifiers
● PO:	"Power ON "IP95 : reset activated and output = 8v "PO" = 5v when TV is working in normally
● POWER-FAIL:	Detection of mains supply and deflection stage failures
● RESET:	Microprocessor reset signal
● SAFETY:	Safety information from the deflection stage
● SCL:	Serial Clock
● SDA:	Serial Data
● SIF:	Sound IF
● TRAP-INFO:	31.4Mhz IF trap activation
● U-STANDBY:	Standby voltage
● U-DRIVER:	Horizontal sync signal from TDA8855H
● U-TIMER:	1 Iv voltage used during "Switch ON " phase and "Wake Up" mode
● V FLB:	Vertical flyback reference for the microprocessor
● VGUARD:	Safety data generated by the vertical amplifier TDA 8351
● V-RETRACE:	42 / 48volts (depending on tube type) generated by the DST and used for vertical blanking
● V-SUPPLY:	13.5 to 15.5 volts (depending on tube type) generated by the DST

THOMSON MULTI
MEDIA

Brandt FERGUSON SABA TELEFUNKEN THOMSON

APPLIED STUDY OF TELEVISION SETS ICC17 RACK



Code : 350 683 60 - 09/98 - APPLIED STUDY OF TELEVISION SETS - ICC17 RACK

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AUDIO PROCESSING	81

MICROCONTROLLER

CONTENTS

POWER SUPPLY AND FUNCTIONAL SIGNALS ON IR01

CONTROLS

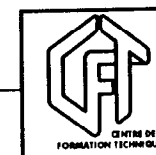
MEMORIES AND I2C BUS

MENU AND TELETEXT

TIMER / ON

OTHER PINS ON IR01

ERROR CODES



POWER SUPPLY AND FUNCTIONS SIGNALS FOR IR01

POWER SUPPLY

The power supply for the IR01 micro-controller, pins 10, 34 and 52, originates in **TIMER** mode, from regulator IP87 (MC7812) and the 5V regulator incorporated in IP95. In **ON** mode, it is supplied with power from the **UTIMER** voltage via the 5V regulator incorporated in IP95.

CLOCK

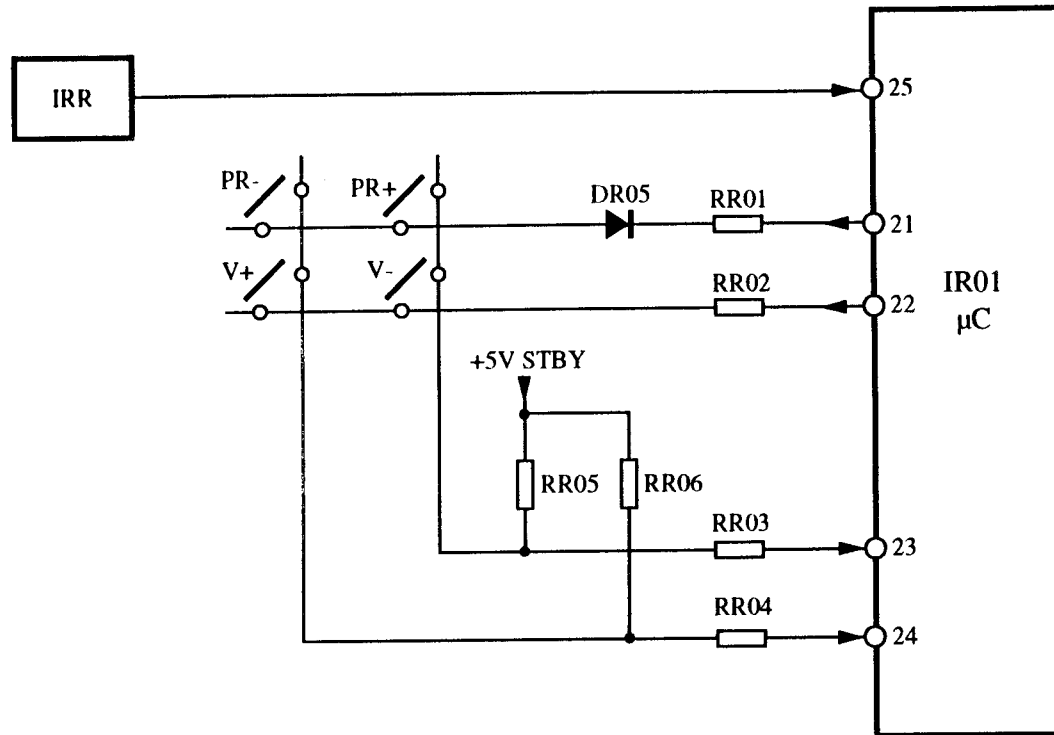
A 22 MHz VCO/PLL assembly internal to IR01 manages the micro-controller. The quartz, QR01, 4 MHz, is used as a reference for the PLL. The components RR95, CR95 and CR97 constitute the loop filter for the PLL.

RESET

CP98, pin 3 of IP95, is the reset capacitor. When the voltage at 9 of IP95 reaches 5V and after a delay of a few milliseconds issued by CP98, pin 6 of IP95 changes from 0 to 5V. Pin 54 of the IR01 receives the **RESET** information.

DETECTION OF MAINS POWER CUT

This circuit is analysed in the power supply chapter.



THE CONTROLS

THE KEYBOARD

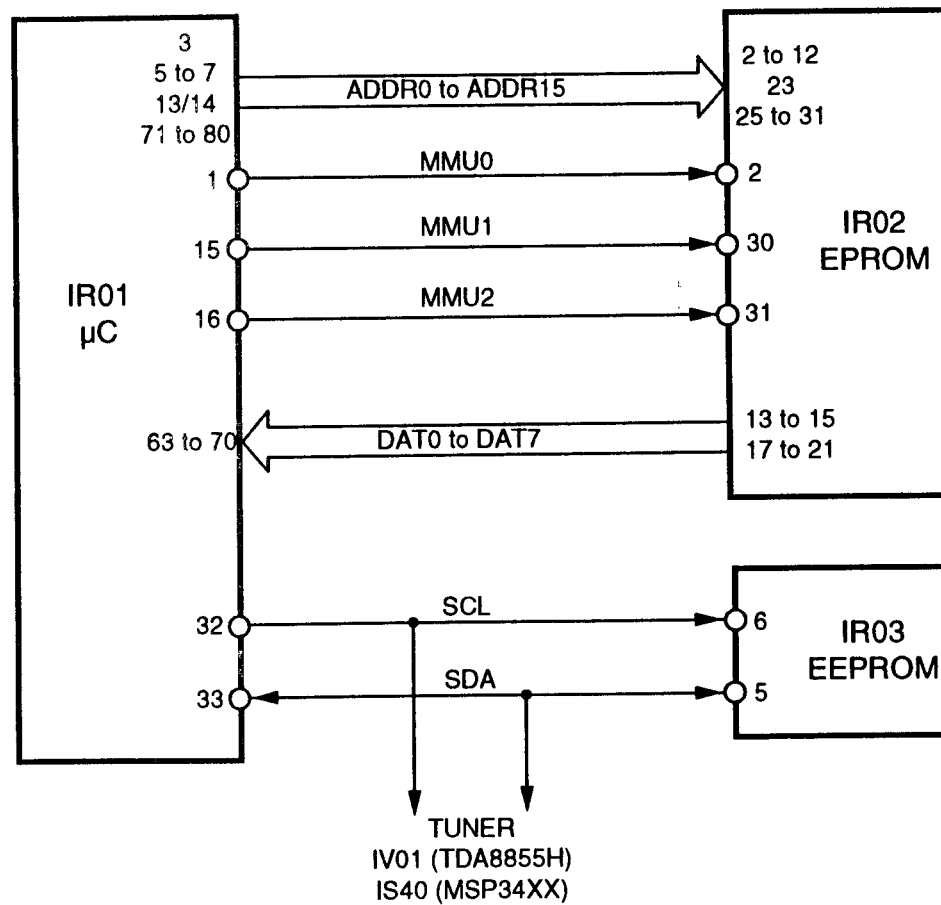
The keyboard has 4 keys. It is arranged in a line/column matrix. Pins 23 and 24 are the function inputs and are at 5V when inactive. Pins 21 and 22 are scanning outputs, they are at 0V when inactive. When a key is pressed, a scanning signal of period approaching 12 ms is generated, either at output 21 (PR keys) or output 22 (V keys).

THE REMOTE CONTROL

The remote control function codes (12 bits) are received at 25 of IR01. These are composed of:

- 4 address bits
- 1 call bit
- 7 function bits, which are defined by the key pressed.

These codes are repeated every 80 ms.



MEMORIES AND IIC BUS

IR02 MEMORY

IR02 is an EPROM memory with a capacity of 512 Kbytes or 4 Mbits. It is the software memory of the IR01 and for the default values of service mode. The lines MMU0 to MMU2 are an extension of the address bus.

IR03 MEMORY

IR03 is an EEPROM memory, capacity 1 Kbyte or 8 Kbits. It contains the coefficients of service mode, the user adjustments (brightness, contrast, etc.) the synthonised TV channels and if applicable, stand-by command, etc.

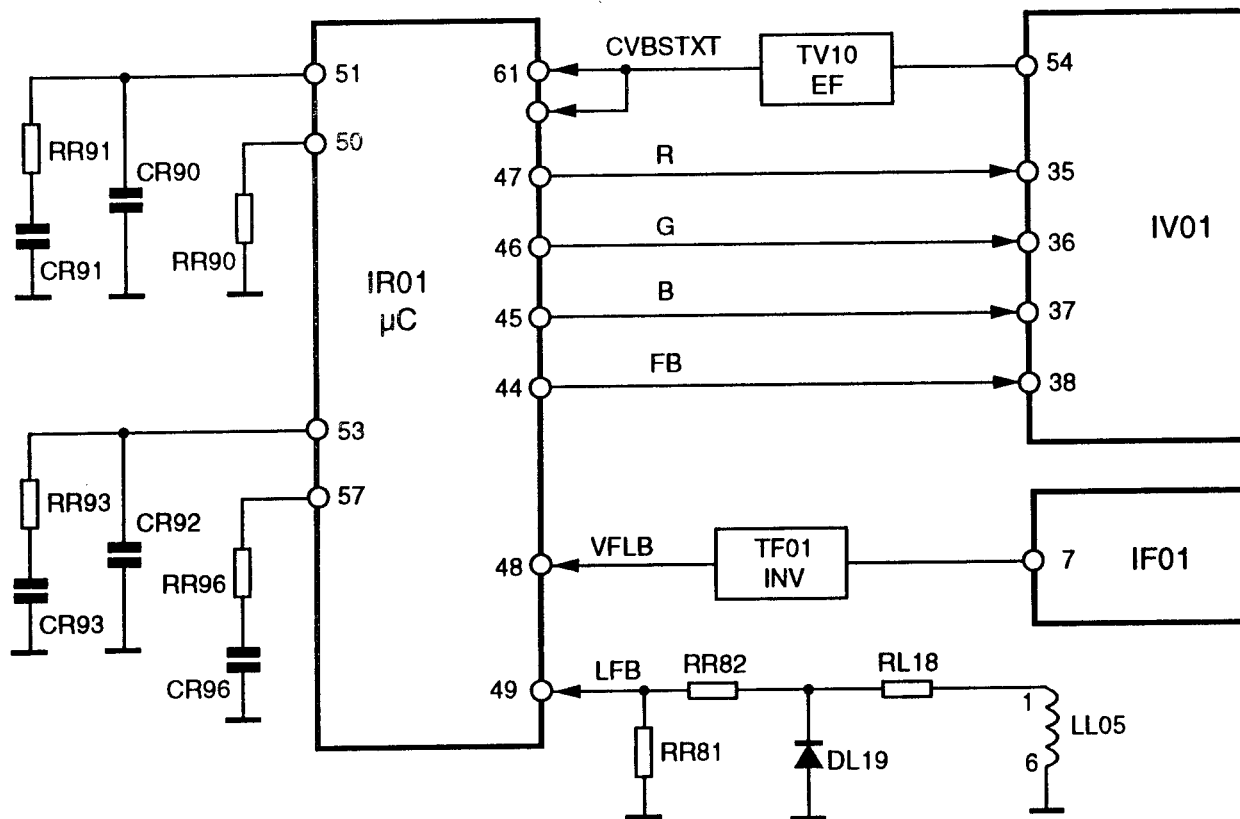
IIC BUS

The IIC bus is charged by pull-up resistors linked to the 5V DC. It is enabled in TIMER and ON modes. It dialogues with or controls the IR03 EEPROM, the tuner, the IF/video/IV01 time bases and the audio processing circuit IS40.

Its operating frequency is in the order of 80 KHz.

Acknowledgement of receipt of IR03, IV01 and IS40 are taken into account by IR01. In the case of absence of the latter, IR01 issues a failure code.

NOTES :



MENU AND TELETEXT

IR01 manages menus and teletext. It incorporates a TDSRAM memory of 8Kbits for storing teletext data.

The teletext data are extracted from the CVBSTXT signal entering at 61 of IR01. The wide screen signalling data (line 23) are extracted from the CVBSTXT signal entering at 60 of IR01.

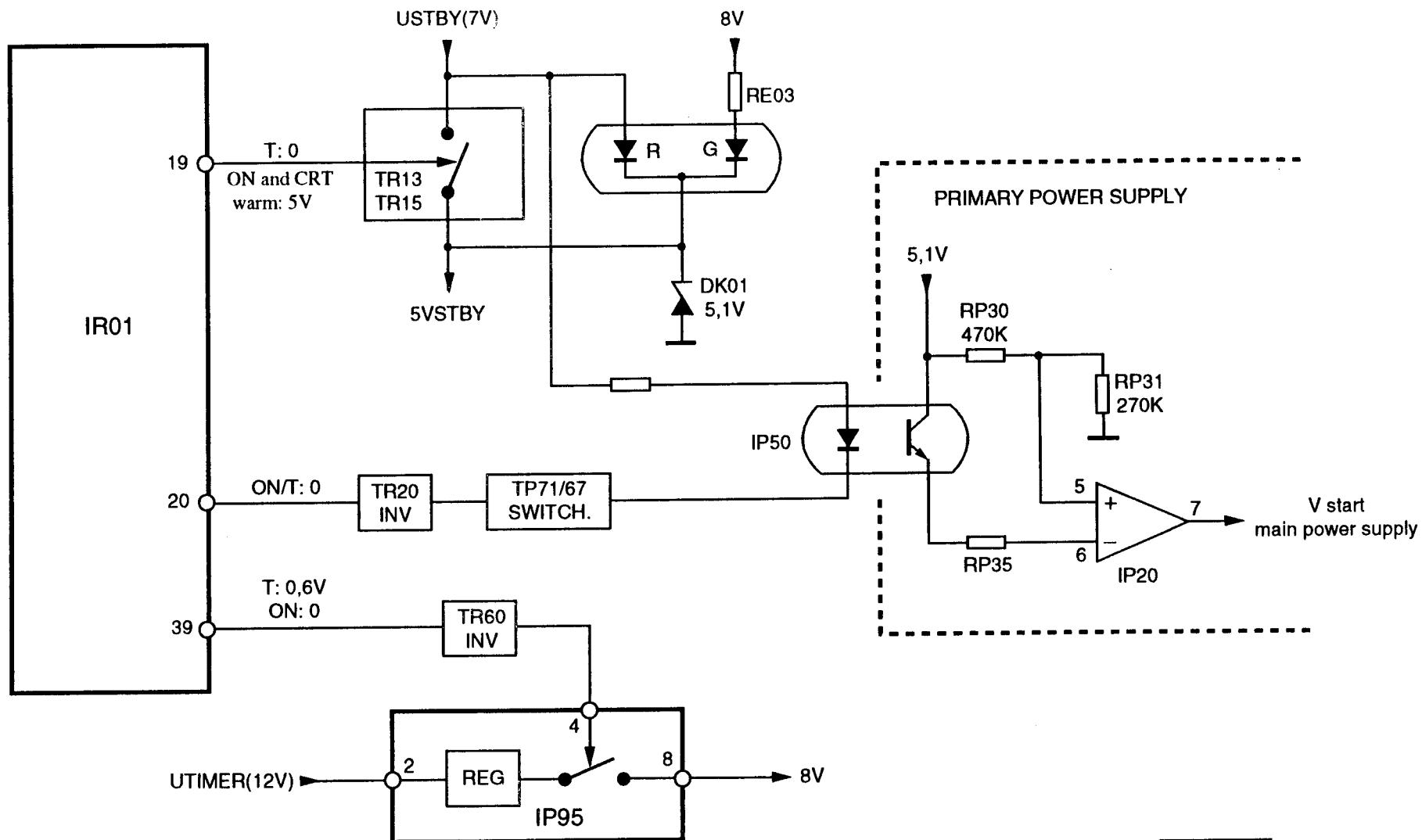
The RVBs (0.7 V dc) and rapid switching (2.5 V dc) are available on pins 47 to 44 of IR01

The VFLB signals (5V dc frame return) and LFB signals (5V dc line return) fix the position of the overlays.

The R/C components connected at 50/51 of the IR01 manage the VCO/PLL assembly for the WSS.

The R/C components connected at 53 of the IR01 are used as the frequency multiplier for the display.

The R/C components connected at 57 of IR01 are used for the teletext data sampling clock.



TIMER/ON

TIMER

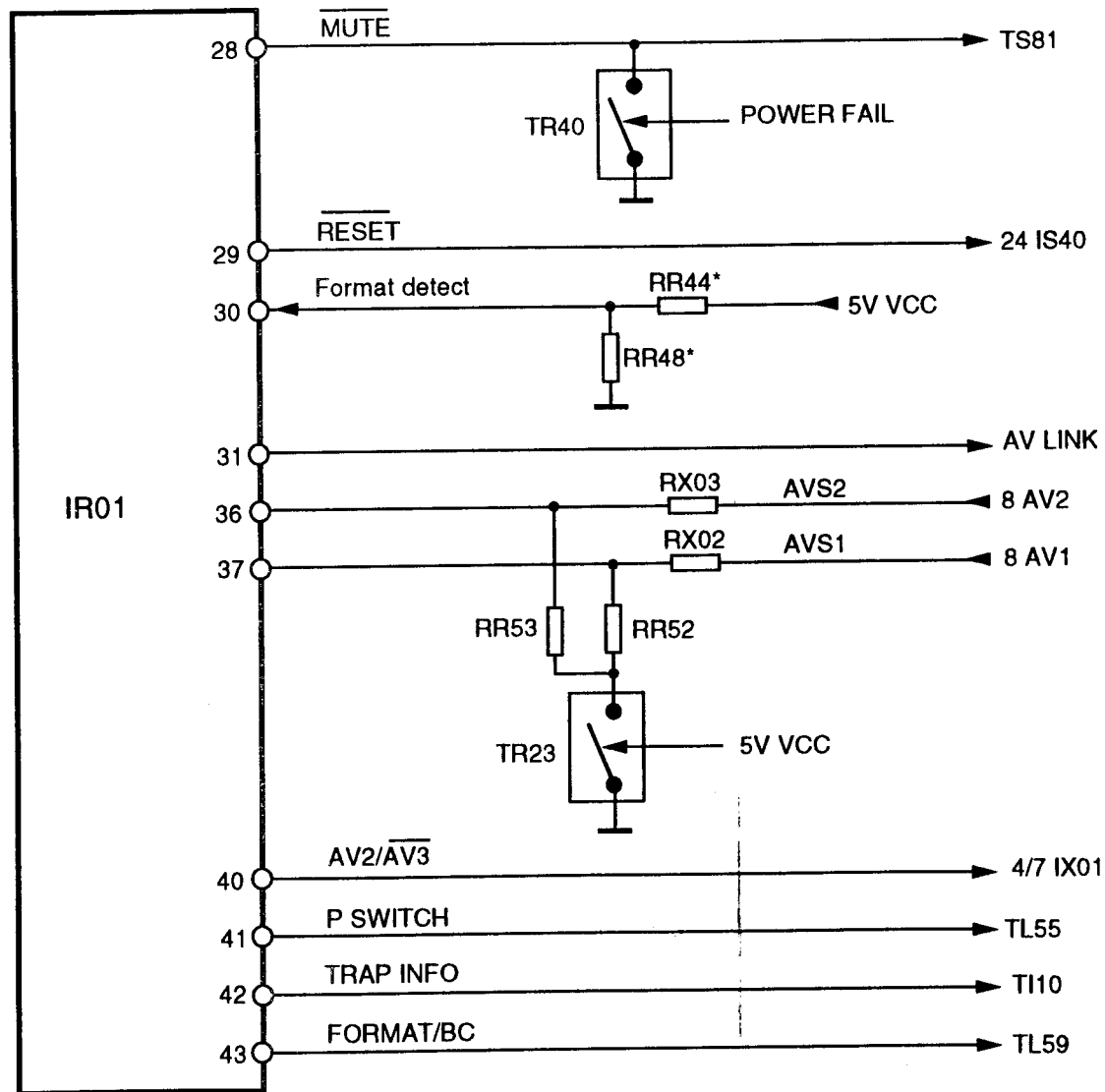
The level at the IR01 pins and the status of circuits are as follows:

- Pin 19: 0
This generates opening of switch TR13/15, power supply for the red LED from USTBY and power supply for the infra-red receiver and keyboard from the 5V STBY.
- Pin 20: 0
This generates the bringing into service of the main power supply, thanks to stopping saturation of the photo-sensor IP50 and the IP20 comparator voltages (pin 5/6: approx. 1.8V and pin 7: 6V)
The management μ C is supplied with power.
- Pin 39: 0.6V
This causes absence of the 8V (IP95 internal switch is open) and consequently, non supply of IV01.

ON

The level at the IR01 pins and the status of circuits are as follows:

- Pin 19: 5V when the tube is warm
This causes closing of the switch TR 13/15 and extinguishing of the red LED.
- Pin 20: 0
This generates the bringing into service of the main power supply, thanks to stopping saturation of the photo-sensor IP50 and the IP20 comparator voltages (pin 5/6: approx. 1.8V and pin 7: 6V)
The management μ C is supplied with power.
- Pin 39: 0
This generates the 8V, power supply of the green LED and of IV01.



OTHER PINS ON THE IR01

- PIN 28 (MUTE)

Enabled at low level, this controls the audio mute during:

- changing of programmes
- searching for a transmitter
- cutting off the sound (silence key)
- switching on the TV set when the tube is not warm
- switching off the TV set
- the stand-by and timer functions.

The transistor TR40 saturated on stand-by (power fail = 5V) completes the mute on stand-by.

- PIN 29 (RESET)

Enabled at low level for 5 ms, this resets the audio processing circuit MSP34XX. It acts when the TV is switched on and each time the TV channel is changed.

- PIN 30 (FORMAT DETECT)

By cabling the resistor RR44 or the resistor RR48, this indicates to IR01 the type of tube with which the TV set is equipped.

RR44 cabled, tube 4/3, 5V at 30 of IR01

RR48 cabled, tube 16/9, 0V at 30 of IR01

This pin is analysed by IR01 in TIMER mode.

- PIN 31 (AV LINK)

Currently, this pin is not used.

- PINS 36/37 (AVS2.AVS1)

This receives slow switching from pins 8 of the SCART connectors AV2 and AV1. The range of voltages for these inputs are as follows:

- AV 16/9: $0.96V < V < 1.44V$
- AV 4/3: $2.96 < V < 3.44V$

The stand-by output of the TV set can be realised by AVS2/AVS1 via RR52 or RR53 and DR23. The transistor TR23, blocked during stand-by, allows this command. The transistor TR23 saturated when on, brings into service the resistive dividers.

- PIN 40 (AV3)

This allows taking into account signals from AV2 or AV3 (control of the integrated switching circuit IX01)

AV2: 5V; AV3: 0V.

- PIN 41 (P SWITCH)

This allows changing format of the image by modifying the value of the S capacitor.

16/9 - ZOOM1: 0; 4.3 centred: 5V

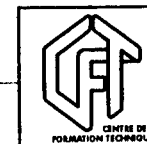
- PIN 42 (TRAP INFO)

This allows putting into service a 31.9 MHz rejector in BG (rejection of adjacent channel)

BG: 0; OTHERS: 5V

- PIN 43 (FORMAT/BC)

This supplies a PWM signal of 5 V dc with period 186 μ s. Via TL59/TL02, it adjusts the voltage of beam current limitation (BCL) depending on the image format.

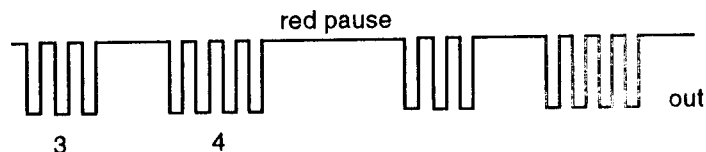
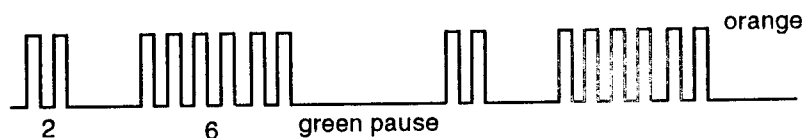


FAILURE CODES

The failure codes are displayed by the red LED. They can be visualised solely if the management *C is operating.

A maximum of 81 codes can be displayed (11 to 99). These codes are comprised of 2 figures separated by a pause of 0.7 seconds. A period of 1.7 seconds separates two failure codes. The failure codes are repeated a minimum of 4 times.

SEQUENCE OF SIGNALS AT RED LED TERMINALS



LIST OF FAILURE CODES

CODES	DEFECTS
14	ACR TDA8855H
15	ACR MSP34XX
21	DATA IIC GROUNDED
23	CLOCK IIC GROUNDED
25	5V SWITCHING ABSENT
26	NO INFORMATION ON TUBE HOT AFTER 25 SEC
27	PROTECTION ENABLED 3 TIMES
28	VERTICAL GUARD EXCESSIVE
34	ACR NVM 24C08
36	NVM ADDRESS NOT FOUND
37	NMI LEVEL INCORRECT (HALT)
41	IIC BUS BLOCKED

POWER SUPPLY

CONTENTS

INTRODUCTION

PRESENTATION

STAND BY POWER SUPPLY

STAND BY MODE AND WAKE-UP CIRCUIT

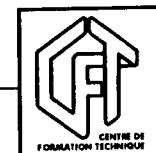
MAIN POWER SUPPLY

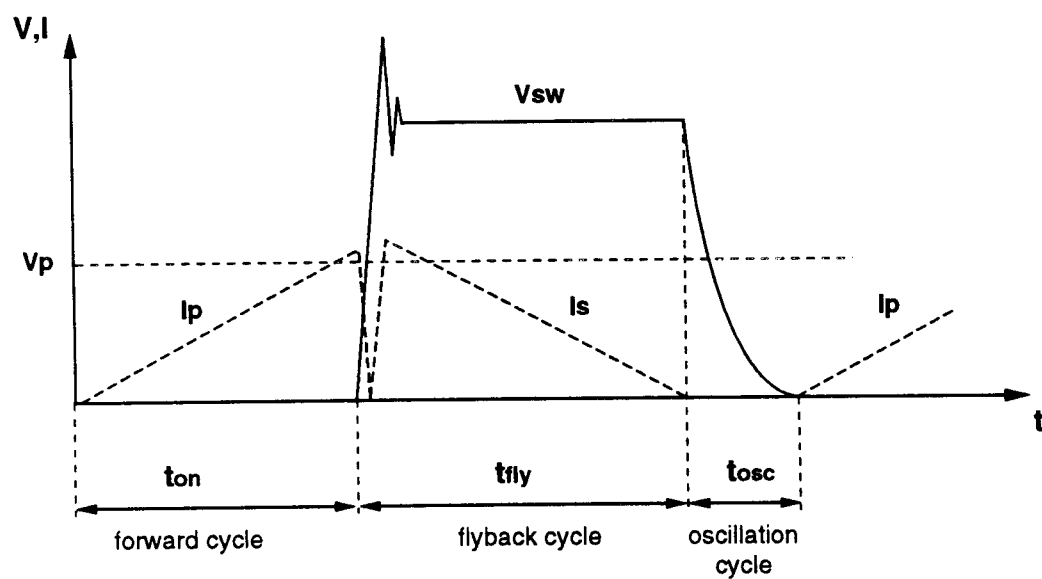
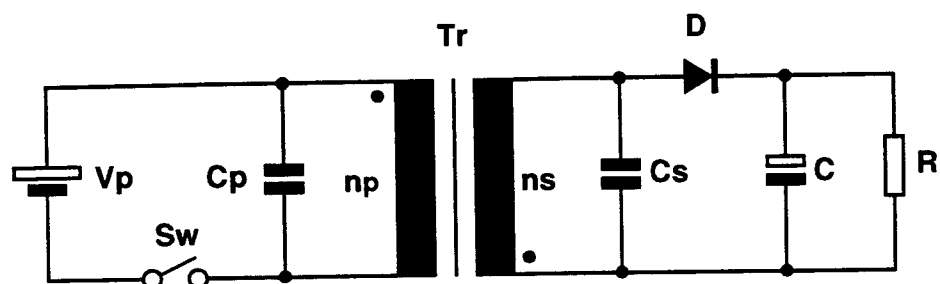
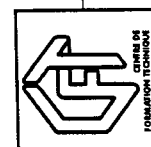
SECONDARY REGULATION

SECONDARY VOLTAGES

CRT DEGAUSSING CIRCUIT

MAIN VOLTAGE CONTROL





INTRODUCTION

The ICC17 rack satisfies 2 needs:

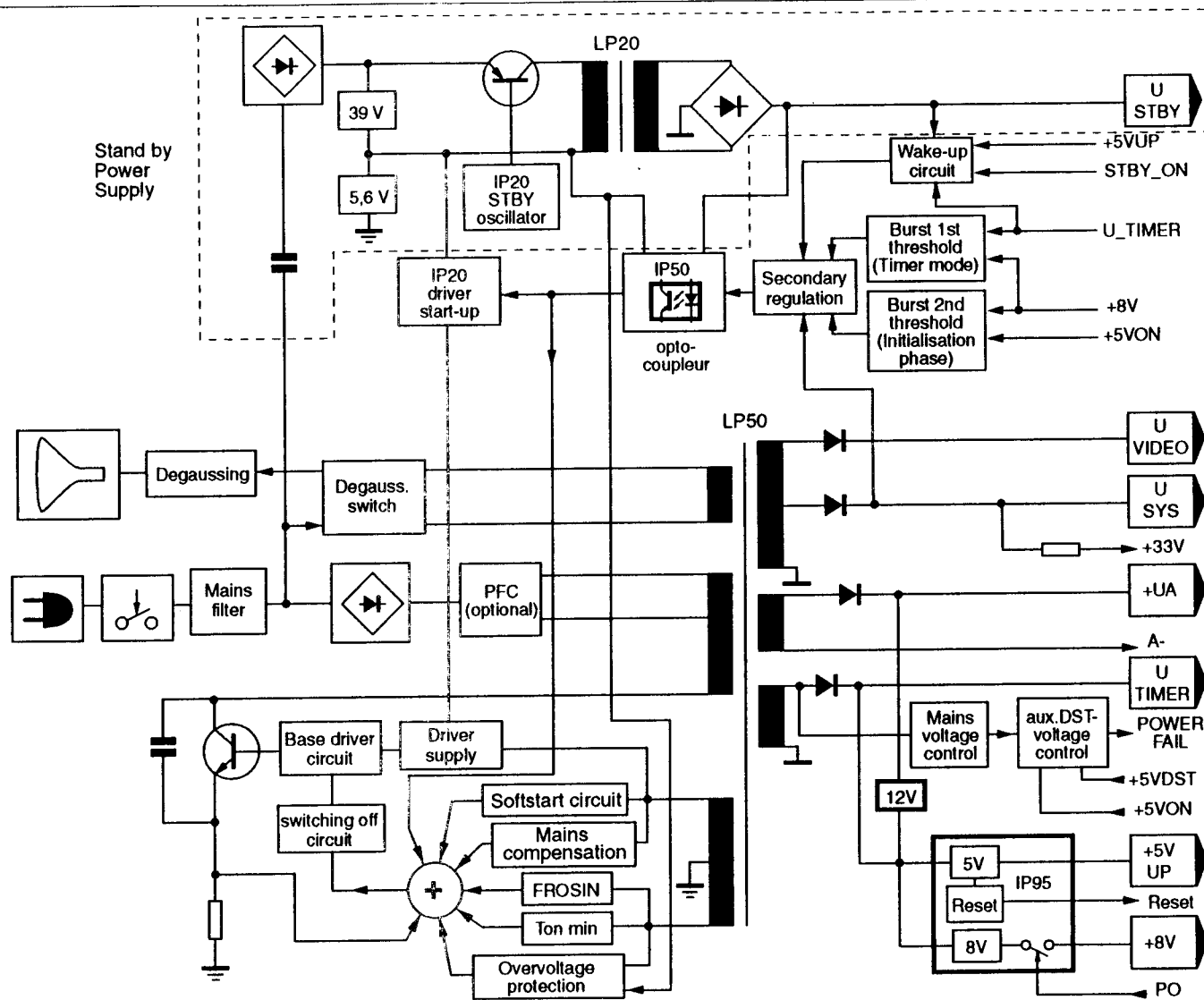
- supplying a large range of power to ensure maximum power of 47 watts for the image and $2 * 10$ watts rms for the audio (respectively 35 watts and $2 * 5$ watts rms for the TX92F).
- to display low consumption in stand-by (≈ 0.5 watts)

This is the FROSIN concept (Free Oscillation Safe Intelligent) coupled with a two pole transistor which was selected, associated with a separate stand-by power supply.

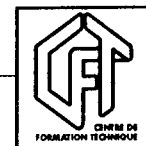
A mode intermediary to stand-by and the normal regimen exists : "Timer" mode. This corresponds to the stand-by mode for previous racks, supplying the micro-controller (approx. 3 watts).

The FROSIN principle reduces voltage at the de-coupling collector when switching and is here reinforced by the ZVS concept (Zero Voltage Switching) ensuring that voltage at the collector is almost zero during switching.

The disadvantage of this is high voltage at the collector of the de-coupling transistor during the restitution phase, requiring a collector/transmitter component with a high maximum voltage ($V_{ces} > 1500$ volts), a characteristic linked to LOW GAIN.



SYNOPTIQUE DES ALIMENTATIONS



PRESENTATION

The stand-by power supply supplies, after rectification, 2 voltages stabilised by zeners which supply respectively, the transformer primary (39 volts) and the oscillator (5.6 volts).

The secondary supply provides the non-regulated USTBY voltage of approx. 7 volts.

The switch-on stage enabled by the STBY-ON data starts up the main power supply via the secondary regulation stage and the opto-coupler.

The control stage is first of all supplied by the "driver start-up" circuit and is subsequently self-supplied.

The splitter transistor base is controlled by the blocking circuit via a new base driver stage.

Conduction time is linked to the combination of various circuits:

- regulation (opto-coupler)
- soft start-up and mains compensation (forward mode)
- FROSIN, minimum sound and detection of over voltage (flyback mode)
- current limitation (transmitter resistance)

A triac switches demagnetisation of the tube, whereas an optional power factor correction circuit is provided for.

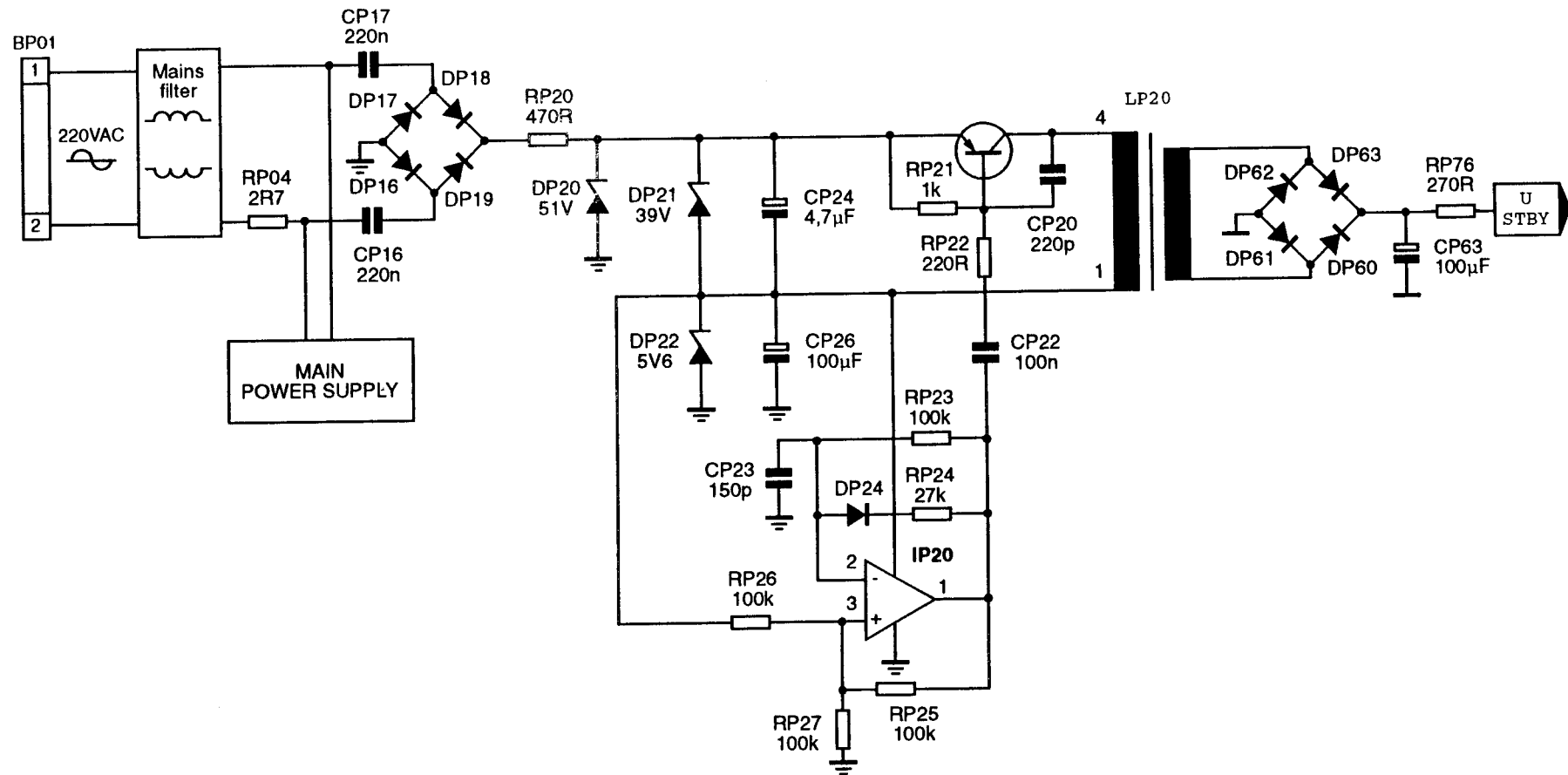
Secondary regulation stabilises the secondary voltages in TIMER mode (1st threshold), during start-up (2nd threshold) and in the normal regimen (USYS stabilising).

Four secondary windings supply respectively:

- the Uvideo voltage
- the USYS voltage for scanning
- power supply for the audio stage + UA
- 12 Volts UTIMER

Supplied in TIMER mode by + UA via IP87 and by U TIMER in normal regimen, circuit IP95 supplies:

- the permanent 5 VUP and reset for management
- 8 volts power supply for the video processor switched by the micro controller via the PO control.



STAND-BY POWER SUPPLY

STAND-BY POWER SUPPLY

The bridge rectifier DP16 to DP19 samples the current through capacitors CP16 and CP17.

Two serial zeners DP21 and DP22 stabilise the rectified voltage to supply respectively :

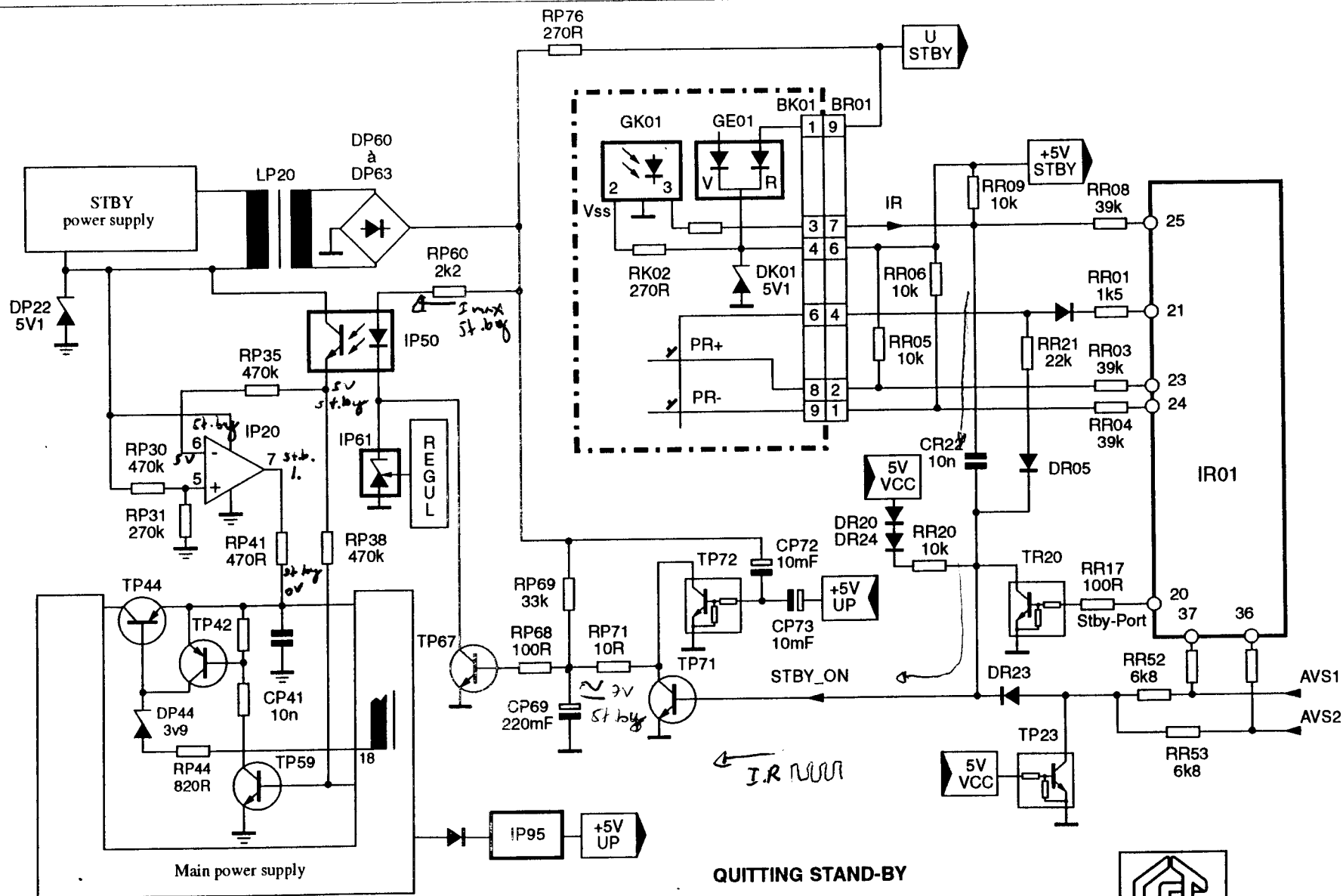
- with 39 volts, the LP20 primary and the TP21 splitter
- with 5V6, the opto-coupler transistor and the oscillator IP20 (pins 1, 2, 3)

This latter is cabled in non stable fashion ($F = 65 \text{ KHz}$, $T = 1$)

The transistor TP21 is saturated during each low level (4 microseconds) via CP22.

At the secondary, the 2 alternating currents are rectified by bridge DP60 to DP63 to obtain USTBY (7 volts). This voltage supplies :

- the opto-coupler diode
- the red LED and the zener diode DK01 (+ 5V STBY)
- the infra red receiver
- the front panel keyboard
- an AV switching detection stage.



STAND-BY MODE

In stand-by mode, TP 71 and TP72 are blocked (STBY-ON line at 0), CP69 is charged, TP67 is saturated and maximum current passes through the opto-coupler.

At the primary, the regulation currents saturate TP59 via RP38, whereas a high level via RP35 is imposed at the inverse input of IP20 (pin 6), suppressing the start-up power supply (low level on pin 7 of IP20). No current can reach the base of TP50 and the main power supply is inactive.

QUITTING STAND-BY

The STBY-ON line changes to high status in constant or cyclical fashion in the following cases:

- receipt of an infra red signal
- pressing of key PR+ or PR- on the front panel keyboard
- slow switching command AV1 or AV2 (TR23)

TP71 discharges CP69, TP67 is blocked and current in the opto-coupler reduces by action of the serial programmable shunt diode IP61.

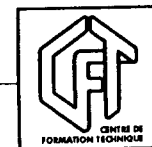
At the primary, the regulation current also decreases, the amplifier IP20 (pins 5, 6, 7) switches, supplying by its output at pin 7 (5V6) the capacitor CP41 whereas the base of TP59 is liberated.

When CP41 reaches approx. 4V5, TP44 conducts and supplies current to the base driver stage, thus starting up the main power supply.

The micro controller again forces stand-by via transistor TR20 after 8 seconds if the commands have disappeared in the meantime.

NOTES :

On 10/11/85
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in circuit



MAIN POWER SUPPLY

The main power supply is basically composed of two major parts:

- preparation of the base current of TP50 (self supplied: DP41/CP41, switching: TP44, formatting: LP44 and associated components)
- the validation/inhibition circuit for this current: the cut-off circuit (TP59/TP42).

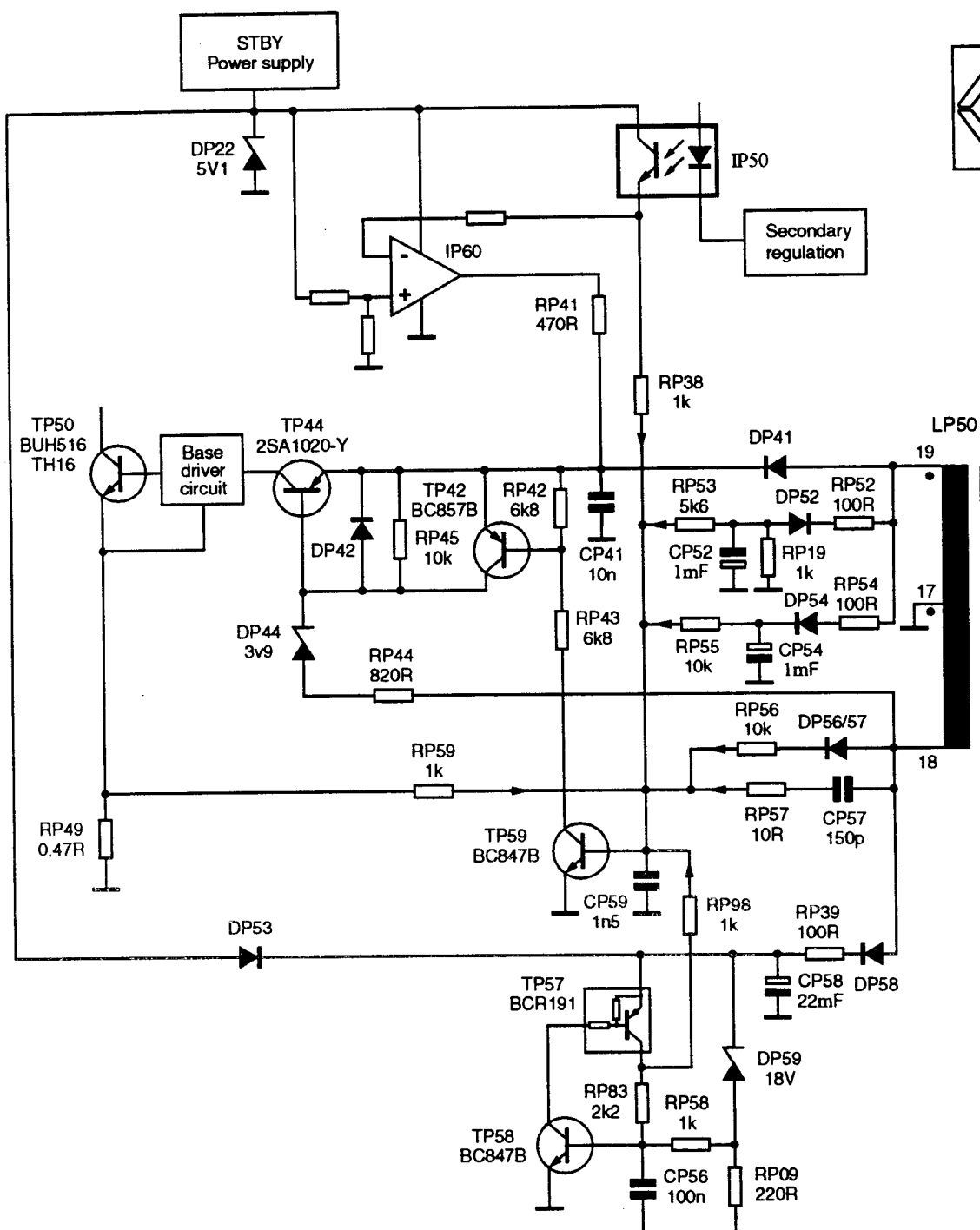
PREPARATION OF BASE CURRENT FOR TP50

The load of the capacitor CP41 generates the base current of TP50. This charge is assured during start-up by IP20, then via the diode DP41.

This current is applied at the base of TP50 by the intermediary of TP44 and LP44 (base driver). TP44 conducts during start-up for CP41 - 4V5 (zener DP44) then when the cut-off circuit is blocked (TP42 no longer short circuits the junction be of TP44)

At the end of the storage cycle, the cut-off circuit (TP42/59) is saturated and blocks transistor TP44. LP44 then becomes a generator and maintains current according to 2 circuits:

- first circuit: from mid point of LP44 via DP47/DP48, through CP47 and returning through the input (pin 5) by DP46. CP47 is then negatively charged in relation to the ground (negative voltage at the base of TP50 during the energy restitution phase)
- second circuit: on account of the fact that the 2 coils of LP44 are in opposite directions, the induced voltage which is generated between points 1 and 3 generates a second current opposite to the first. This starts from the middle of the coil via DP47/DP48 through the junction of TP50 (unloading of the junction)



CUT-OFF CIRCUIT

CUT-OFF CIRCUIT

7 data items are applied at the base of TP59 and determine, by the combination of their effects, more or less rapid blocking of TP50:

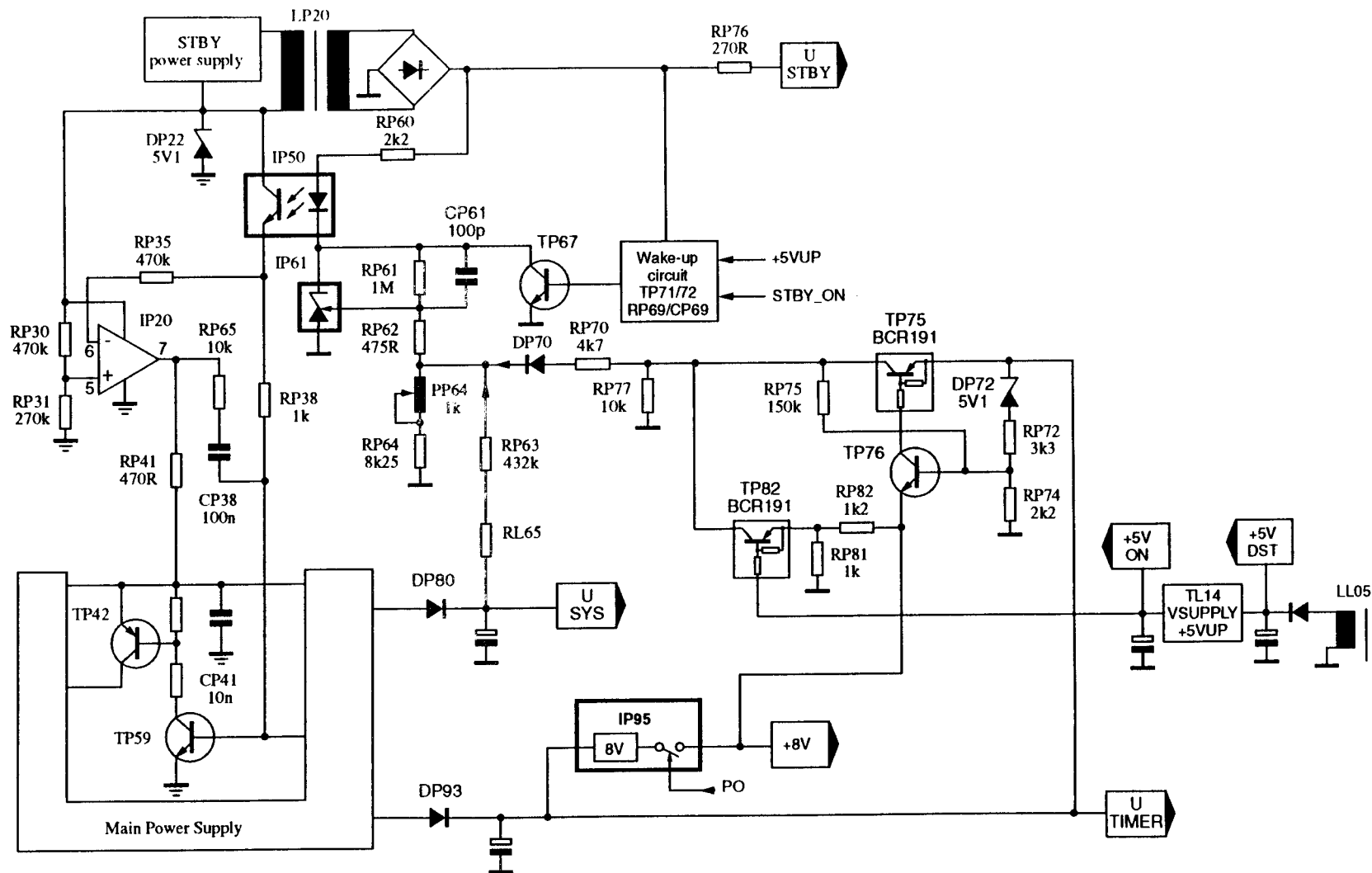
- regulation (IP50, RP38)
- the principle primary current limit threshold (RP49, RP59)
- soft start-up (DP52, CP52)
- mains compensation (DP54, CP54)
- the FROSIN circuit (DP56/57, RP56)

This circuit ensures, at the end of the restitution cycle, by controlling the saturation current (RP56), a time delay linked to the discharging time of transistors TP59/TP42.

An oscillation phase is also permitted at the TP50 collector allowing saturating this component when the collector voltage is minimal:

- the minimum sound circuit (RP57, RP56)
- protection against over voltage.

An image of the secondary voltages is recreated at the primary by fly-back rectification (pin 18 of LP50, DP58 and CP58). Once this voltage exceeds the 19 volts threshold (zener DP59 + V_{be} TP58) the pseudo thyristor assembly TP57/58 is triggered, blocking TP50 by permanent saturation of the cut-off circuit.



SECONDARY REGULATION

SECONDARY REGULATION

Secondary regulation operates:

- in **TIMER** mode where it stabilises the secondary voltages at 50% of the rated value (to limit the power consumed).
- in **ON** mode when it regulates the **USYS** voltage to its rated value
- in an intermediary mode during the changeover from **TIMER** mode to **ON** mode when the secondary voltages are stabilised at 75% of their rated value.

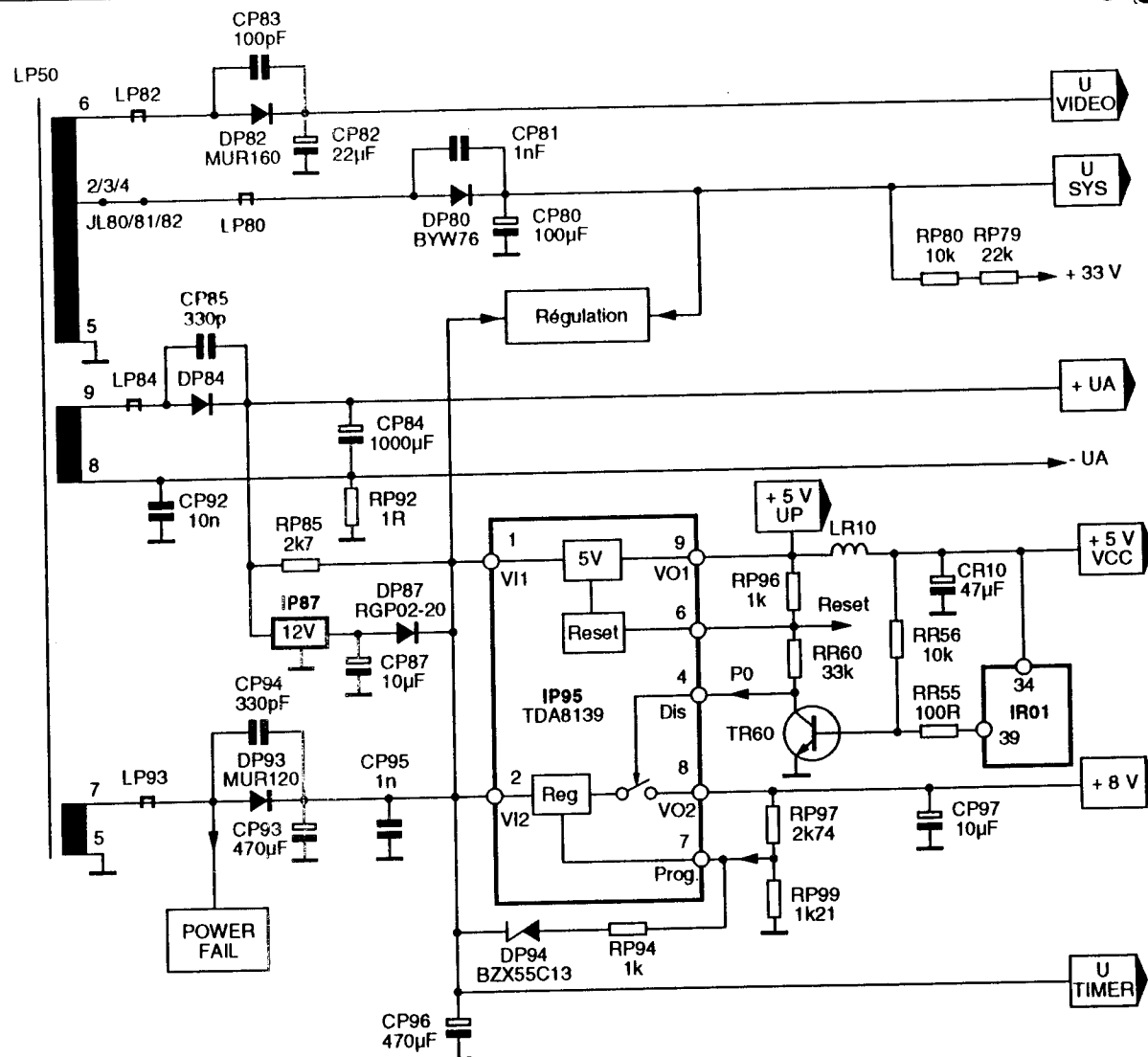
In **TIMER** mode TP76 conducts and controls TP75. The voltage obtained on the ref-pin of IP61 via DP70 and RP62 fixes the secondary voltages at 50% of their value (first threshold).

During start-up, TP82 takes over from TP75 which is now blocked to stabilise the secondary voltages at 75% of their value (second threshold).

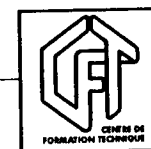
Finally, TP82 is again blocked, as is TP70 and it is a fraction of **USYS** (via RL65 and RP63) which controls IP61 (adjustable by PP64) to stabilise the voltage at its rated value.

Note that in **TIMER** mode, the regulation works in **salvo** mode.

Timer ~~AV1/2 nominal~~



SECONDARIES DISTRIBUTION



SECONDARIES

It should be recalled that the 4 secondary windings supply respectively:

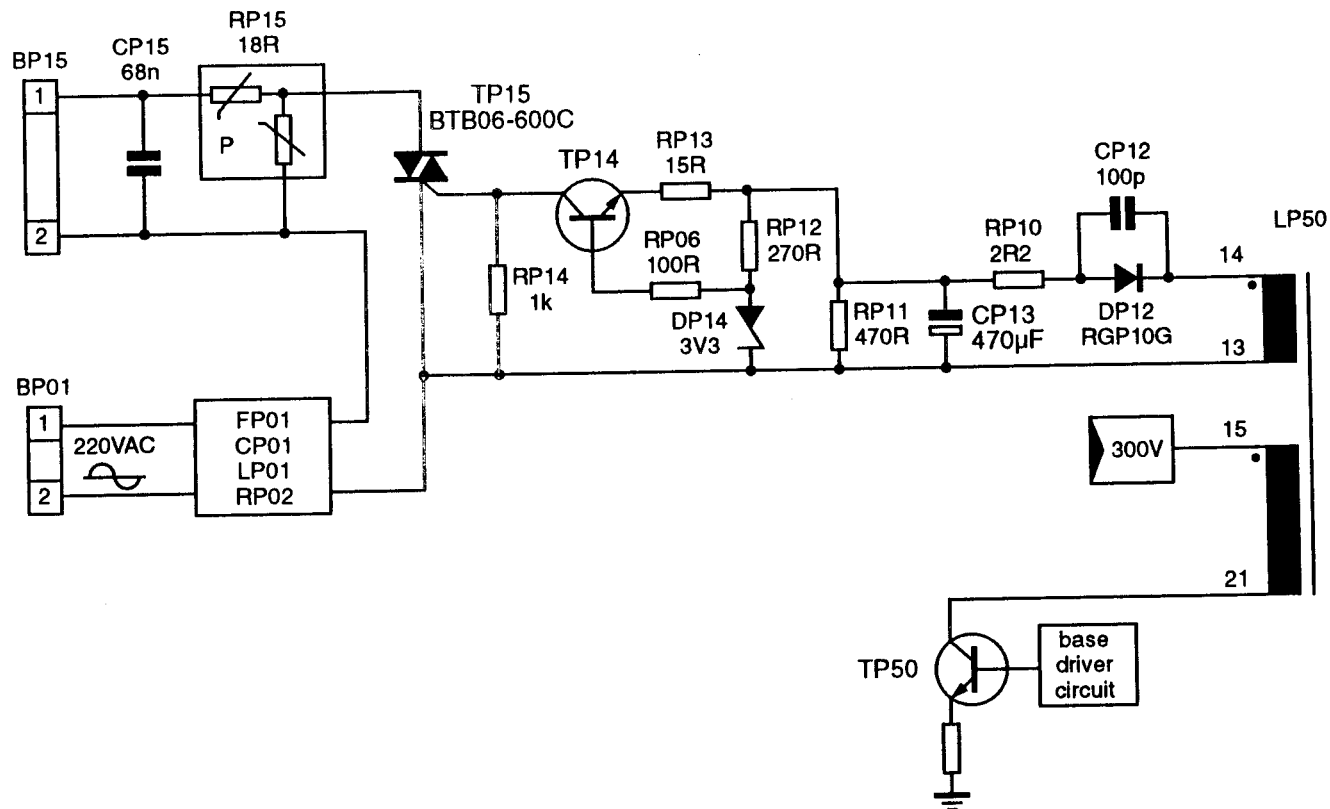
- the Uvideo voltage of 200 volts $\pm$ 8 volts (rated I = 10 mA)
- USYS of 126 to 138 volts depending on the tube (max I = 700 mA)
- + UA of 29 volts (maximum load) to 35 volts (minimum load) (max I = 1.2 A)
- UTIMER of 12 volts $\pm$ 1 volt (rated I = 100 mA)

The circuit IP95 supplies:

- the permanent 5 VUP and reset for management
- 8 volts for supplying the video processor switched by the micro controller via the PO command.

Power supply to IP95 is provided during normal regimen by the UTIMER voltage (12 V).

However, in TIMER mode, since this voltage is lower, it is the + UA which takes over via IP87 and DP87.



TUBE DEMAGNETISATION

CRT DEGAUSSING CIRCUIT

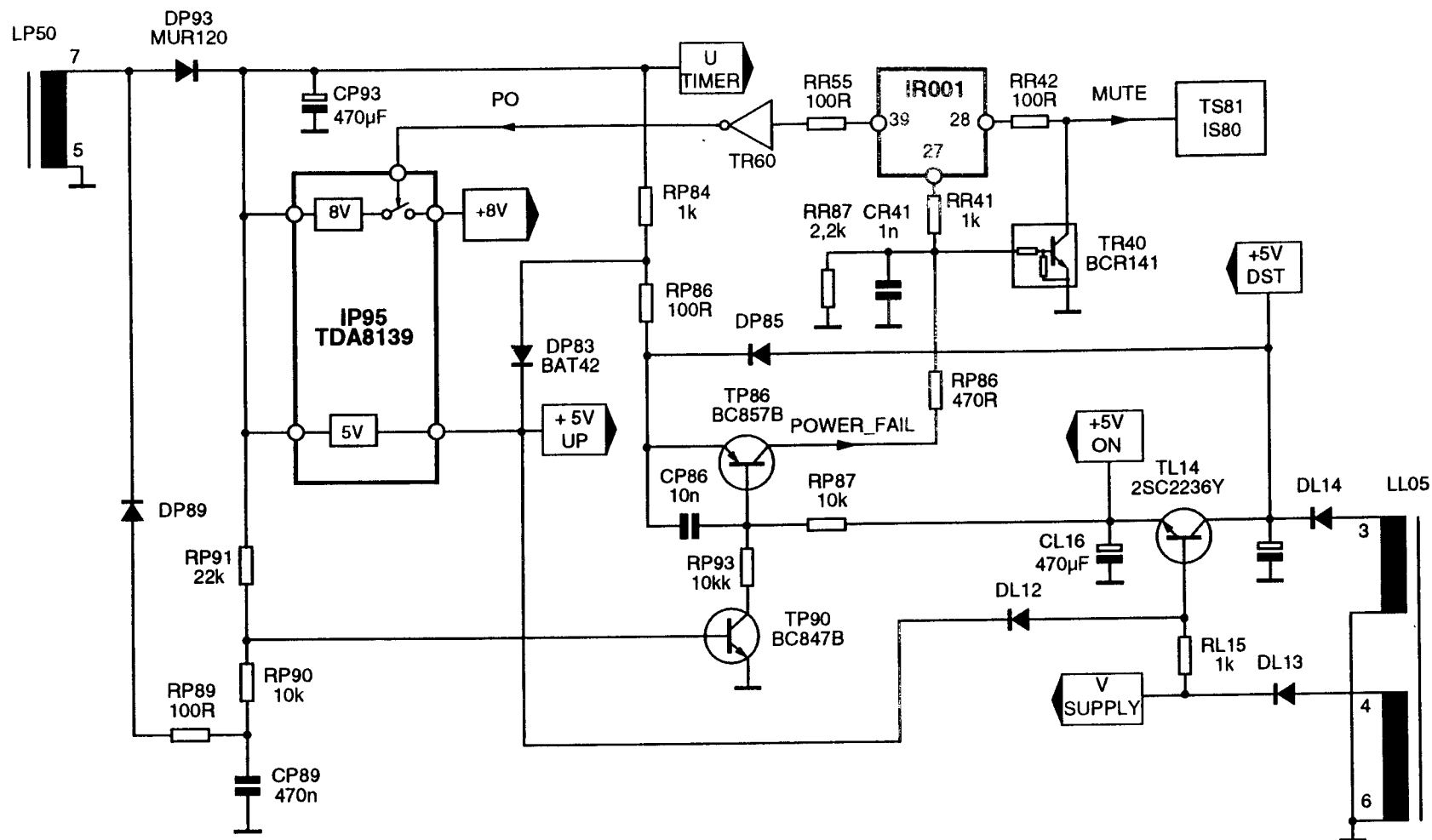
In stand by mode, no voltage appears at capacitor CP13. The transistor TP 14 is blocked, as well as the triac TP 15.

In TIMER mode, the charge of CP 13 is -1V5, a voltage which is inadequate to polarise the zener DP 14 (3V3), TP 14 remains blocked.

During start-up in normal regimen, the second regulation threshold (see corresponding chapter) limits voltages to 75% of their value, the CP 13 is charged to -2V5.

The triac is still blocked.

Finally, since scanning has started, the capacitor CP13 changes to -5V, TP14 and TP 15 conduct, the posistor is supplied and a decreasing current from the mains crosses the degaussing loop.



CIRCUIT POWER-FAIL

MAINS POWER CUT DETECTION CIRCUIT

If mains power falls below 150 V AC, the voltage at the terminals of CP89 increases above -4.4 volts and TP90 is polarised. Transistors TP90 and TP86 conduct, the Power Fail line changes to high status and informs the micro controller which cuts off the 8 volts switched by the PO line

This assembly also controls the THT through DP85, DP86 and TP86 under the following conditions:

- in the case of over voltage of the THT secondaries, the increase in the +5 VDST results in conduction at TP86. The micro controller then stops scanning before attempting a restart 2 seconds later. if this is unsuccessful after the third attempt, the micro controller forces stand-by mode.
- in the case of under voltage of the +5 V ON, the transistor TP86 is freed and enables the Power Fail information with the same effect as above.

Note that the micro controller uses this means to control start-up of THT.

TIME BASE

CONTENTS

INTRODUCTION

GENERATION OF THE TDA 8855H COMMAND SIGNALS

DRIVER STAGE

LINE POWER AND EHT

EW STAGE

FORMAT CORRECTION

FRAME SCANNING

TIME BASE SAFETY



INTRODUCTION

Time base commands are generated by the video processor IV01: TDA 8855H. The latter is supplied with power from the 8 V voltage at pin 53. This voltage is available in "ON" mode. The 12C BUS is present on pins 17 and 18.

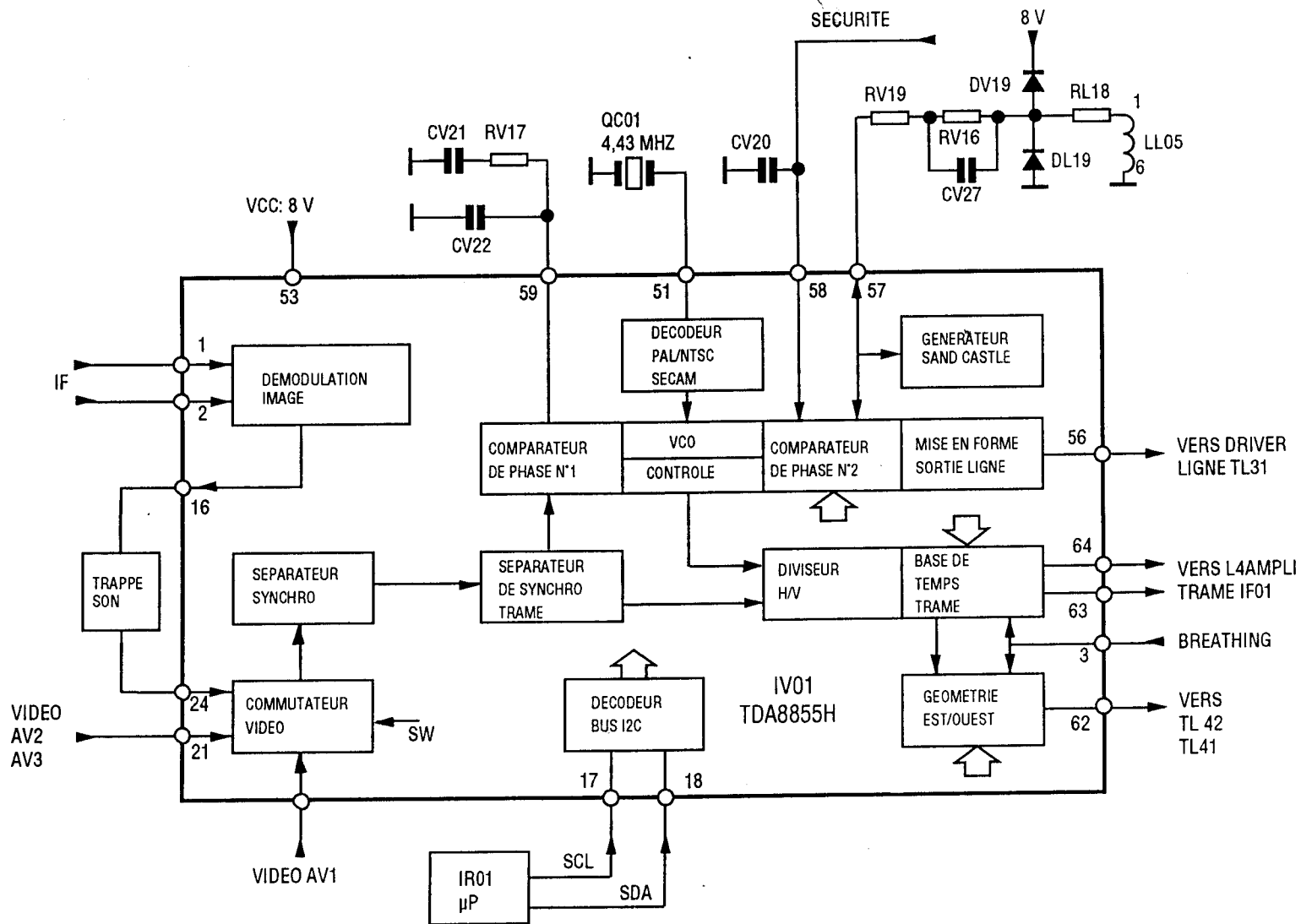
GENERATION OF THE LINE COMMAND

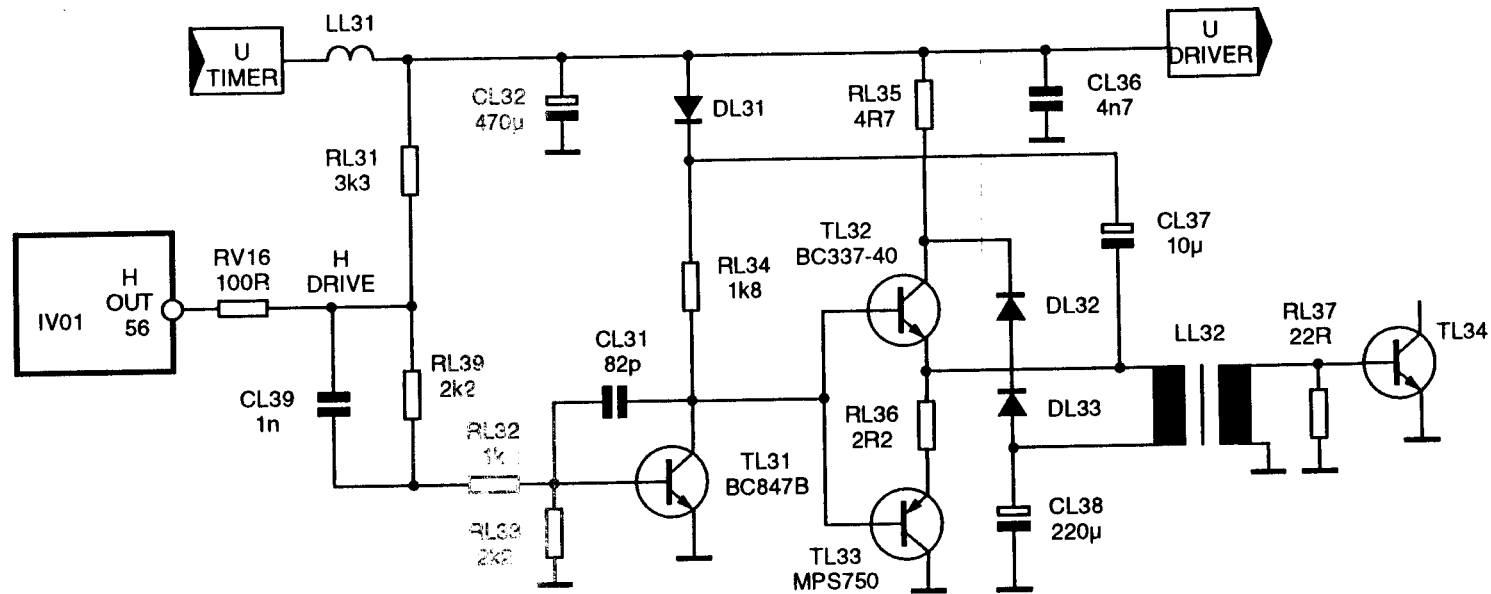
A VCO and divider assembly managed by the 4.43 MHz quartz (pin 51) supplies a signal at line frequency.

A first phase comparator, on receiving the video signal line synchronisation, locks the divider.

A second phase comparator ensures static phasing. It receives line return pulses from pin 1 of transformer EHT LL05 on pin 57.

The line signal, after a formatting stage, is present at pin 56 of IV01 and is then sent to the line power transistor TL54 via the driver stage.





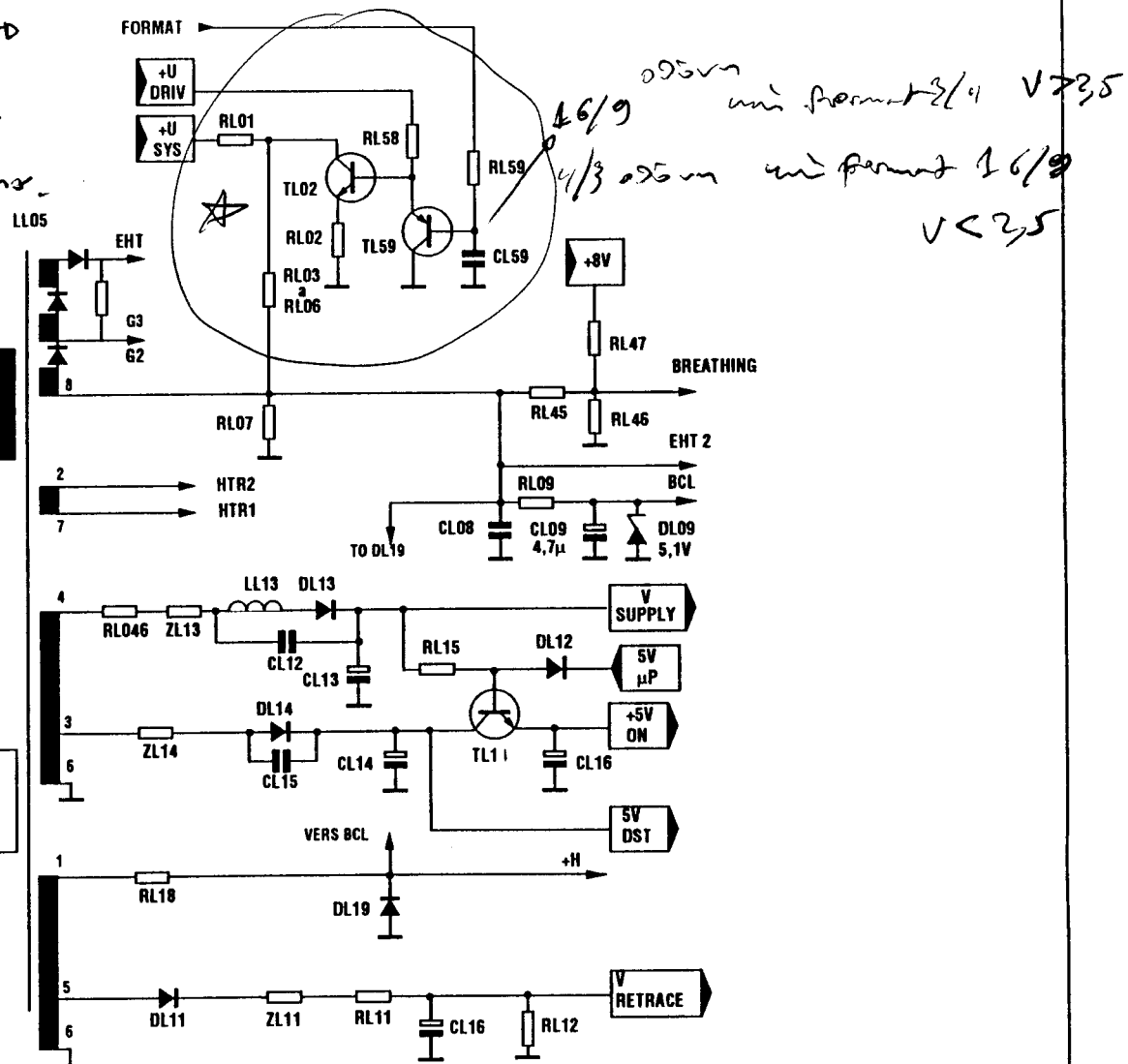
DRIVER STAGE

The line transistor is controlled by the intermediary of a driver transformer operating in forward mode. Its primary is permanently crossed by a positive or negative current.

For this purpose, the base of the primary LL32 relies on positive voltage from the charge of capacitor CL38 linked to the cyclical ratio of the line command. The transistor driver TL 31 switched by this signal controls the push-pull TL 32/TL 33.

Diodes DL32/DL 33 intervene in the case of a short-circuit between the collector/transmitter of transistor TL 32 to render the TV set safe by stopping scanning. From this time TL 33 conducts permanently and causes rapid destruction of RL35.

IR 01



LINE POWER AND EHT

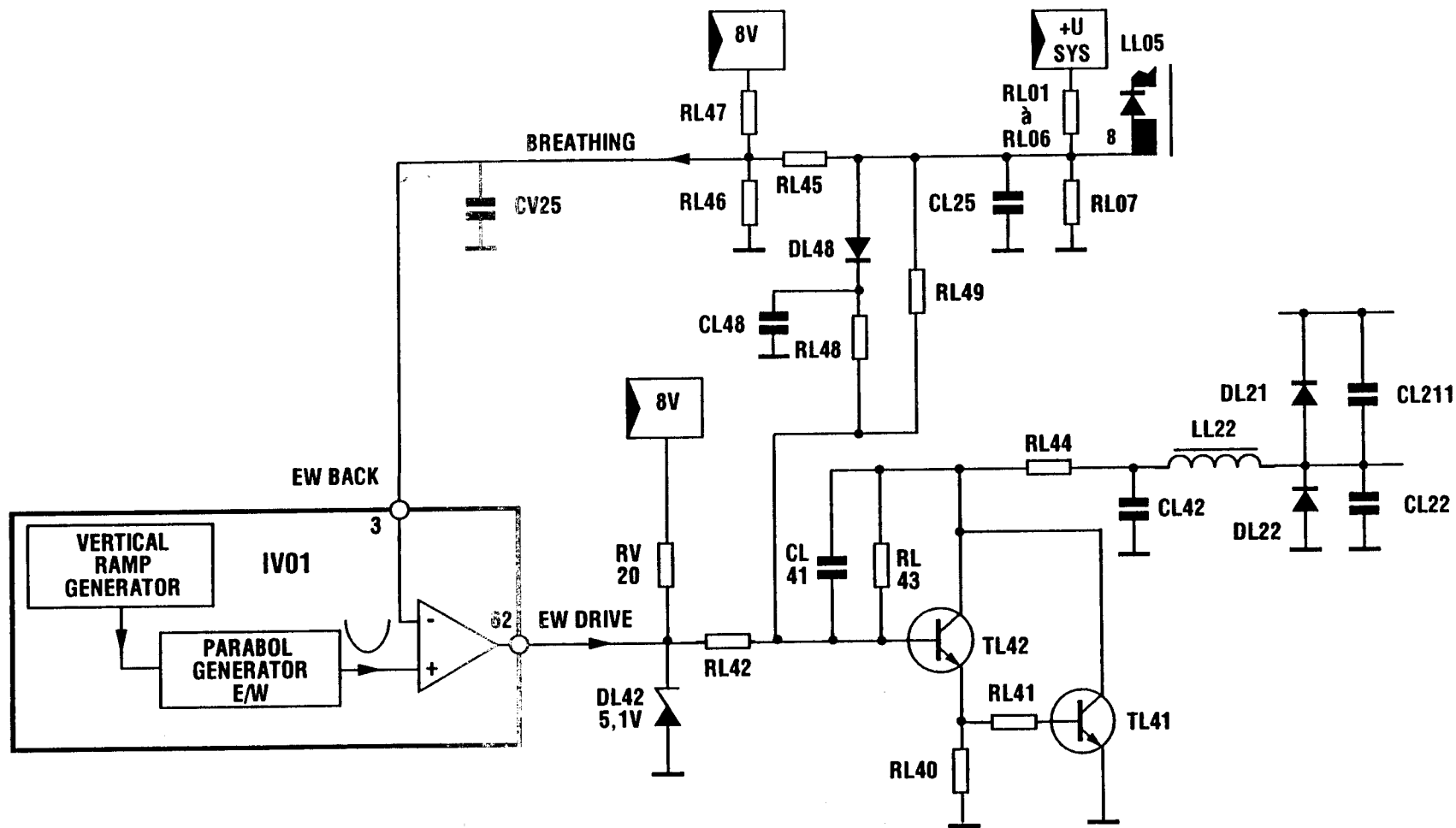
The LL05 primary supplied by the + USYS voltage is associated with the line power transistor TL34 and the diode modulator DL21, DL22, CL21, CL22.

These switching components also channel current from the horizontal deviator connected in serial with the capacitor of "S " CL24 and the linearity inductance coil LL26.

Two circuits are assembled in parallel on the capacitor "S". The first is a damping circuit to suppress oscillations which appear during rapid changes in beam current. The second on the 16/9 rack only, allows by adding a capacitor switched by a thyristor, adjusting line amplitude during changes of format.

On the LL05 secondaries the following are located:

- pin 2 and 7 a pulse for heating the image tube filament.
- pin 4 rectified by DL13 filtered by CL13 "V SUPPLY" voltage.
- pin 3 rectified by DL14 filtered by CL14 and stabilised by TL14 from the 5 Vmp with a voltage of 5V ON.
- pin 1 a positive line return pulse to obtain service signals.
- pin 5 rectified by DL11 filtered by CL16 a "V RETRACE" voltage to supply the frame amplifier during return.
- pin 8 the image of the instantaneous beam current "BREATHING", "bcl", "EHT 2".



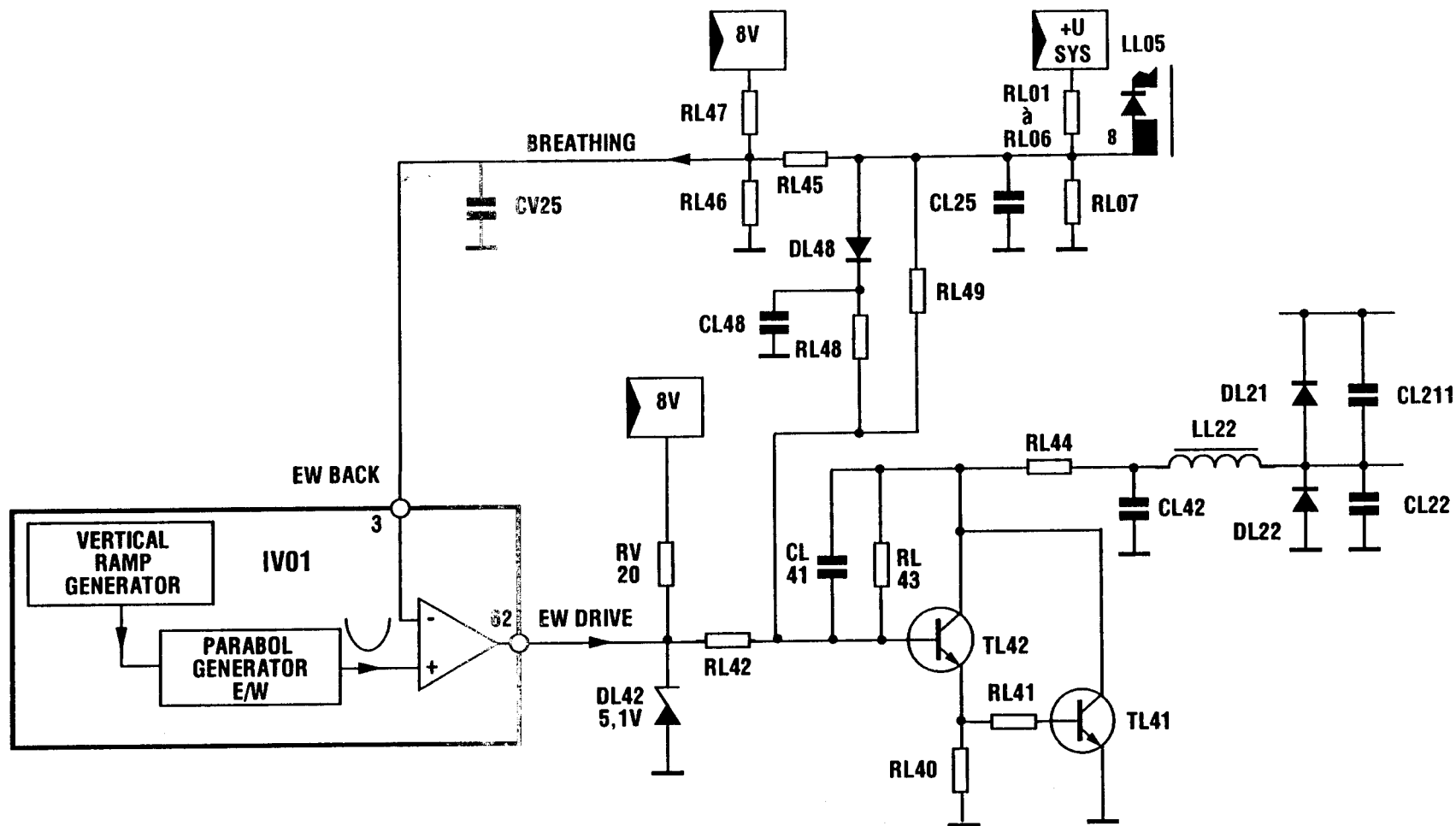
EW STAGE

The integrated circuit IV01 integrates the E/W parabola generator synchronised by the vertical ramp generator.

The various adjustments are by the intermediary of service mode and are routed by the 12C bus.

An amplifier integrated in IV01 supplies in the form of a parabolic current at pin 62 an E/W command, which is applied at two transistors TL 41 and TL 42 assembled in darlington. It extract energy from the modulator through the inductance coil LL22.

From the EHT2 voltage image of the beam current and through DL48, RL48, RL49, CL48, automatic correction of width is made depending on the tube rate.



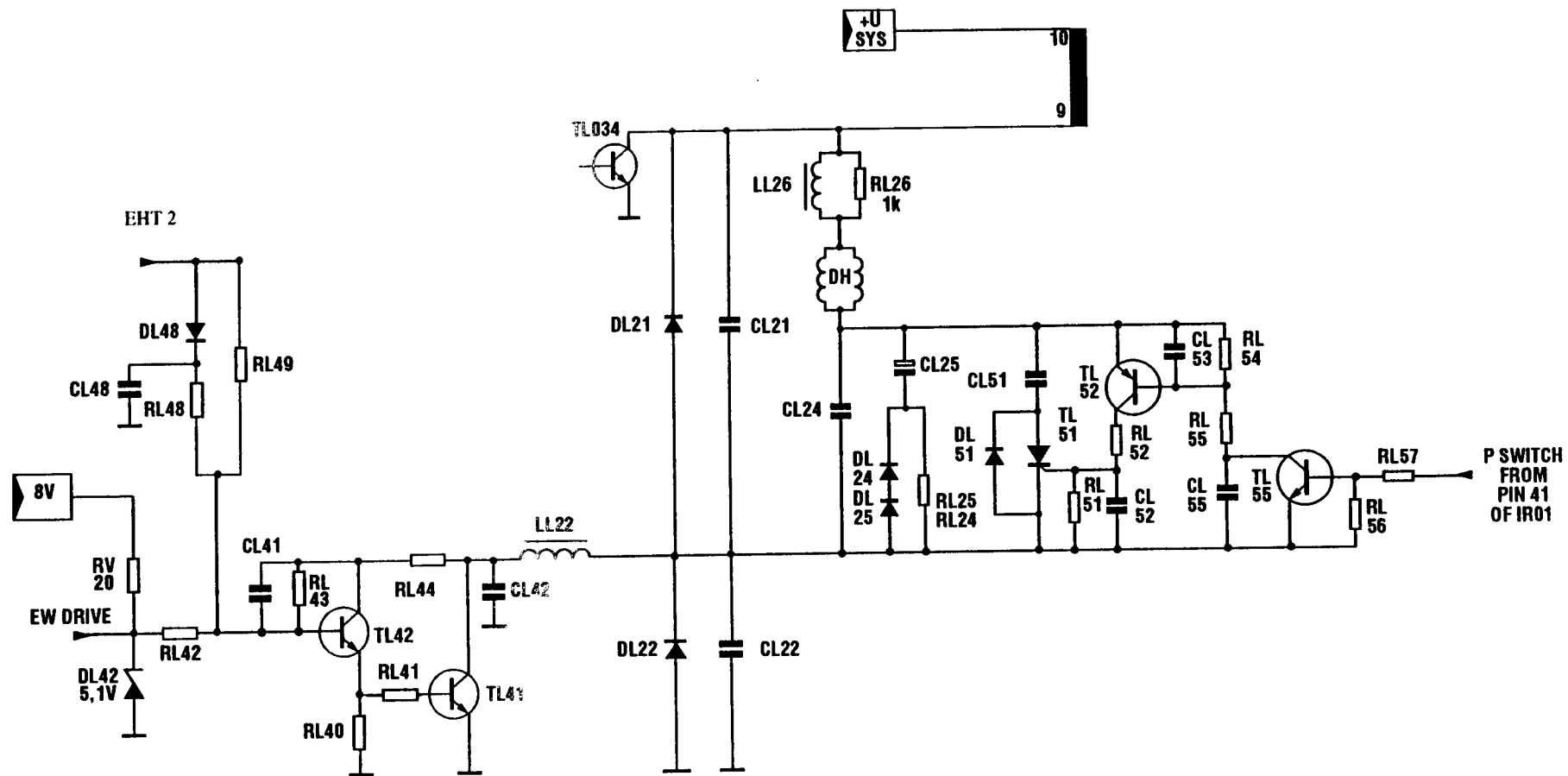
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FORMAT CORRECTION

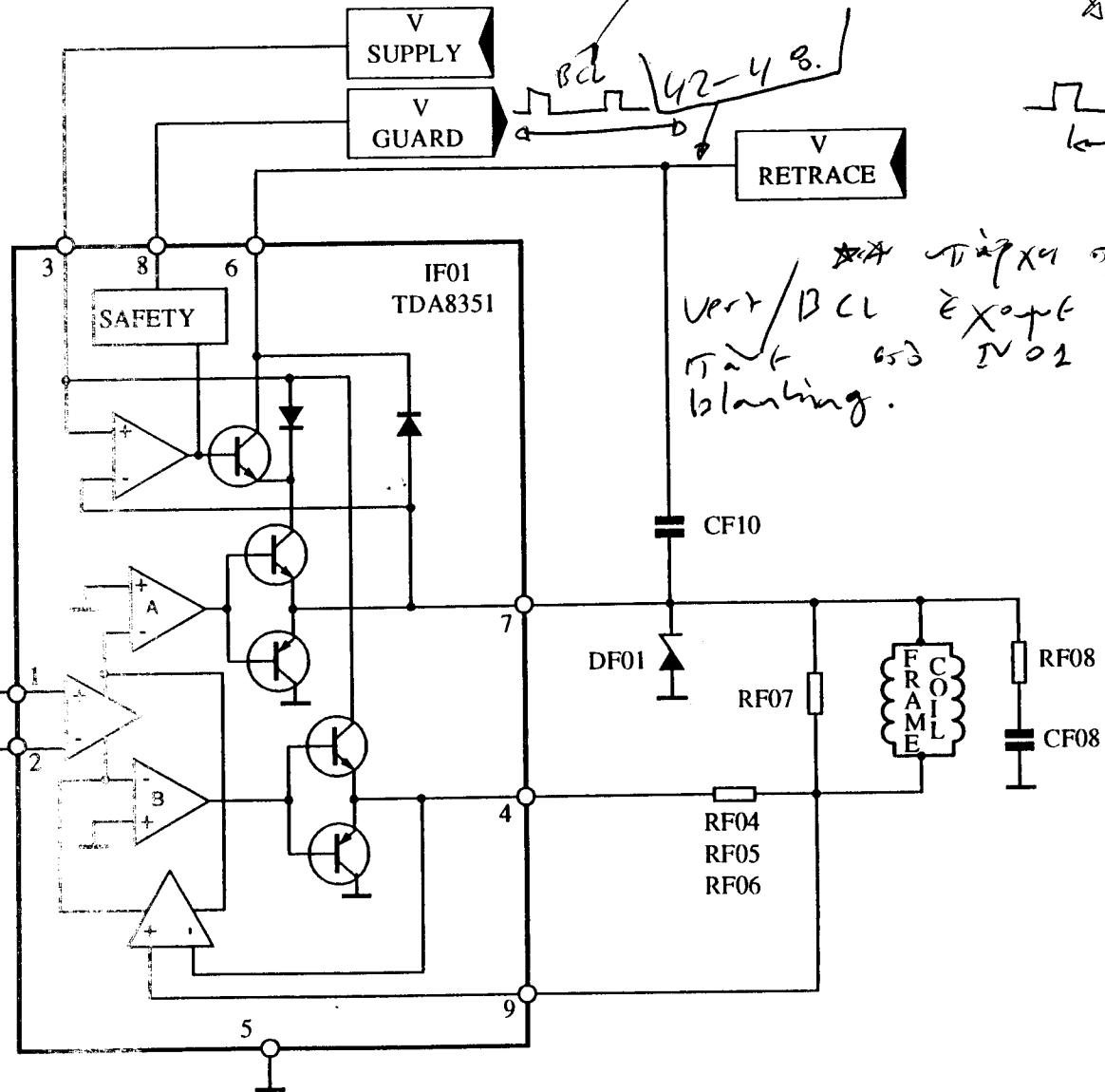
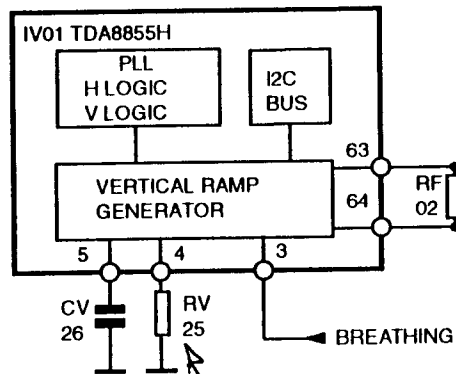
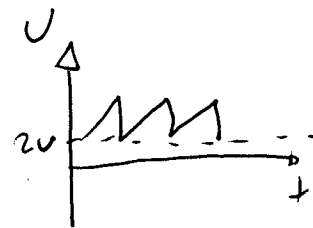
On the 16/9 rack it is possible to switch via the intermediary of TL55, TL52, TL51 controlled by the IR01 μ p, a second capacitor "S" CL51 in parallel on CL24.

The effect is to reduce line amplitude and supply correct linearity in centred 4/3 mode.

FORMAT CORRECTION

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The effect is to reduce line amplitude and supply correct linearity in centred 4/3 mode.



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TAK 653 IV01 un nivel
blanking.

FRAME SCANNING

Two circuits are involved in frame scanning.

IV01 (TDA8855H) generates the frame saw tooth

IF01 (TDA8351) amplifies this signal and supplies the signal to the frame deviator

The video processor IV01 incorporates a vertical ramp generator which uses the capacitor CV26 (pin 5) and the resistor RV25 (pin 4).

The amplitude of this ramp is adjusted versus the BREATHING information applied at pin 3 (automatic height correction).

Linearity and amplitude correction is also supplied by IV01. They can be adjusted by bus 12C in the framework of service mode. A correct border is ensured by internal continuous voltage adjusted at bus 12C.

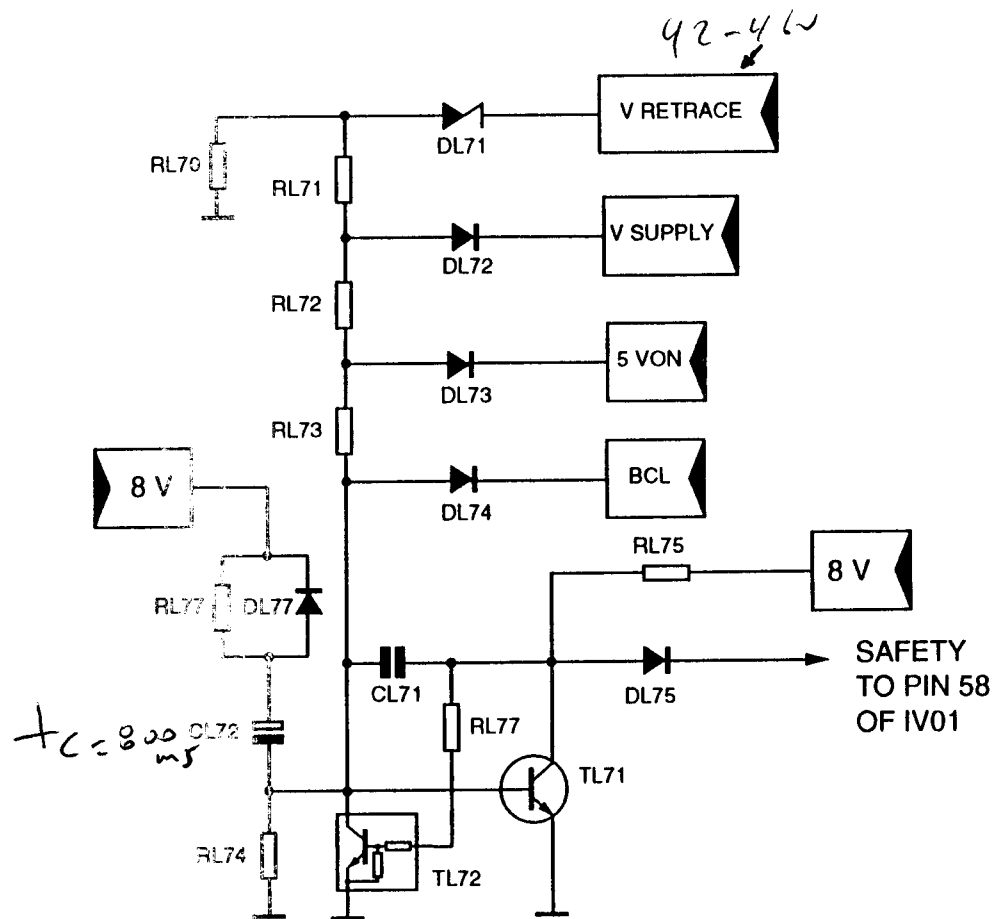
A saw tooth signal is available at pin 64 combined with a continuous component on pin 63 to control the amplifier circuit IF01.

The circuit TDA 8351 receives the previous commands at pins 1 and 2.

The voltages V SUPPLY and V RETRACE supply this circuit.

The output pin 5 supplies current to the deviator. In series with the latter, the resistors RF04, RF05, RF06 develop at their terminals, an image of the current for the counter reaction.

To avoid burning the image tube in the event of frame failure, we monitor satisfactory operation of the frame time base by the GUARD data which will be at high status. In the case of a frame failure, absence of this data indicates to the video processor IV01 (pin 34) a defect, and the latter cuts the three RGB channels by rendering the circuit safe after two start-up attempts (failure code 27).



TIME BASE SAFETY

The safety circuit detects short circuits in scanning or line voltages and runaway of the beam current.

The frame deviator signal supplies a voltage which polarises the zener DL71 and saturates the transistor TL71 imposing a low level on the SAFETY line.

The following defects force a high level on the SAFETY line, which applied at pin 58 of IV01 cuts off line scanning.

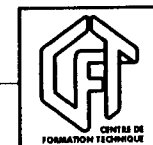
- Frame defect by DL71.
- Defect in the V SUPPLY voltage by DL72.
- Defect in the 5V On voltage by DL73.
- Runaway of the beam current.

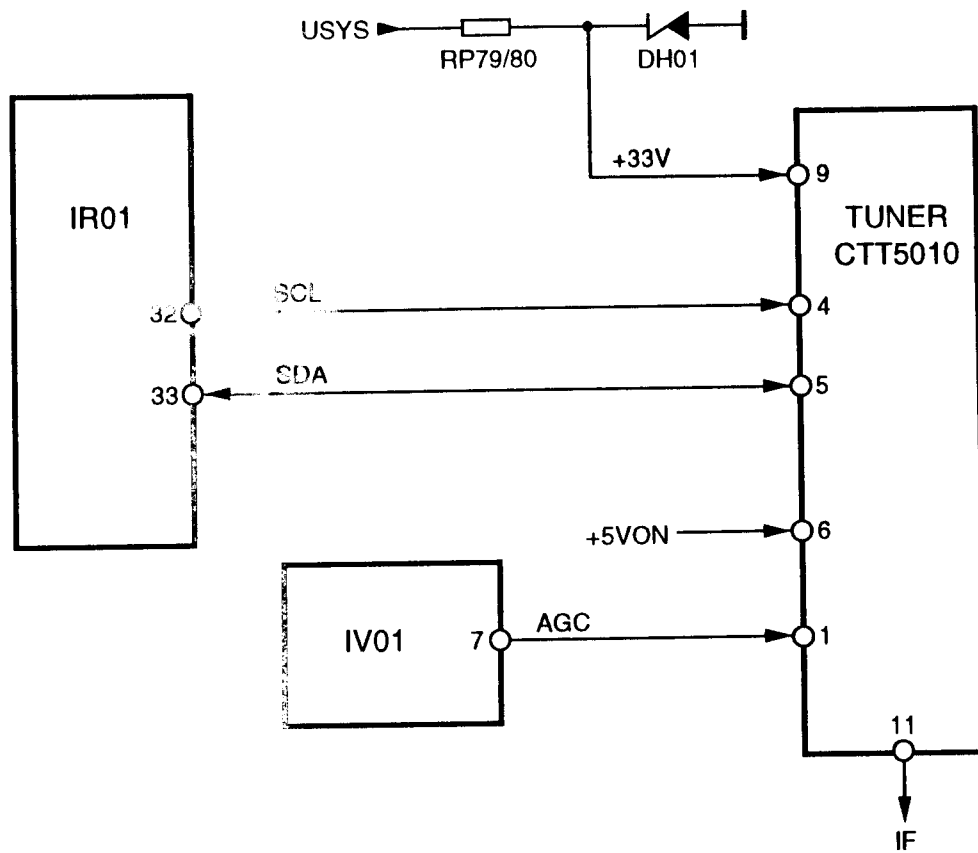
CONTENTS

CTT5010 TUNER

INTERMEDIATE FREQUENCIES

HIGH FREQUENCY INTERMEDIATE FREQUENCY

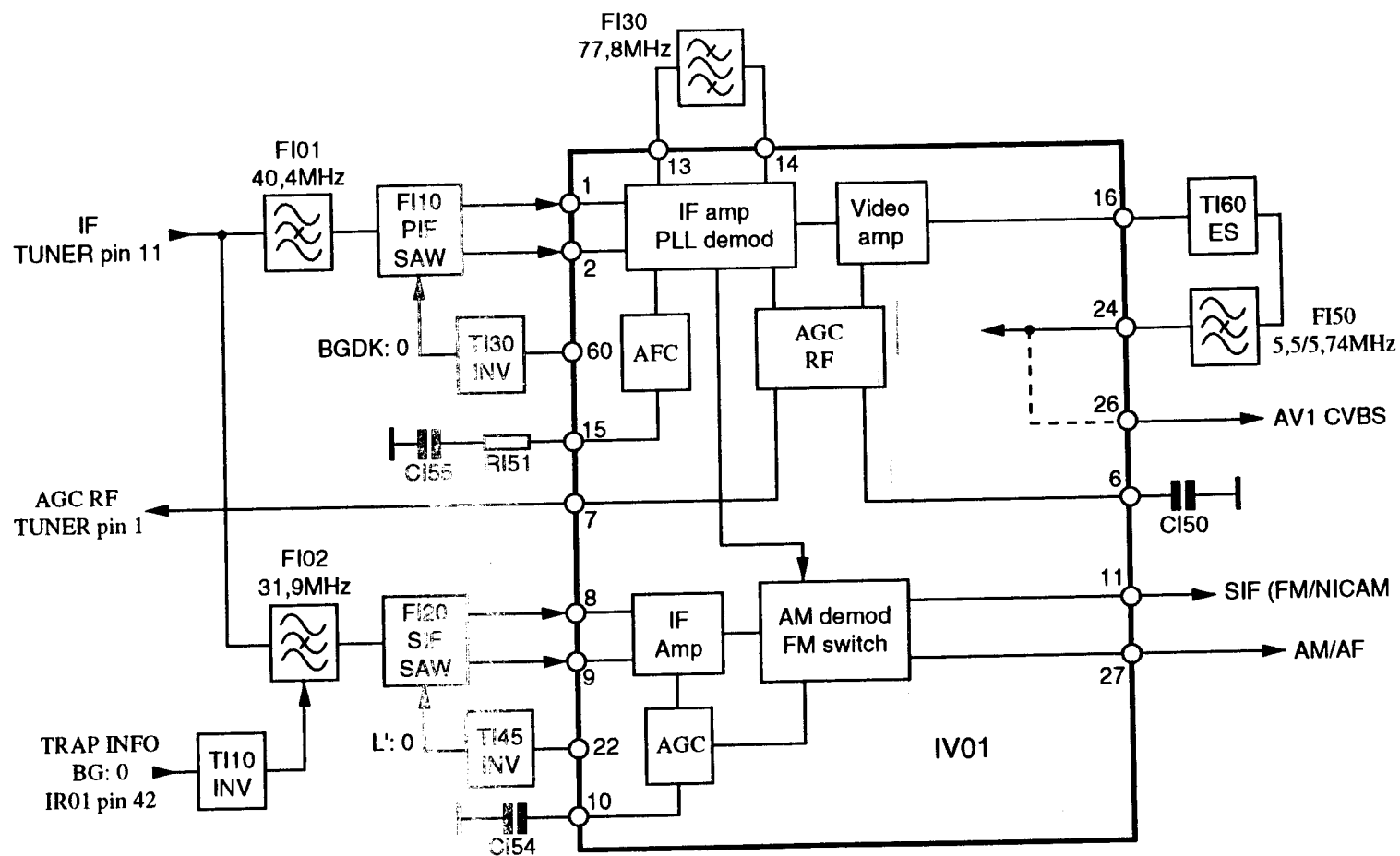




CTT5010 TUNER

The CTT5010 is a tuner equipped with frequency synthesis. It is controlled by the μ C IR01 via the IIC bus for switching standards and channel management. It covers the following frequency ranges :

- VL : 48.25 MHz to 112.25 MHz
- VH : 119.25 MHz to 399.25 MHz
- U : 407.25 MHz to 863.25 MHz



INTERMEDIATE FREQUENCIES

IMAGE INTERMEDIATE FREQUENCY

The IF from output 11 of the tuner passes through filter IF01 (rejection of adjacent channel in BG, 40.4 MHz), the IF10 grouped selectivity and is then fed to IV01 by its pins 1 and 2.

Filter IF10 can be switched. For LL'IK' standards it has two nyquist sides (38.9 MHz and 33.9 MHz). For BGDK standards it has 1 nyquist side (38.9 MHz).

In IV01 the image IF is amplified and demodulated. The video signal, supplied at 16 of IV01 passes through the FM audio inter-carriers rejector (IF50) and fed back at 24 of IV01. In IV01 it is sent to the switching stage and output 26 for the SCART socket AV1.

The CAG HF voltage present at output 7 of IV01 (0.5V to 4.1V) is transmitted to the tuner.

SOUND INTERMEDIATE FREQUENCY

The IF from output 11 of the tuner passes through filter IF02 (rejection of adjacent channel in BG, 31.9 MHz), the IF20 grouped selectivity and is then fed to IV01 by its pins 8 and 9.

Filter IF20 can be switched. For L' standards, its accord frequency is 40.4 MHz. For other standards, its accord frequency is 32.4 MHz.

In IV01, the AM sound IF is amplified, demodulated and supplied at output 27.

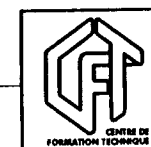
In IV01, the FM sound IF and the NICAM, sampled from the video stages are amplified and supplied at output 11.

CONTENTS

VIDEO SWITCHING

RGB SWITCHING

SWITCHING



VIDEO SWITCHING

The integrated circuit IV01 allows switching the 7 input sources (VIDEO or Y/C) to 2 outputs for the SCART sockets and the teletext and 1 internal output for the processing channel. The μ C IR01 controls switching via the I2C bus.

The voltages from pin 8 of the SCART sockets arriving at pins 36 and 37 of μ C IR01 indicate, depending on their values, a 4/3 or 16/9 source.

Switching between the SCART socket AV2 and AV3 is by the data "AV3 PORT" from pin 40 of μ C IR01.

RGB SWITCHING

The RGBs for the SCART socket AV1 are present at pins 41, 42, 43 of the integrated circuit IV01. The rapid switching signal present at pin 44 switches between signals from the video source switch and the RGBs.

VIDEO PROCESSING

CONTENTS

GENERAL

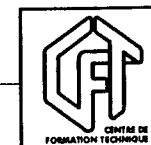
LUMINANCE/CHROMINANCE SEPARATION

CHROMA IDENTIFICATION

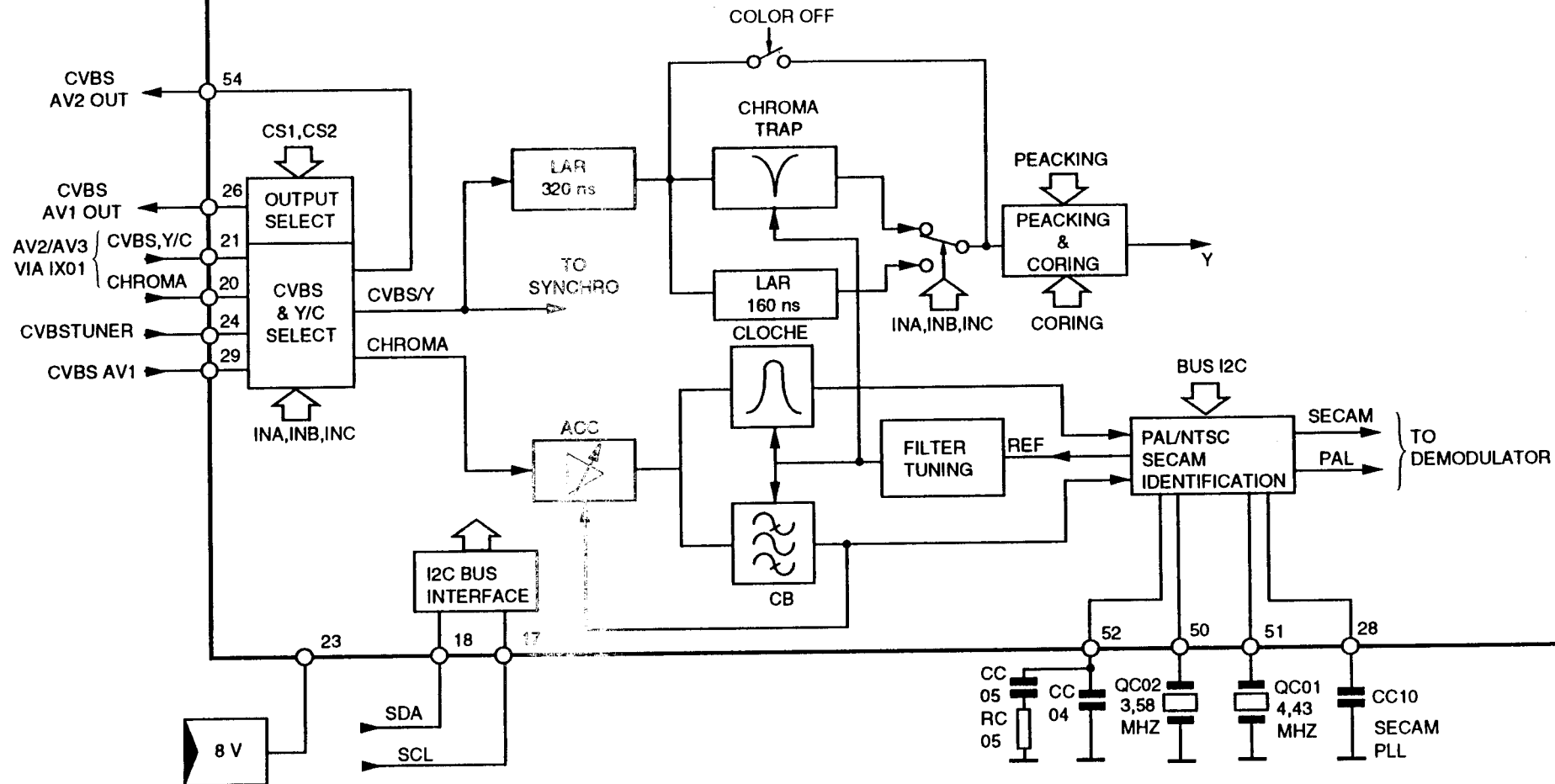
CHROMA DEMODULATION

SWITCHING OF RGB AV1 AND OSD

PROCESSING RGB



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GENERAL

All luminance and chrominance processing is performed inside integrated circuit IV01 TDA 8855H. Integration was increased and very few components are external to the integrated circuit.

The power supply of this circuit with 8 V is located on pin 23, the I2C bus allowing control of video processing.

LUMINANCE/CHROMINANCE SEPARATION

The composite video signal switched for processing is applied to the sub carrier rejection stage accorded automatically with the standard detected.

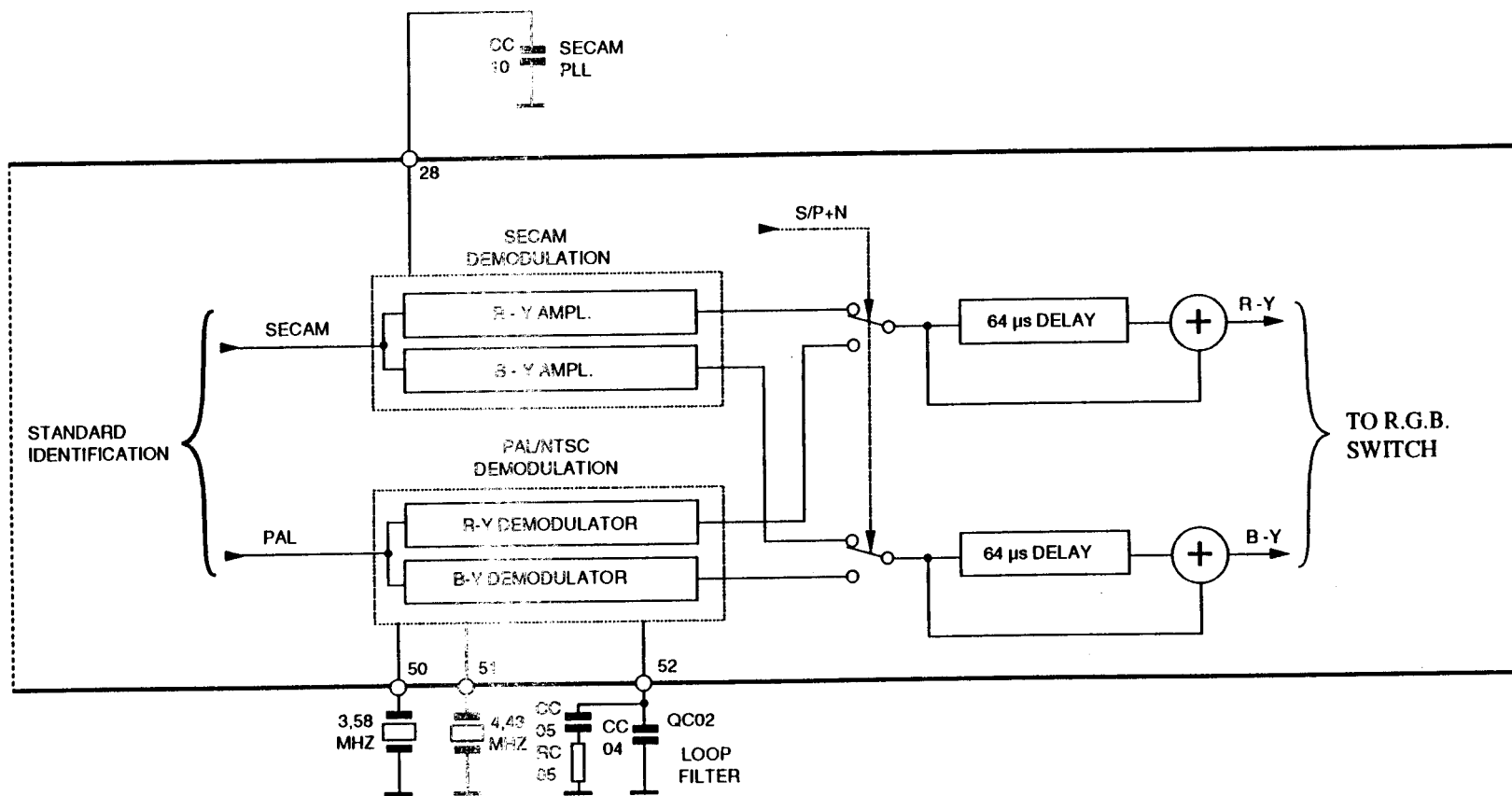
In Y/C mode the sub carrier rejector is suppressed.

The luminance signal passes through the contour adjustment circuit and a noise reducer prior to being switched with the signals R-Y and B-Y.

CHROMA IDENTIFICATION

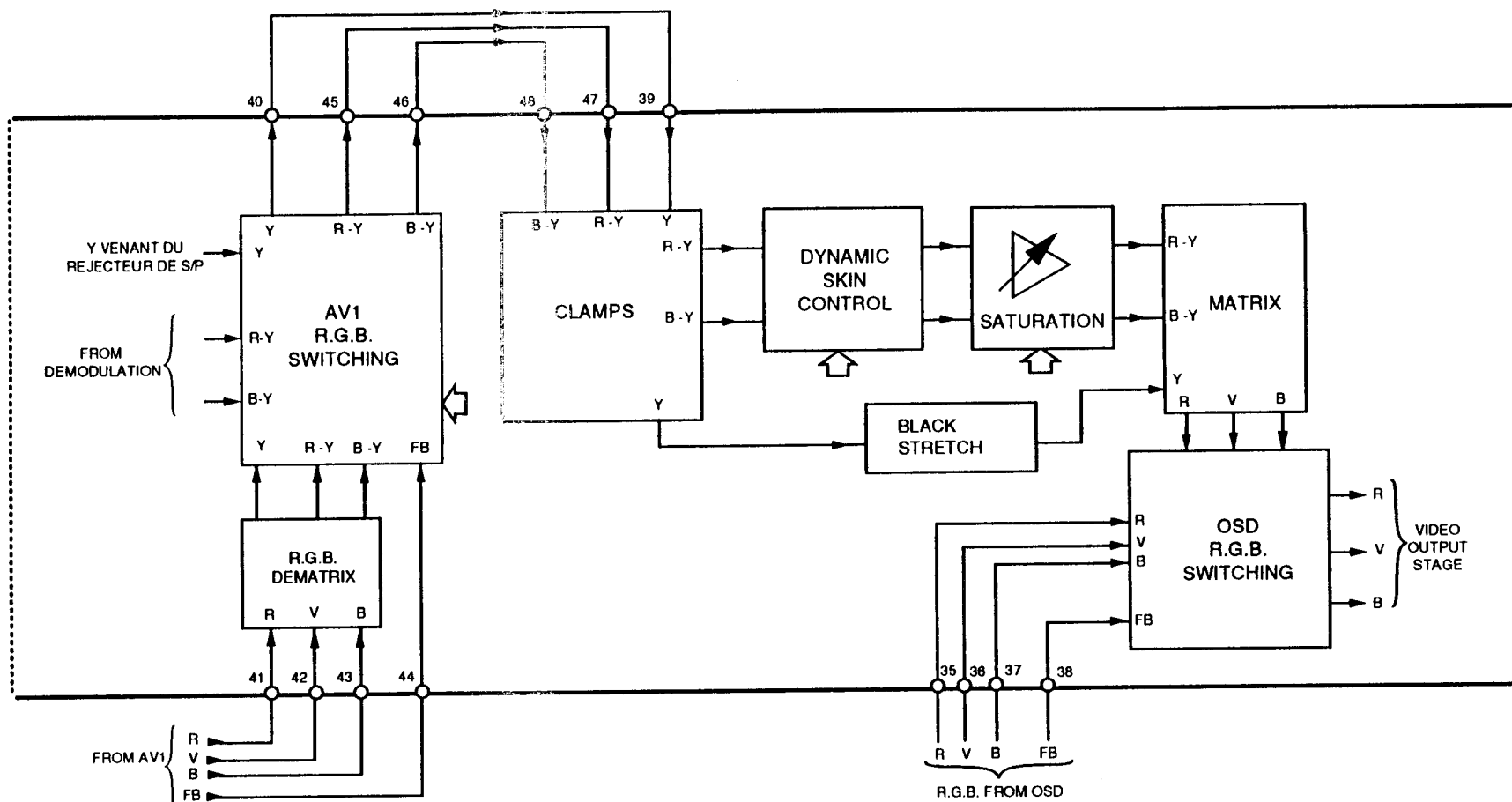
In IV01, the separated video or chroma signals are directed to the input chroma filter (bell or bandwidth), the accord of this filter is adjusted automatically by a PLL loop accorded for PAL and NTSC by the 3.58 or 4.43 MHz oscillators or for SECAM by the B-Y demodulator at 4.250 MHz.

This decoder is multi-standard and can identify all known standards (PAL 4.43, PAL 3.58, SECAM, NTSC 4.43, NTSC 3.58). Only two quartzes and a loop filter are external to the integrated circuit. Identification of the standard is automatic but can be forced by the I2C bus.



CHROMA DEMODULATION

The identified chroma signals are applied towards demodulators R-Y and B-Y. In PAL and NTSC there are two synchronous demodulators controlled by the 4.43 or 3.58 MHz oscillator. In SECAM the signals R-Y and B-Y cross two delay lines of 64 ms for SECAM permutation prior to application at the switching circuit.



SWITCHING OF RGB, AV1 AND OSD

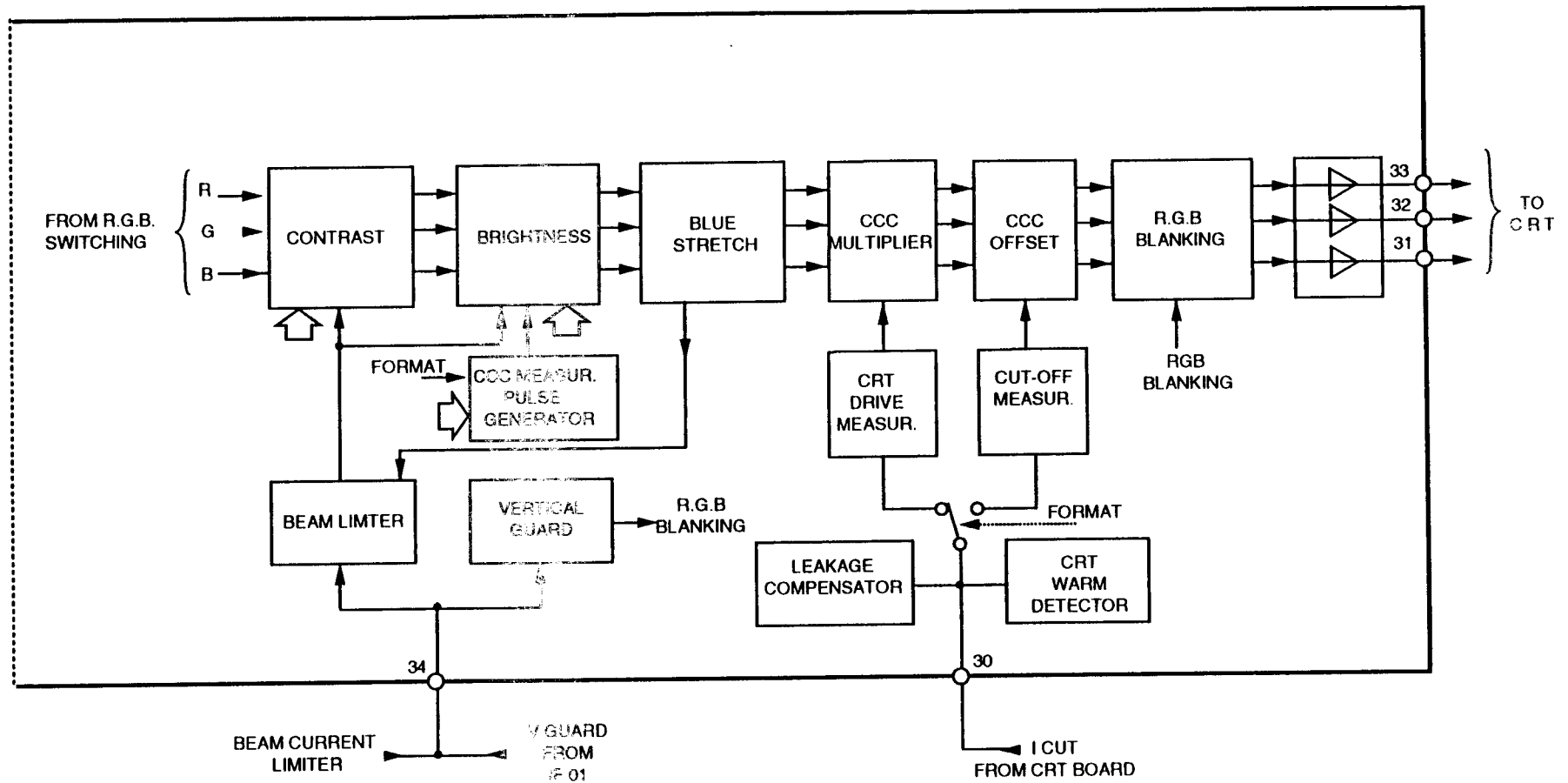
The signals Y, R-Y, B-Y are fed to the first switching input, the dematrixed R, G, B from the AVI SCART connector (pins 41, 42, 43) are present at the second input, the FB fast switching signal (pin 44) makes the selection between the two sources.

The switched signals leave the integrated circuit pins 40, 45, 46 and are fed to pins 48, 47, 39.

After a clamp stage followed by NTSC shade correction and chroma saturation they are RGB matrixed.

The RGB are again switched with the RGB from the OSD pins 35, 36, 37, the rapid switching signal at pin 38 making the selection.

The switched RGB signals are sent to the final video stage.



RGB PROCESSING

The selected signals are adjusted for light/contrast. The beam brake data from pin 34 is received at the light and contrast adjustment stages. This data, originating from the base of the THT elevator windings, indicates the tube rate. The "VERTICAL GUARD" signal allows, in the case of frame failure, cutting off the three channels to avoid burning the tube.

The blues extension circuit allows reducing the red and green when the image becomes very luminous.

Slaving of the tube to the black and white levels is performed by the intermediary of the ICUT data pin 30, such data also allowing indicating to the integrated circuit that the tube is warm.

After the RVB amplification and deletion circuits the signals are output from pins 31, 23 and 33 towards the CRT.

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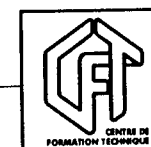
R G B AMPLIFIER

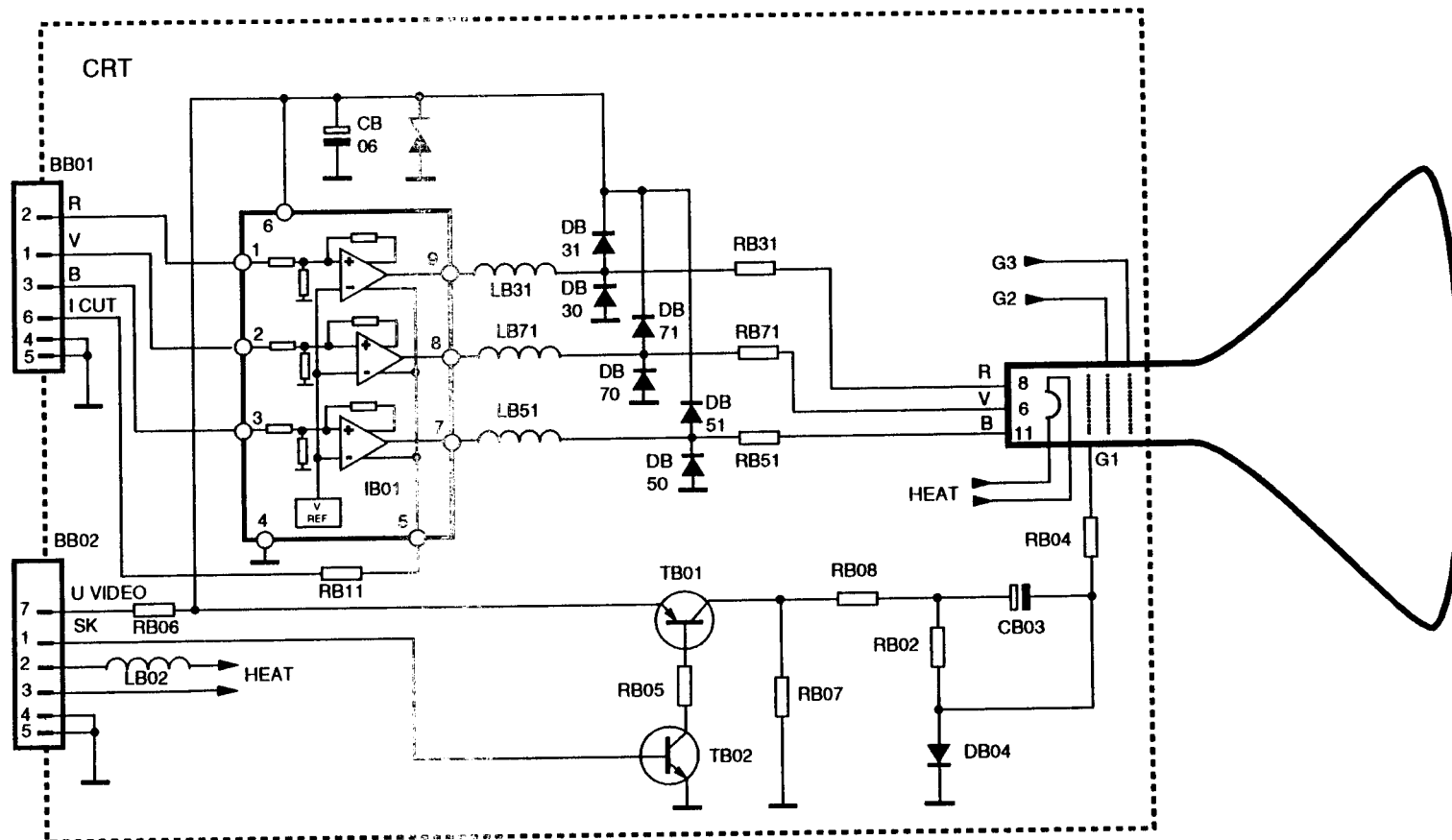
CONTENTS

GENERAL

RGB AMPLIFIER

SPOT BLOWING





GENERAL

RGB amplification is performed by circuit IB01 TDA 6107Q. This circuit is based on the same concept as circuit IV01 TDA 8855, that is with the minimum of external components.

RGB AMPLIFIER

This circuit is composed of three independent amplifiers. It is supplied with power by the U VIDEO 200 V at pin 6, the polarisation voltages and gain are obtained through resistors and an internal reference voltage generator. RGB are present at pins 1, 2 and 3 and the amplified RGB exit via pins 7, 8 and 9.

SPOT BLOWING

When the TV set is in use, the transistors TB01 and TB02 are saturated, the capacitor is charged at the supply voltage, that is 200 V, G1 is polarised at 0.7 V by diode DB04.

When the TV set is switched off, the signal SK from μ C IR01 blocks transistors TB01 and TB02, capacitor CB04 discharges via RB02 causing blocking of DB04 and applying a negative voltage to G1.S

AUDIO PROCESSING

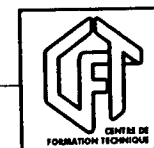
CONTENTS

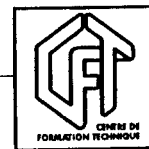
AUDIO MODULE WITH MSP34XX

AUDIO MODULE WITH EQU SUB AMVD

AUDIO MODULE WITH EQU SUB AMDP

POWER AMPLIFIER (DOLBY VERSION)





AUDIO MODULE WITH MSP34XX

The integrated circuit IS40 (MSP3400 or MSP3410) is used for audio processing. It is managed by an 18.432 MHz clock. The management μ C, IR01, controls it via the IIC bus and executes reset via pin 29.

The circuit performs :

- Demodulation of the audio FM intermediary carriers
- Demodulation of the NICAM audio (MSP3410 only)
- Switching of the various analogue audio sources for the SCART outputs
- Analogue/digital conversion of the various audio sources
- Correction of the digital audio signals (tone, pseudo stereo, extended stereo, volume, etc.)
- Digital/analogue conversion.

The audio signals for the hps outputs are available on pins 28 and 29 of IS40. They are sent to the power amplifier IS80.

The transistor TS81 and its associated components, controlled by output 28 of IR01, supply audio mute during :

- Changing of channels
- Searching for a transmitter
- Cutting off the sound (silence key)
- Starting up the TV set when the tube is not warm
- Switching off the TV set
- The stand by and timer functions.

AUDIO MODULE WITH EQU SUB AMVD

AUDIO MODULE WITH EQU SUB AMDP

The circuit EQU SUB AMVD incorporates two integrated circuits, 1 MSP3410D and 1 DPL3518A.



POWER AMPLIFIER (DOLBY VERSION)

IA001 amplifies the power for the left and right hps

IA002 amplifies the power for the centre and surround hps

A measurement of the current supplying the integrated circuits IA001 and IA002 is made via RA080 and TA080. In the case of overload, TA080 is saturated and triggers the audio mute, via the monostable TA072/TA077.