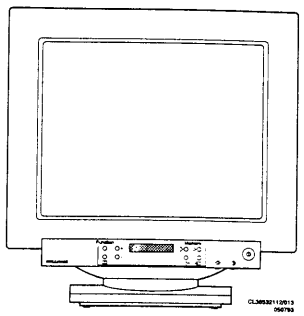
20" and 21" Autoscan ...itor

C2082DAS/II

Service
Service
Service

2020DC
C2182DAS/II



Service Manual

Horizontal frequencies
30 to 82 kHz

Contents

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1. Technical data

C2082DAS/II 2020DC

General

- Mains voltage	: 90 - 132V or 180 - 264V
- Mains frequency	: 47 - 63Hz
- Power consumption	: 180 W
- Operating temperature	: 5°C to 40°C
- Weight	: 37 kg
- Dimensions (H, W, D)	: 485, 498, 538 mm
- Video signal	: 0.714 Vp-p 75 Ω / high impedance (selectable)

Sync. signal

- Separate sync.	: TTL-level
- Composite sync.	: TTL-level
- Composite sync.	: on Green

Picture tube

- Size	: 20 inch (trinitron)
- Light transmission	: 39 %
- EHT voltage	: 27,5 kVolt
- Pitch	: 0.30 mm aperture grille pitch

Video

- Dot rate	: 150 MHz
- Image area:	
* horizontal	: 387,2 mm
* vertical	: 291,6 mm
- Vertical frequency	: 50 - 160 Hz
- Vert. Sync. polarity	: positive or negative
- Horizontal frequency	: 30 to 82 kHz
- Hor. Sync. polarity	: positive or negative
- Resolution	: up to 1280x1024 at 76 Hz refresh rate
- Misconvergence	: 0.3 mm in the center 0.4 mm in the corners

Preset modes

- Number of preset modes	: 22 (14 factory presets)

* Technical data are subject to change without notice

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General

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Sync. signal

- Separate sync.	: TTL-level
- Composite sync.	: TTL-level
- Composite sync.	: on Green

Picture tube

- Size	: 21 inch (flat)
- Light transmission	: 52 %
- EHT voltage	: 27,5 kVolt
- Pitch	: 0.28 mm

Video

- Dot rate	: 150 MHz
- Image area:	
* horizontal	: 406,4 mm
* vertical	: 304,8 mm
- Vertical frequency	: 50 - 160 Hz
- Vertical sync. polarity	: positive or negative
- Horizontal frequency	: 30 to 82 kHz
- Horizontal sync. polarity	: positive or negative
- Resolution	: up to 1280x1024 at 76 Hz refresh rate : up to 1600x1280 at 60 Hz refresh rate
- Misconvergence	: 0.3 mm in the center 0.5 mm in the corners

Preset modes

- Number of preset modes	: 22 (14 factory presets)

* Technical data are subject to change without notice

Technical data

Factory Preset Video Timings

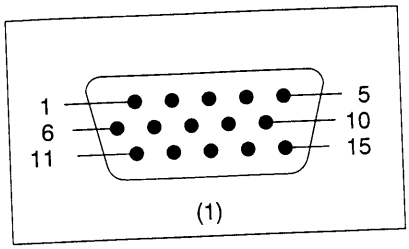
Item	Unit	1280*1024 64kHz / 60Hz	640*350 VGA mode 1	640*400 VGA mode 2	640*480 VGA mode 3	800*600 S-VGA std.
		1	2	3	4	5
Mem. channnel	No.	107.3	25.175	25.175	25.175	35.86
Pixel rate	MHz	63.9	31.468	31.468	31.468	35.16
Hor. freq.	kHz	60	69.93	69.93	59.94	56.25
Vert. freq.	Hz	1280	640	640	640	800
Hor. resol.	dots	1024	350	400	480	600
Vert. resol.	H	1680	800	800	800	1020
Period (hor.)	dots	400	160	160	160	220
Blanking	dots	30	16	16	16	24
Sync delay	dots	108	96	96	96	72
Sync width	dots	N	N	N	N	N
Interlace	Y/N	1065	450	450	525	625
Period (vert)	lines	41	100	50	45	25
Blanking	lines	3	37	12	10	1
Sync delay	lines	3	2	2	2	2
Sync width	lines	Y	N	N	N	N
Sync on green	Y/N		+	-	-	+
TTL H sync	±		-	+	-	+
TTL V sync	±					
TTL comp sync	±					
Hor. width	mm/20" mm/21"	340/20" 356/21"	350/20" 380/21"	350/20" 380/21"	350/20" 380/21"	350/20" 350/21"
Vert. width	mm/20" mm/21"	272/20" 285/21"	263/20" 285/21"	263/20" 285/21"	263/20" 285/21"	263/20" 263/21"

Item	Unit	800*600 S-VGA	XGA	640*480 Maclicx	800*600 VESA 1	1024*768 VESA 2
		6	7	8	9	10
Mem. channnel	**No.**	40	44.9	30.25	50	65
Pixel rate	MHz	37.88	35.52	35.0	48.077	48.36
Hor. freq.	kHz	60.3	87/43.5	66.7	72.187	60
Vert. freq.	Hz	800	1024	640	800	1024
Hor. resol.	dots	600	384/768	480	600	768
Vert. resol.	H	1056	1264	864	1040	1344
Period (hor.)	dots	256	240	224	240	320
Blanking	dots	40	8	64	56	25
Sync delay	dots	128	176	64	120	136
Sync width	Y/N	N	Y	N	N	N
Interlace	lines	628	409	525	666	806
Period (vert)	lines	28	25	45	66	38
Blanking	lines	1	0/0.5	3	37	3
Sync delay	lines	4	4	3	6	6
Sync width	Y/N	N	N	N	N	N
Sync on green	±	+	+	-	+	+
TTL H sync	±	+	+	-	+	+
TTL V sync	±					
TTL comp sync	mm/20" mm/21"	350/20" 380/21"	350/20" 380/21"	350/20" 380/21"	350/20" 380/21"	350/20" 380/21"
Hor. width	mm/20" mm/21"	263/20" 285/21"	263/20" 285/21"	263/20" 285/21"	263/20" 285/21"	263/20" 285/21"
Vert. width						

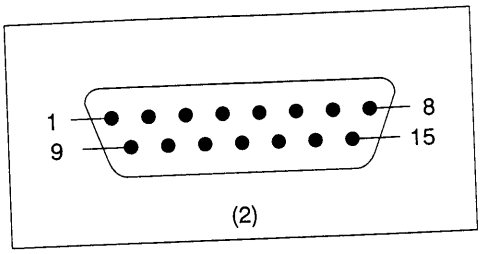
Item	Unit	1024*768 VESA 3	1152*870 69kHz / 75Hz	832*624 50kHz / 75Hz	1280*1024 81kHz / 76Hz	
		11	12	13	14	
Mem. channnel	No.	75	100	57.28	135	
Pixel rate	MHz	56.47	68.68	49.7	81.13	
Hor. freq.	kHz	70.07	75	75.18	76.1	
Vert. freq.	Hz	1024	1152	832	1280	
Hor. resol.	dots	768	870	624	1024	
Vert. resol.	H	1328	1456	1152	1664	
Period (hor.)	dots	304	304	320	384	
Blanking	dots	24	32	32	32	
Sync delay	dots	136	128	64	104	
Sync width	Y/N	N	N	N	N	
Interlace	lines	806	915	667	1066	
Period (vert)	lines	38	45	43	42	
Blanking	lines	3	3	1	2	
Sync delay	lines	6	3	3	8	
Sync width	Y/N	N	N	N	N	
Sync on green	±	+	-	-		
TTL H sync	±	+	-		-	
TTL V sync	±					
TTL comp sync	mm/20" mm/21"	350/20" 380/21"	350/20" 380/21"	350/20" 380/21"	340/20" 356/21"	
Hor. width	mm/20" mm/21"	263/20" 285/21"	263/20" 285/21"	263/20" 285/21"	272/20" 285/21"	
Vert. width						

2. Connection facilities

Pin assignment 15p "D" shell (3 rows)



Pin assignment 15p "D" shell (2 rows)



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INPUT- OUTPUT SIGNALS

15 pins D-Shell connector

D-Shell adapter (3 rows to 2) rows)

Pin	Assignment	Sensitivity	Terminal impedance	Assignment	Sensitivity	Terminal impedance
1	Red Video input	RGB-analog	75Ω	Red ground		
2	Green Video input/ sync. on green	RGB-analog	75Ω	Red Video input/	RGB-analog	75Ω
3	Blue Video input	RGB-analog	75Ω	Composite sync.		2.2 kΩ
4	Ident output (connected to 10)			Sense 0		
5	Self test input (ground)			Green Video input (Sync. on green)	RGB-analog	75Ω
6	Red Video ground			Green ground		
7	Green Video ground			Sense 1		
8	Blue Video ground			Not connected		
9	Not connected (no pin)			Blue Video input	RGB-analog	75Ω
10	Logic ground			Sense 2		
11	Ident output (connected to 10)			Comp-sync and V-sync ground		
12	Not connected			V-sync		
13	Horizontal sync. (or Hor. + Vert. sync)	TTL Level L=0-0.8V H=2.4 -5V	2.2 Ωk pull down	Blue Video ground		
14	Vertical sync.	TTL Level L=0-0.8V H=2.4 -5V	2.2 Ωk pull down	H-sync ground		
15	Not connected (no pin)			H-sync		

3. Warnings and Notes

Warnings

1. Safety regulations require that the unit should be returned in its original conditions and that components identical to the original components are used. The safety components are indicated by the symbol ⚠.

2. In order to prevent damage to **ICs** and transistors, all high-voltage flash-overs must be avoided. In order to prevent damage to the picture tube, the method shown in Fig. 3.1 should be used to discharge the picture tube. Use a high-voltage probe and a multimeter (position DC-V). Discharge until the meter reading is **0 V** (after approx. 30s).

3. **ESD**

   All **ICs** and many other semiconductors are sensitive to electrostatic discharges (ESD). Careless handling during repair can drastically shorten the life. Make sure that during repair you are connected by a pulse band with resistance to the same potential as the earth of the unit. Keep components and tools also at this same potential.

4. When repairing a unit, always connect it to the mains voltage via an isolating transformer.

5. Be careful when taking measurements in the high-voltage section and on the picture tube panel.

6. It is recommended that safety goggles are worn when replacing the picture tube.

7. When making settings, use plastic rather than metal tools. This will prevent any short-circuit and the danger of a circuit becomes unstable.

8. Never replace modules or other components while the unit is switched on.

9. Together with the deflection unit the picture tube is used as an integrated unit. Adjustment of this unit during repair is therefor not recommended.

10. After repair the wiring should be fastened once more in the cable clamps for this purpose.

Notes

1. The semiconductors indicated in the circuit diagram(s) and in the parts lists are completely interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.

2. The direct voltages and oscillograms are average voltages. They have been measured by using the service test software and under the following conditions:
   - Signal pattern : grey scale.
   - Mode: VGA (640 * 480) 31,5kHz/60Hz.
   - Contrast and Brightness to maximum.

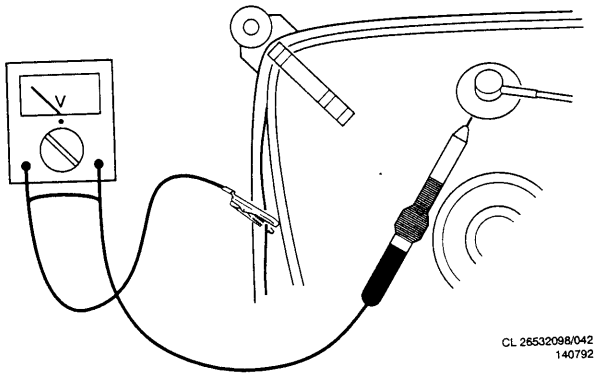


Fig. 3.1

4. Mechanical instructions

General

To be able to perform measurements on the circuit boards, the unit should placed in the service position first. For the location of the circuit boards and the item numbers mentioned in this chapter we refer to the exploded view drawing.

Rear cover, item 101
- Remove the screws , item 112 (4x)
- The rear cover can now be removed.

Top screening, item 37
- Loosen the crews item 24 (5x) a few turns.
- The screening can now be removed by sliding it back wards.

Screening left, item 5
- Loosen the screws item 8 (3x) a few turns.
- The screening can now be removed by swinging it to the left side.
- The PCB boards, "Main Panel", "Horizontal Sync. Panel", "Low Signal Panel" and "Degaussing Panel" are than reachable.

Screening right, item 51
- Loosen the screws item 8 (3x) a few turns.
- The screening can now be removed by swinging it to the right side.
- The PCB Board, " Supply Panel" is then reachable.

Rear screening with input sockets, item 11
- Remove the screws item 10 (9x)
- The screening with input sockets can now be pulled backwards.
  Remark: By leaving the wire trees connected, the monitor is still working.
- The PCB Boards, "Video Panel", "Video Interface Panel" and CRT Panel are than reachable.

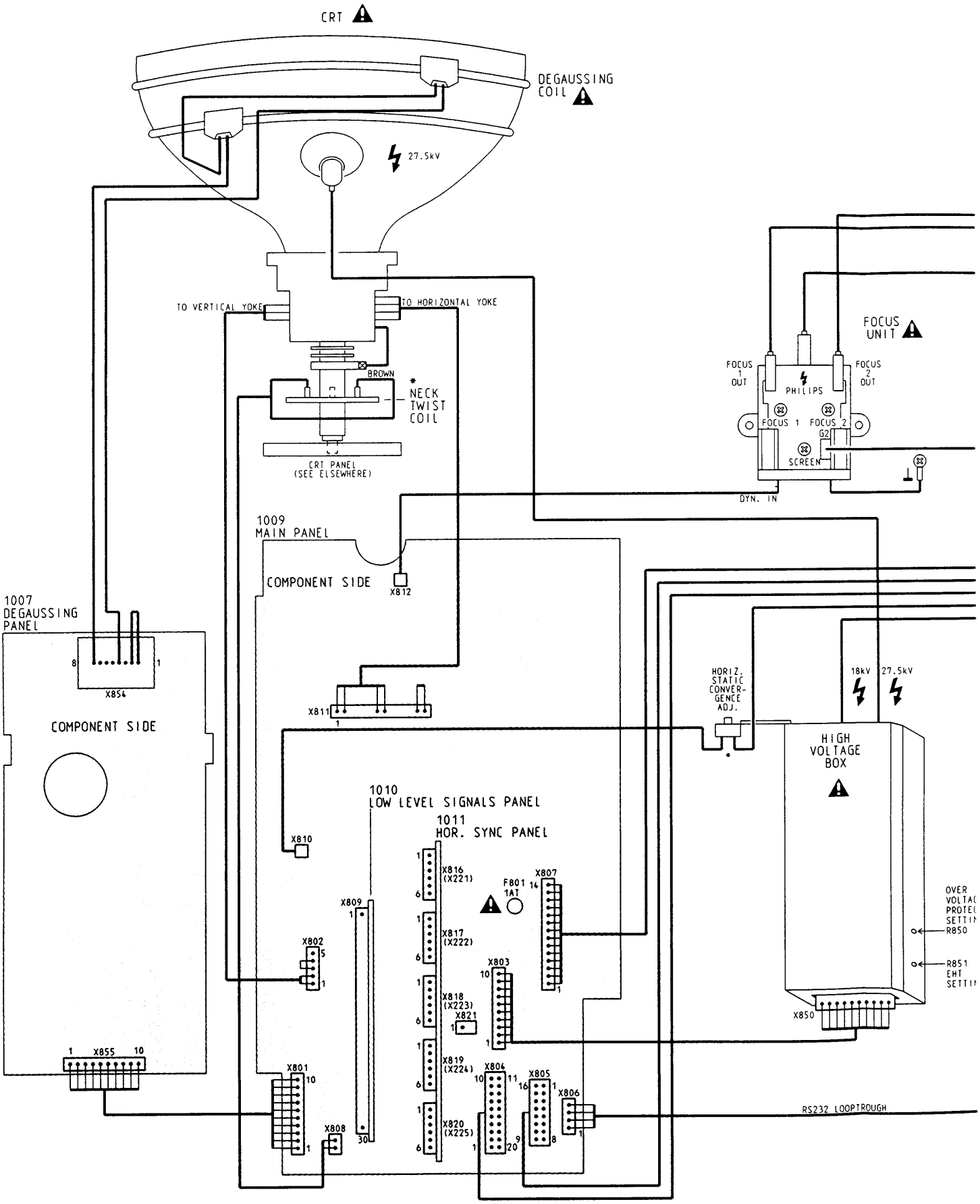
Abbreviations

ABBREVIATIONS

AA1200V	: HORIZONTAL DEFLECTION YOKE (HOT)
AA200V/AE200V	: JUMPER ON H DEF. SUPPLY VOLTAGE
ABL	: BEAM CURRENT INDICATION FOR BEAM LIMITER CIRCUIT (-1V/0.1mA)
AG200	: HORIZONTAL DEFLECTION YOKE
BAL/PAR.IN	: BALANCE PARALLELOGRAM INPUT
BCCE	: BUFFERED CONVERGENCE CHIP ENABLE
BCCE0	: BUFFERED CONVERGENCE CHIP ENABLE 0
BCCE1	: BUFFERED CONVERGENCE CHIP ENABLE 1
BC OUT	: BUFFERED CLOCK CONVERGENCE DATA OUT
BCK	: BUFERED CLOCK
BDIN	: BUFFERED DATA INPUT
BDOUT	: BUFFERED DATA OUTPUT
BHOR	: BUFFERED HORIZONTAL SYNC
BLANK	: LOGICAL BLANK SIGNAL ACTING ON HVP SIGNAL (ACTIVE HIGH)
BLD	: BUFFERED LOAD
BLP	: BUFFERED PAR ALLEL LOADS
BRXD	: BUFFERED RECIEVER DATA
BRIGHT	: DC NEGATIVE VOLTAGE FOR G1 CONTROL (BRIGHTNESS)
BSTB	: BUFFERED STROBE
BTXD	: BUFFERED TRANSMITTER DATA
BVER	: BUFFERED VERTICAL SYNC
CCE	: CONVERGENCE CHIP ENABLE
CDOUT	: CONVERGENCE DATA OUT
CLAMP	: BACKPORCH SIGNAL FOR VIDEO AMP. DC RESTORATION
CLK	: CLOCK SIGNAL
COMP	: COMPENSATION
DATA-IN	: SERIAL DATA SIGNAL FOR THE MC14410 DACs
DATA-OUT	: SERIAL DATA OUT
DATA-V	: SERIAL DATA FOR VIDEO DACs
DATIN	: SERIAL DATA INPUT
DATOUT	: SERIAL DATA OUTPUT
DC.V.CONV	: DC VERTICAL CONVERGENCE
DC.V.HEIGHT	: DC VERTICAL HEIGHT
DC.H.WIDTH	: DC HORIZONTAL WIDTH
DC.H.SHIFT	: DC HORIZONTAL SHIFT
DEGAUSS	: ONE-SHOT SIGNAL FOR DEGAUSSING CIRCUIT
DEL-ST	: DELAYED STROBE FOR S-CORRECTION CAPACITOR LOADING
DF OUT	: DYNAMIC FOCUS OUTPUT
DIN-	: SERIAL DATA TO LOGIC BOARD
DOUT	: DATA OUT
E	: ENABLE
EN1/EN2	: COMPLEMENTARY SIGNAL FOR VIDEO INPUT SELECTION (ACTIVE HIGH)
E/W-KEY IN	: EAST/WEST KEYSTONE INPUT
GATE	: SIGNAL AT HALF VERTICAL FREQ. FOR PERIOD MEASUREMENT
H1	: D-SUB HORIZONTAL OR COMPOSITE SYNC INPUT
HD	: DRIVE SIGNAL FOR HORIZONTAL OUTPUT STAGE
H.DC-SHIFT	: HORIZONTAL DC SHIFT
H-DRIVE	: HORIZONTAL OSCILLATOR OUTPUT
HFL	: HORIZONTAL RETRACE PULSE (FROM POWER STAGE)
HFLY	: HORIZONTAL FLYBACK VIDEO
H-H+V	: BNC HORIZONTAL OR COMPOSITE SYNC INPUT
H-H+V-S	: SELECTED HORIZONTAL OR COMPOSITE SYNC
HOR	: HORIZONTAL SYNC (TO LOGIC BOARD)
H-PHASE	: DC CONTROL FOR HORIZONTAL OSCILLATOR PHASE ADJUSTMENT
HV-EN	: ENABLE SIGNAL FOR HIGH VOLTAGE GEN. (ACTIVE HIGH)
HV-ON	: HIGH VOLTAGE STATUS INDICATION (+5V IF ON)
HVP	: DEFLECTION FAIL SIGNAL ACTING ON G1 CIRCUIT (ACTIVE LOW)

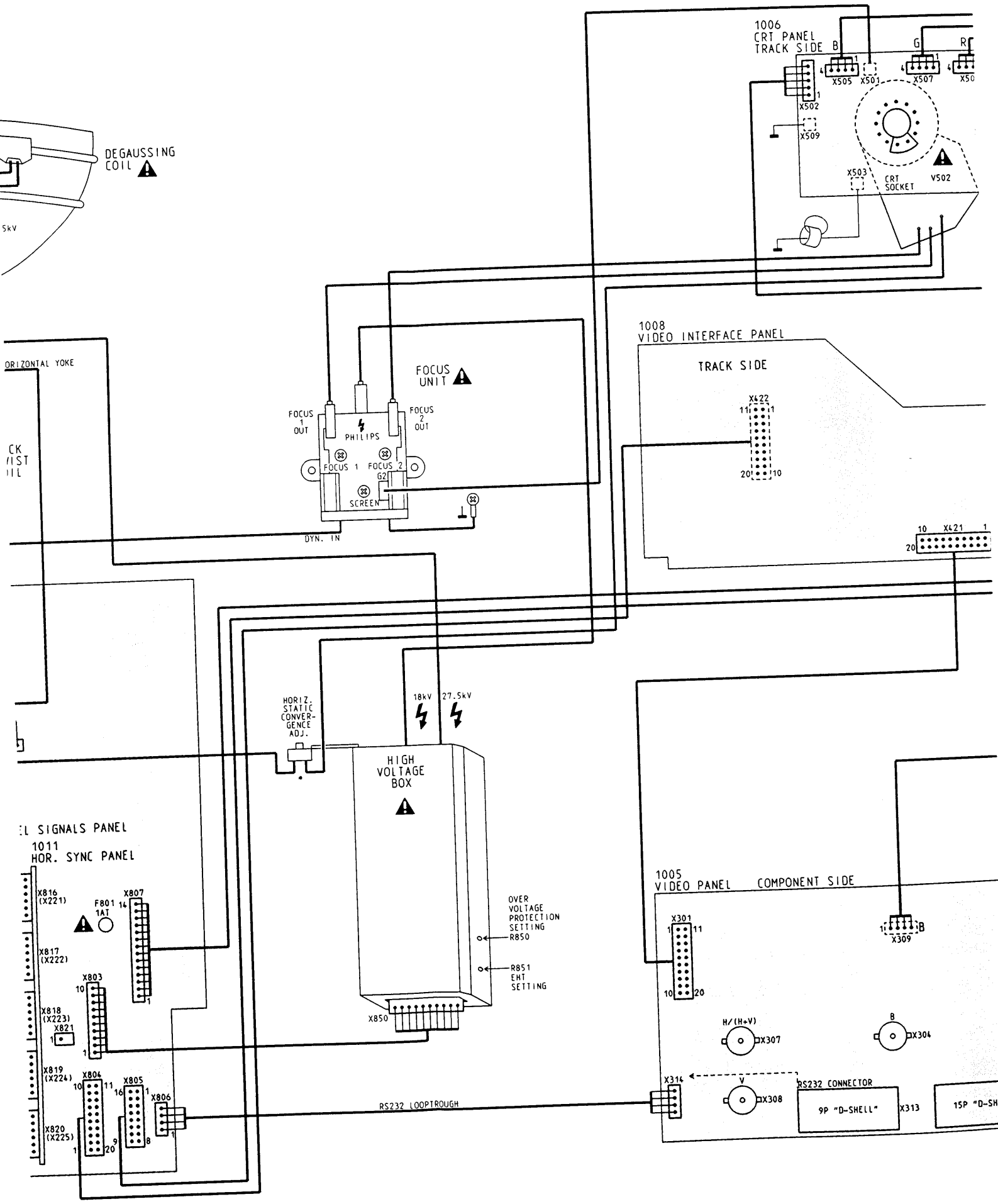
H.CONV	: DC CONTROL FOR HORIZONTAL STATIC CONVERGENCE
H.CONV.F	: FEEDBACK FROM HORIZONTAL STATIC CONVERGENCE AMPLIFIER
H.DC SHIFT	: DRIVE SIGNAL FOR RASTER CENTERING
H.FAIL	: HORIZONTAL DEFLECTION STATUS (+5V IF ON
H.LIN-FB	: FEEDBACK FROM HORIZONTAL LINEARITY COIL
H.LIN-OUT	: DC CONTROL FOR HORIZONTAL LINEARITY COIL
H.STATIC	: HORIZONTAL CONVERGENCE OUTPUT
LD	: LAOD
LDAC	: LOAD SIGNAL FOR GEOMETRY DAC,S
LOCKPLL	: HORIZONTAL OSCILLATOR STATUS INDICATION
N.C.	: NOT CONNECTED
NOSYNC	; HORIZONTAL SYNC STATUS INDICATION
OUT-LOCK	: HORIZONTAL OSCILLATOR LOCKED / NOT LOCKED INDICATION
PL	: STROBE SIGNAL FOR U806 (PARALLEL LOAD)
POL-HOR	: HORIZONTAL SYNC POLARITY INDICATION
POL-VER	: VERTICTAL SYNC POLARITY INDICATION
RD	: DRIVE SIGNAL FOR HORIZONTAL SUPPLY MODULATOR (V806)
RESBLK	: RESET BLANK
RFSS	: FLIP-FLOP RESET SIGNAL
RXD	: RECEIVE DATA (RS232 PORT)
R.RELE	: REED RELAIS CONNECTION FOR TERMINATION SWITCH
R/G/B GAIN	: DC CONTROL FOR VIDEO AMPLIFICATION
R/G/B IN 1	: BNC VIDEO INPUTS
R/G/B IN 2	: D-SUB VIDEO INPUTS
R/G/B LEVEL	: DC CONTROL FOR VIDEO CUT-OFF ADJUSTMENT
R/G/B OUT	: VIDEO AMPLIFIERS OUTPUT TO CRT
RSEL	: LCD DATA DRIVE (OUTPUT MICROPROCESSOR)
SEROUT	: SERIAL OUT
SDO	: SERIAL DATA OUT
ST	: STROBE SIGNAL
STB	: STROBE
STM	: STROBE SIGNAL FOR THE MC14410 DACs (LOW LEVEL BOARD)
SW	: INPUT SELECTION (BNC/D-SUB) CONTROL
TRMLCD	: TRIMMER LCD
TXD	: TRANSMIT DATA (RS232 PORT)
V	: BNC VERTICAL SYNC INPUT)
V1	: D-SUB VERTICAL SYNC INPUT
V-DRIVE	: DRIVE SIGNAL FOR THE VERTICAL DEFLECTION OUTPUT STAGE
VDYN	: DRIVE SIGNAL FOR VERTICAL DYNAMIC FOCUS AMPLIFIER
VDYNF	: FEEDBACK SIGNAL FROM VERTICAL DYNAMIC FOCUS AMPLIFIER
VERT	: VERTICAL SYNC (TO LOGIC BOARD)
VF	: VERTICAL FLYBACK (CALLED VF1 AFTER THE JUMPER ON YOKE CONN.)
V-PULSE	: RAMP GENERATOR DISCHARGE PULSE
V-S	: SELECTED VERTICAL SYNC
VY1,VY2	: VERTICAL DEFLECTION YOKE
V.BLK	: SIGNAL FOR VERTICAL RETRACE SUPPRESSION
V.DYN.CON.1	: VERTICAL CONVERGENCE FEEDBACK (FROM NECK TWIST COIL)
V.DYN.CON.2	: VERTICAL CONVERGENCE DRIVE
V.FAIL	: VERTICAL DEFLECTION STATUS
V.SYNC	: VERTICAL SYNC (AFTER PASSING SYNC PROCESSING CIRCUIT)
Y.CONV.F.B.	: VERTICAL CONVERGENCE FEEDBACK
Y.CONV.IN	: VERTICAL CONVERGENCE INPUT
V.PAR.OUT	: VERTICAL PARABOLA OUT
Y.SAWT OUT	: VERTICAL SAWTOOTH OUT
V.SHIFT	: VERTICAL SHIFT
WR	: WRITE

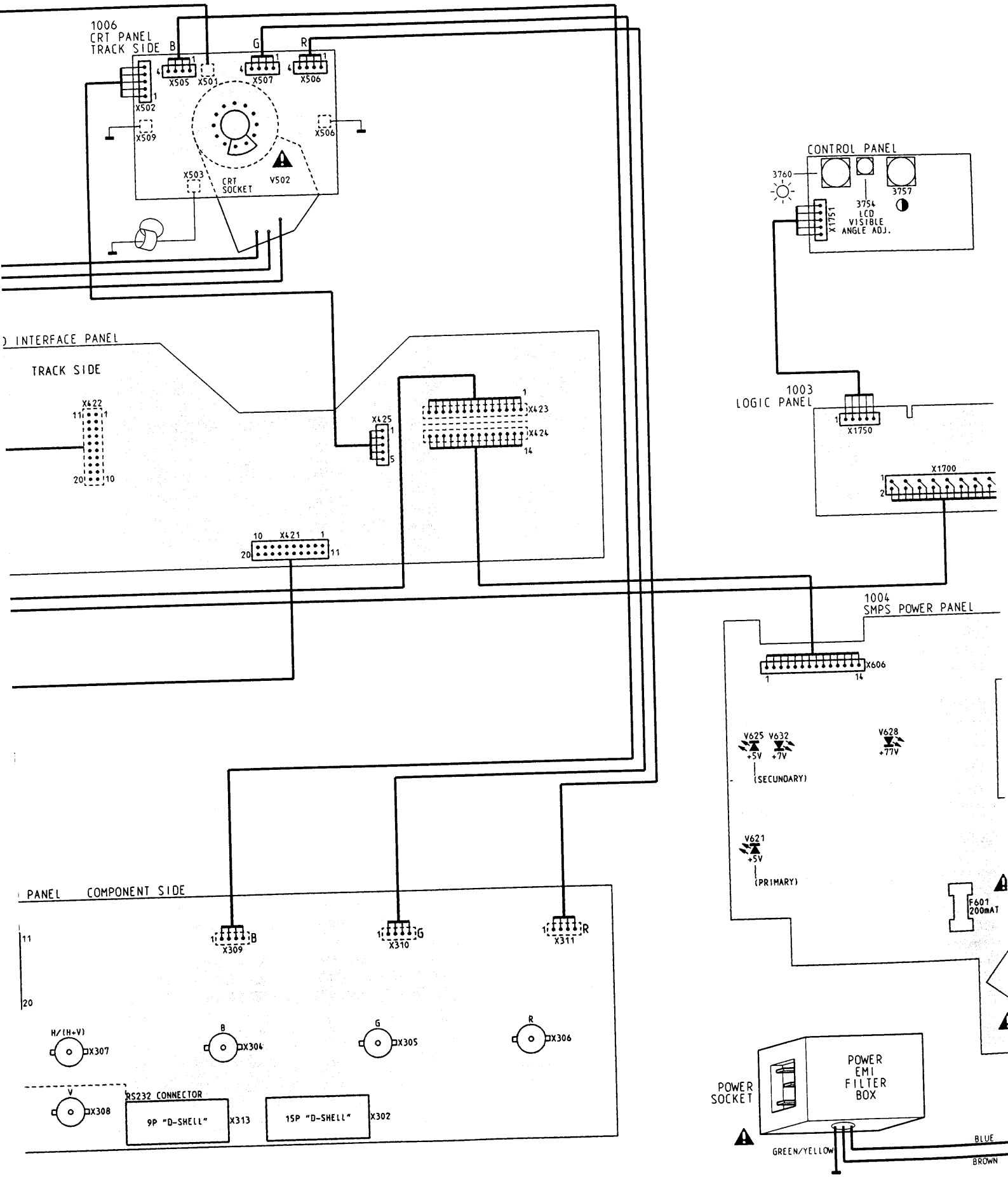
WIRING DIAGRAM



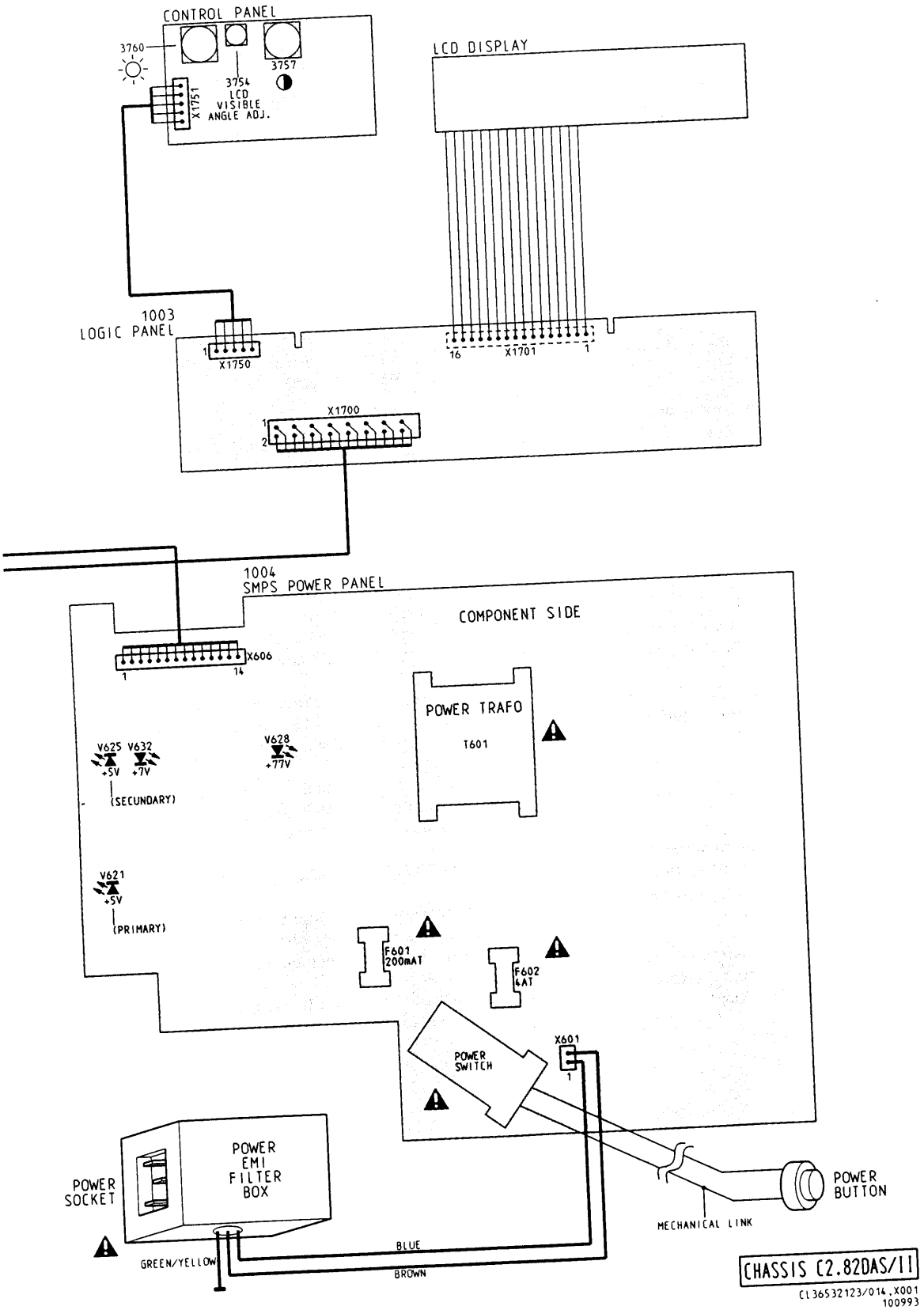
* ONLY FOR C2082DAS/BA

Wiring diagram

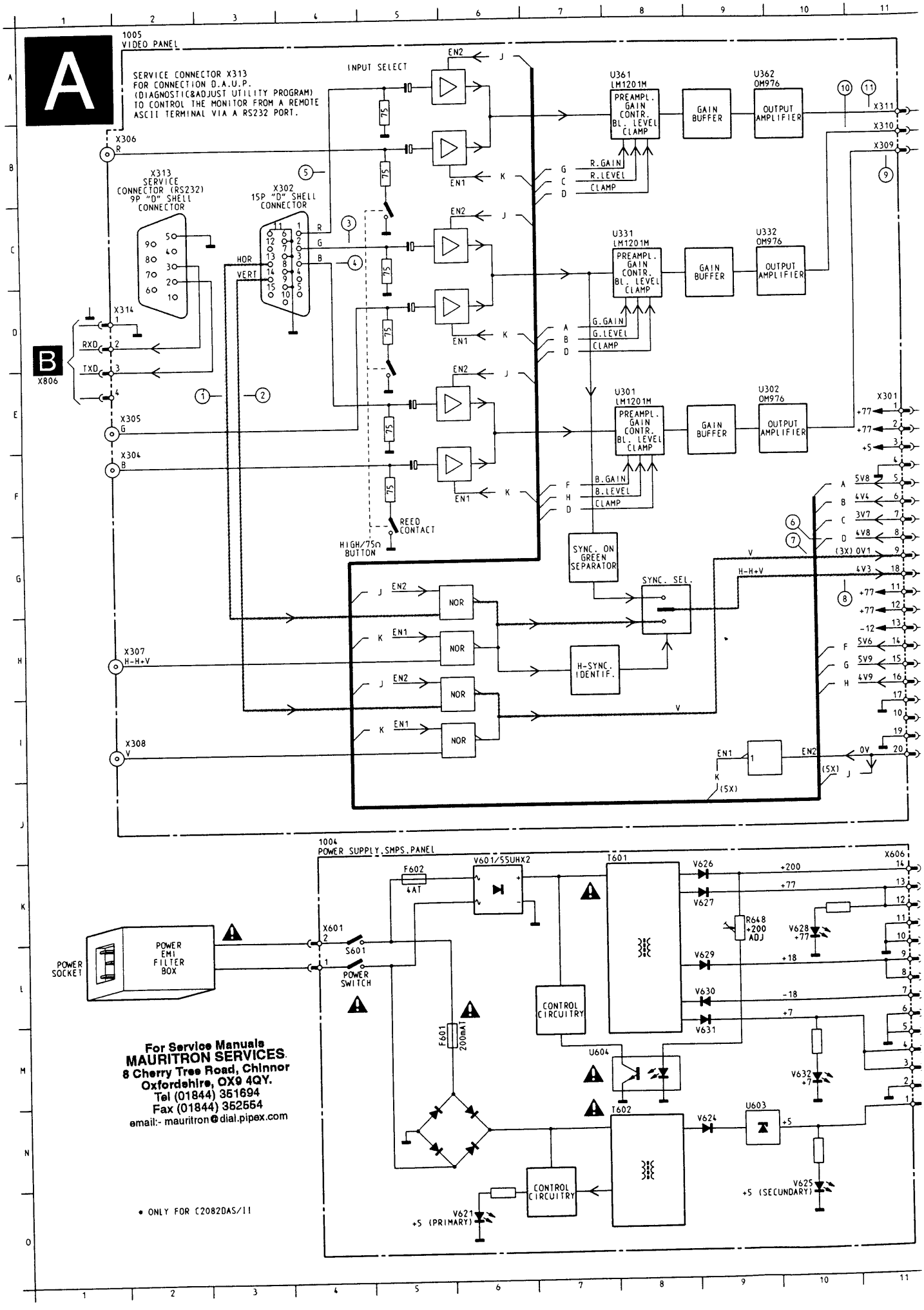



1006
CRT PANEL
TRACK SIDE
B
G
R
X505
X501
X507
X506
X502
X509
X506
X503
CRT SOCKET
V502
CONTROL PANEL
3760
3757
3754
LCD VISIBLE ANGLE ADJ.
X1751
INTERFACE PANEL
TRACK SIDE
X422
X425
X423
X424
1003
LOGIC PANEL
X1750
X1700
X421
1004
SMPS POWER PANEL
X606
V625
+5V
V632
+7V
V628
+77V
(SECUNDARY)
V621
+5V
(PRIMARY)
F601
200mAT
PANEL COMPONENT SIDE
X309
X310
X311
H/(H+V)
X307
B
X304
G
X305
R
X306
V
X308
RS232 CONNECTOR
9P "D-SHELL"
X313
15P "D-SHELL"
X302
POWER SOCKET
POWER EMI FILTER BOX
GREEN/YELLOW
BLUE
BROWN

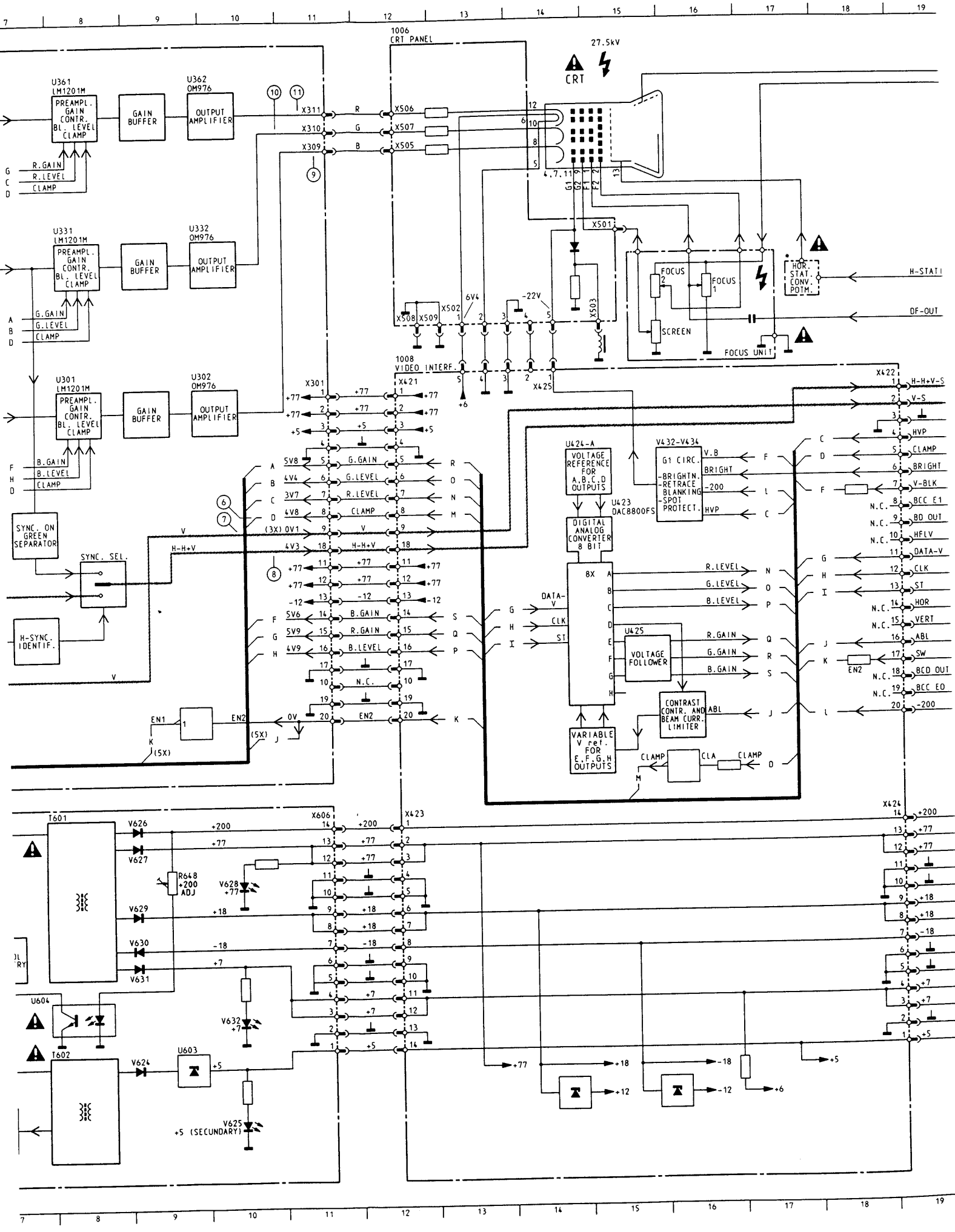
Wiring diagram

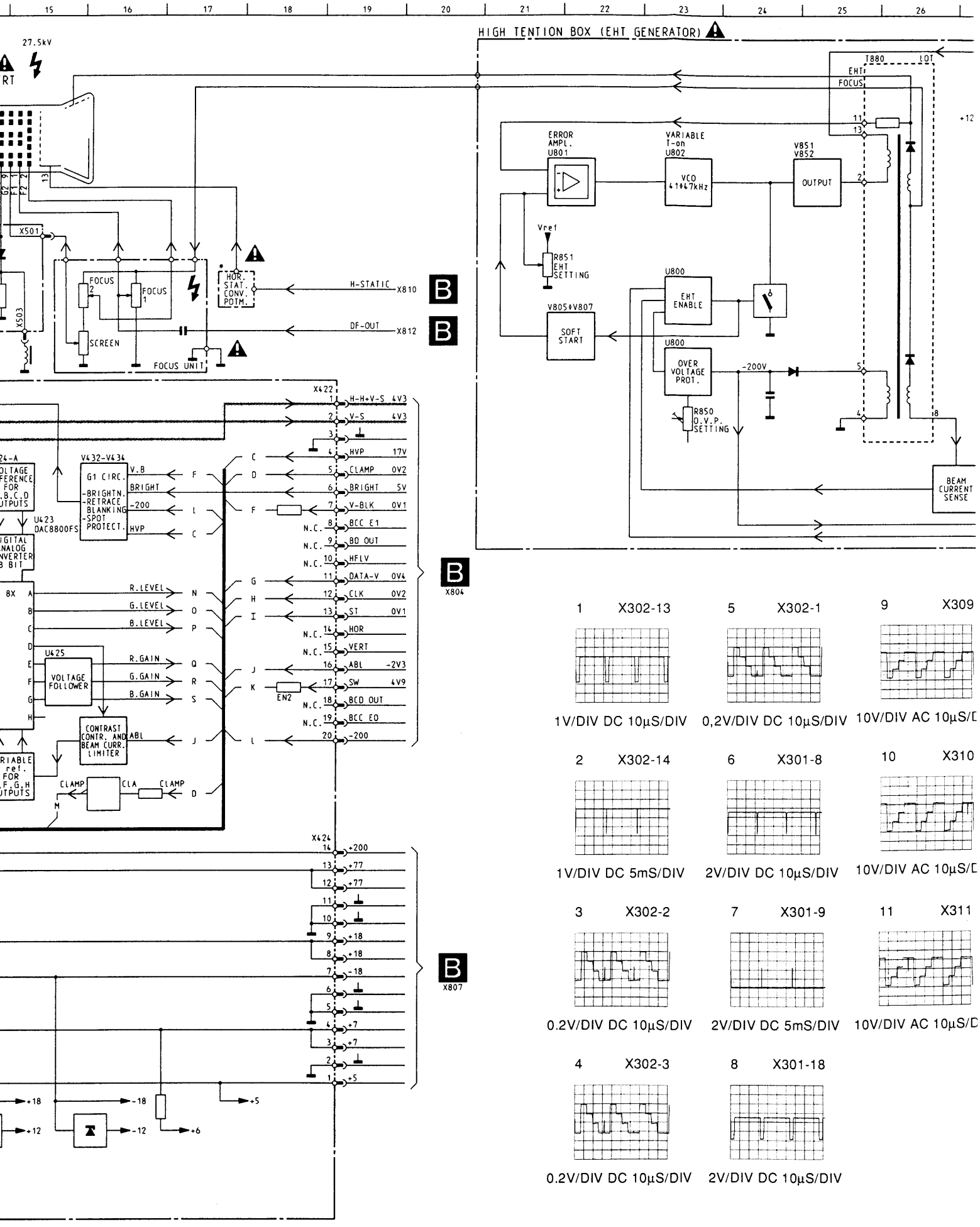


Functional block diagram



Functional block diagram





1 X302-13

1V/DIV DC 10µS/DIV

5 X302-1

0,2V/DIV DC 10µS/DIV

9 X309

10V/DIV AC 10µS/D

2 X302-14

1V/DIV DC 5mS/DIV

6 X301-8

2V/DIV DC 10µS/DIV

10 X310

10V/DIV AC 10µS/D

3 X302-2

0.2V/DIV DC 10µS/DIV

7 X301-9

2V/DIV DC 5mS/DIV

11 X311

10V/DIV AC 10µS/D

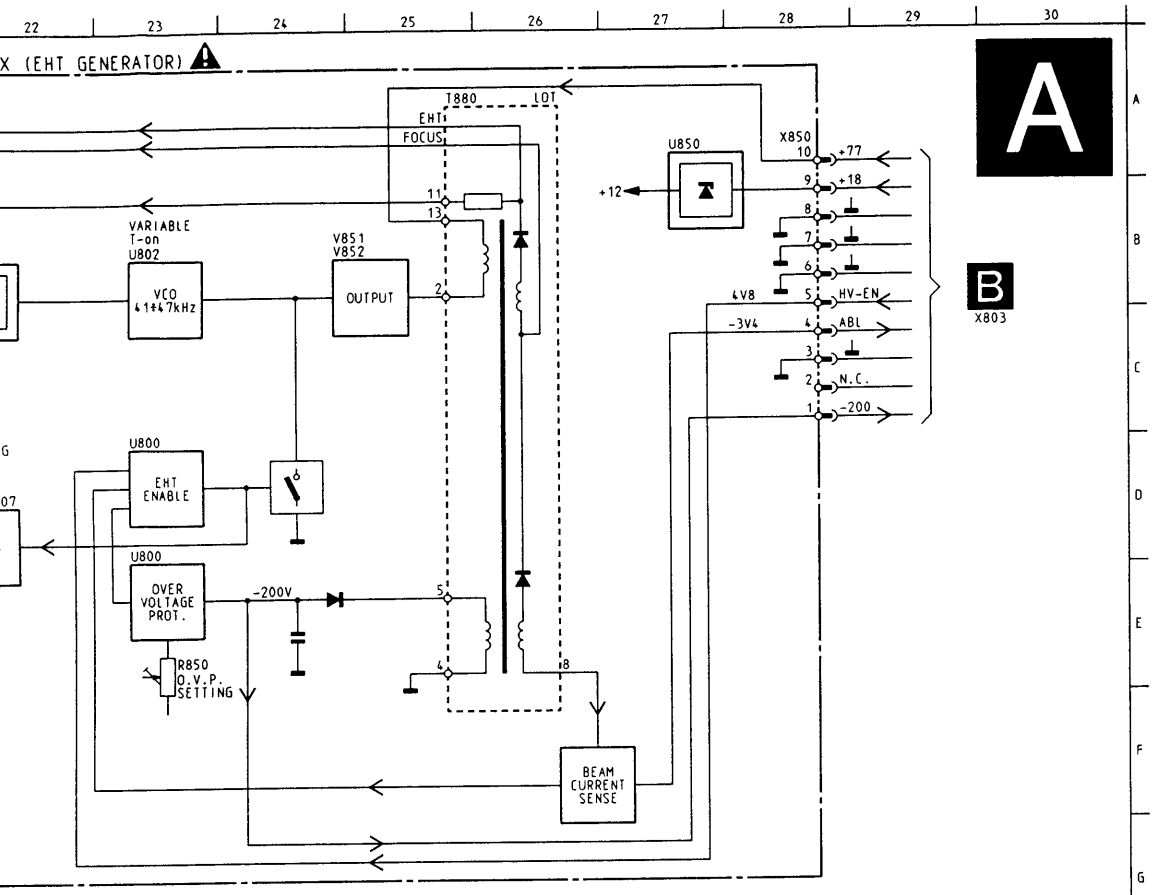
4 X302-3

0.2V/DIV DC 10µS/DIV

8 X301-18

2V/DIV DC 10µS/DIV

Functional block diagram



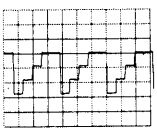
X302-13

DIV DC 10µS/DIV

5 X302-1

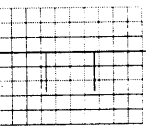
0,2V/DIV DC 10µS/DIV

9 X309



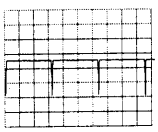
10V/DIV AC 10µS/DIV

2 X302-14



DIV DC 5mS/DIV

6 X301-8

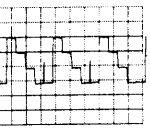


2V/DIV DC 10µS/DIV

10 X310

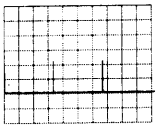
10V/DIV AC 10µS/DIV

3 X302-2



/DIV DC 10µS/DIV

7 X301-9

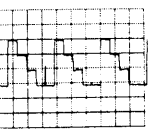


2V/DIV DC 5mS/DIV

11 X311

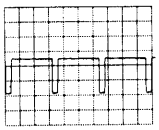
10V/DIV AC 10µS/DIV

4 X302-3



/DIV DC 10µS/DIV

8 X301-18

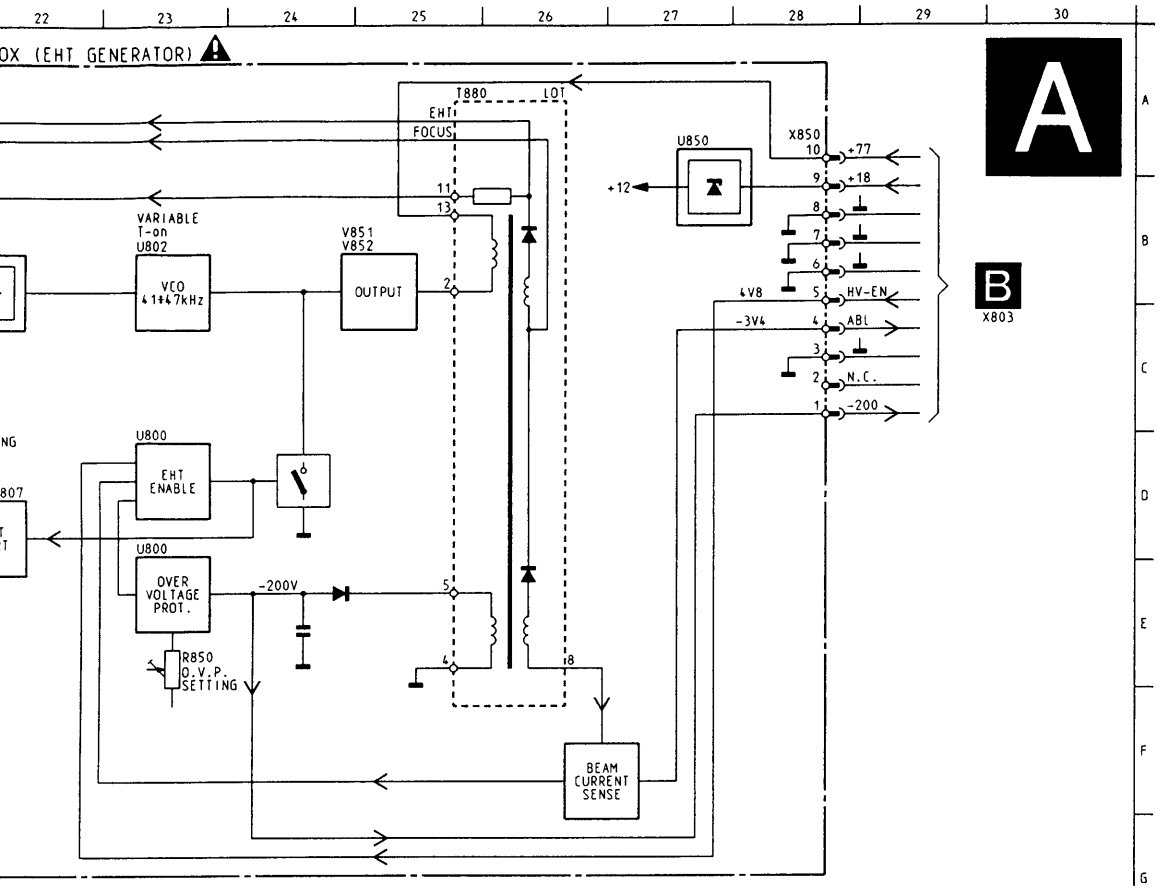


2V/DIV DC 10µS/DIV

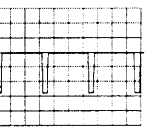
CHASSIS C2.82DAS/11

CL36532123/011.AREF
100993

Functional block diagram

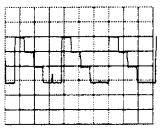


1 X302-13



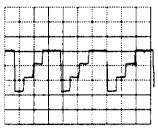
DIV DC 10µS/DIV

5 X302-1



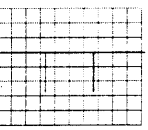
0,2V/DIV DC 10µS/DIV

9 X309



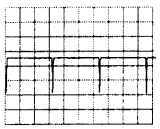
10V/DIV AC 10µS/DIV

2 X302-14



DIV DC 5mS/DIV

6 X301-8



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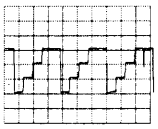
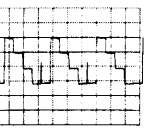
10 X310



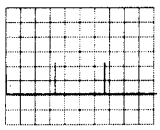
10V/DIV AC 10µS/DIV

3 X302-2



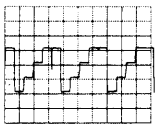
/DIV DC 10µS/DIV

7 X301-9



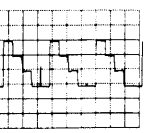
2V/DIV DC 5mS/DIV

11 X311



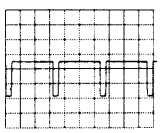
10V/DIV AC 10µS/DIV

4 X302-3



DIV DC 10µS/DIV

8 X301-18

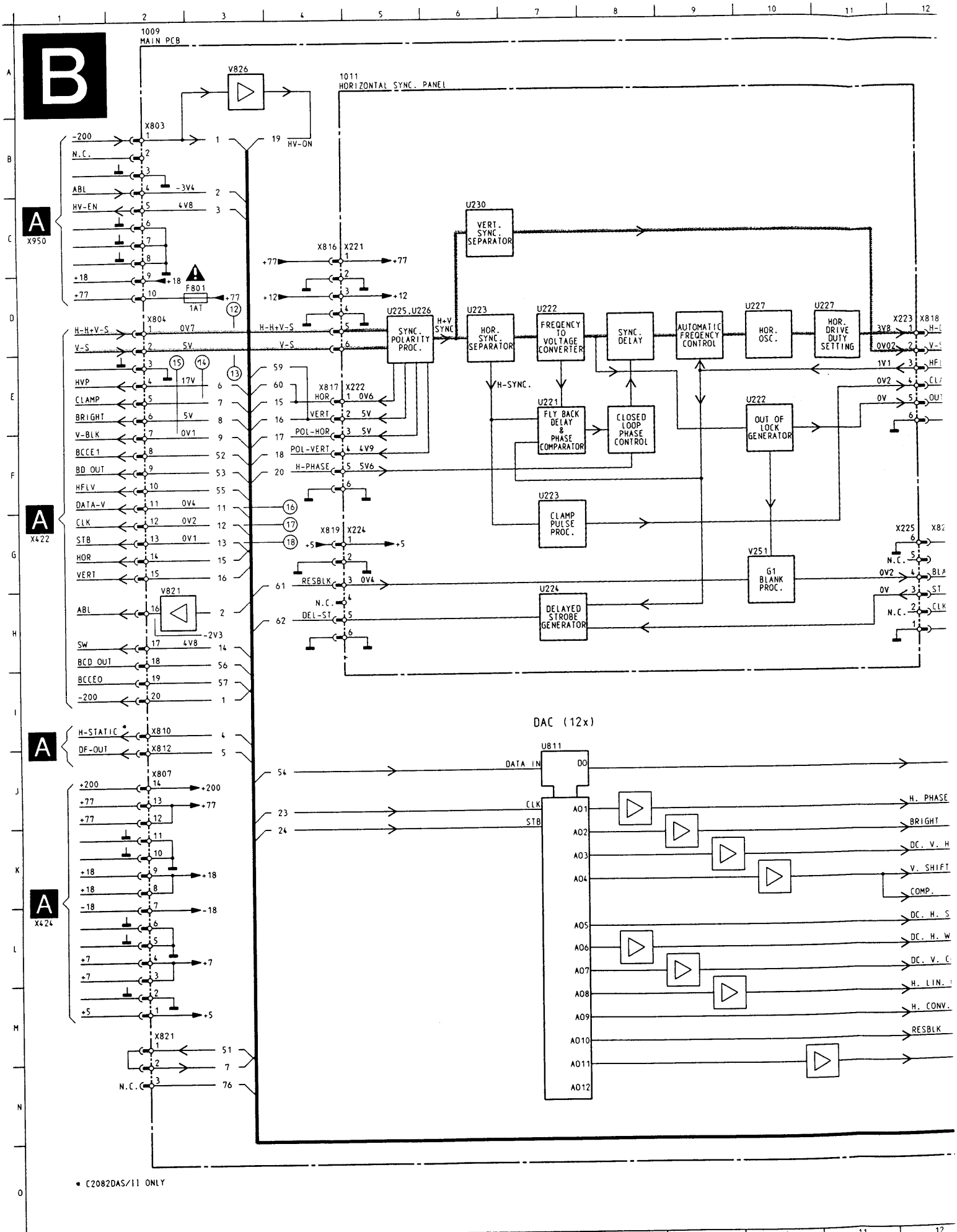


2V/DIV DC 10µS/DIV

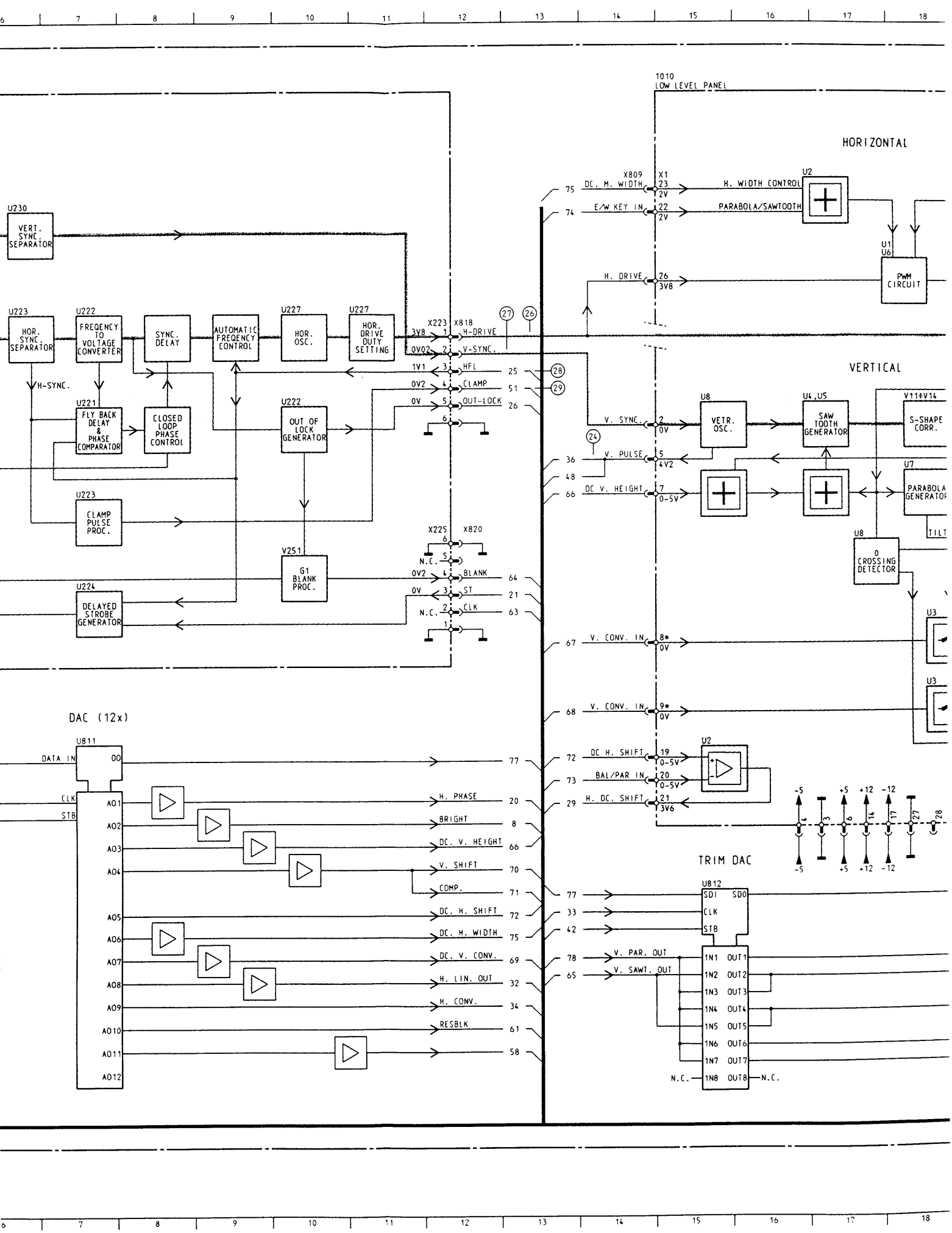
CHASSIS C2.82DAS/11

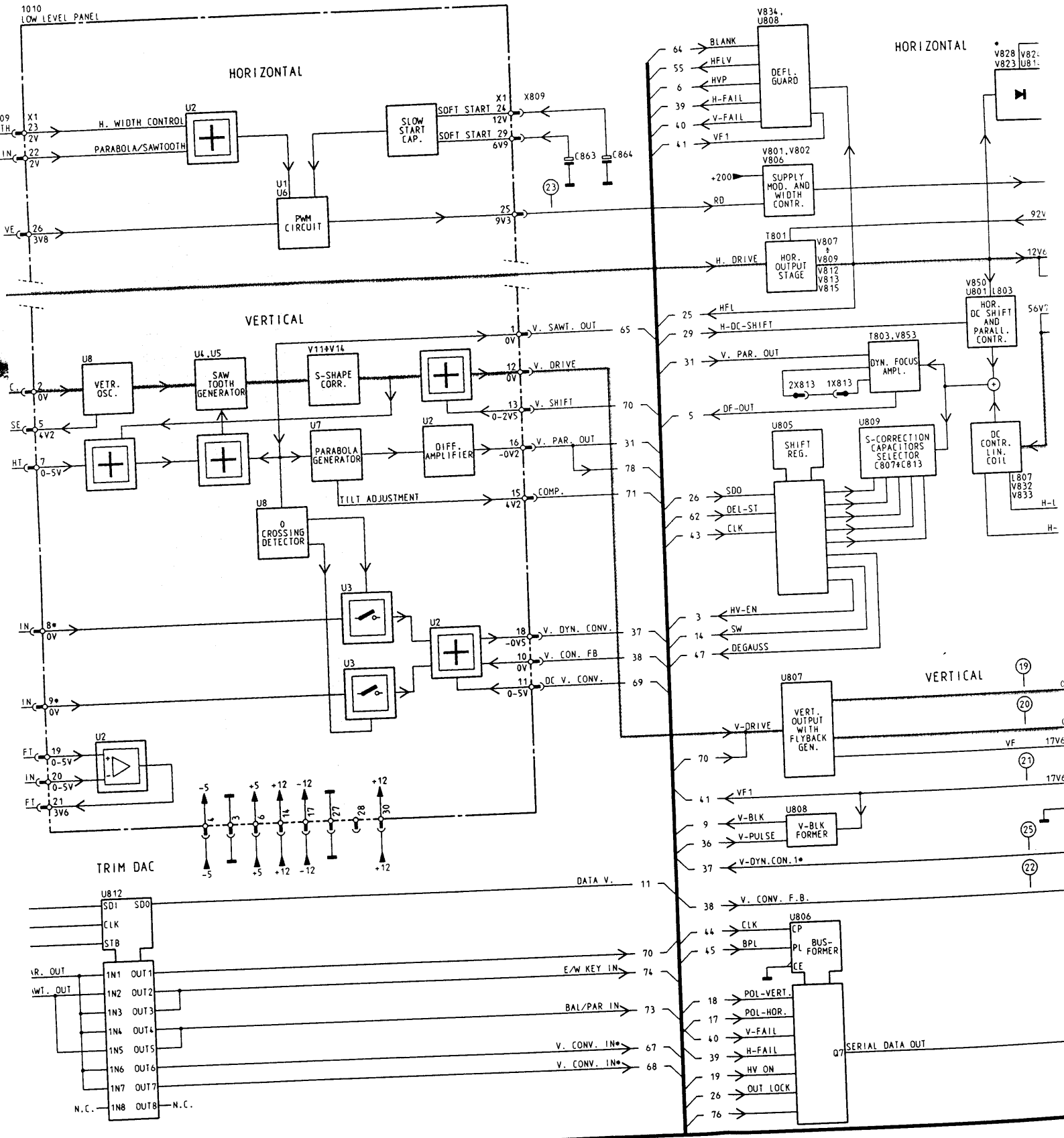
CL36532123/011.AREF
100993

Functional block diagram

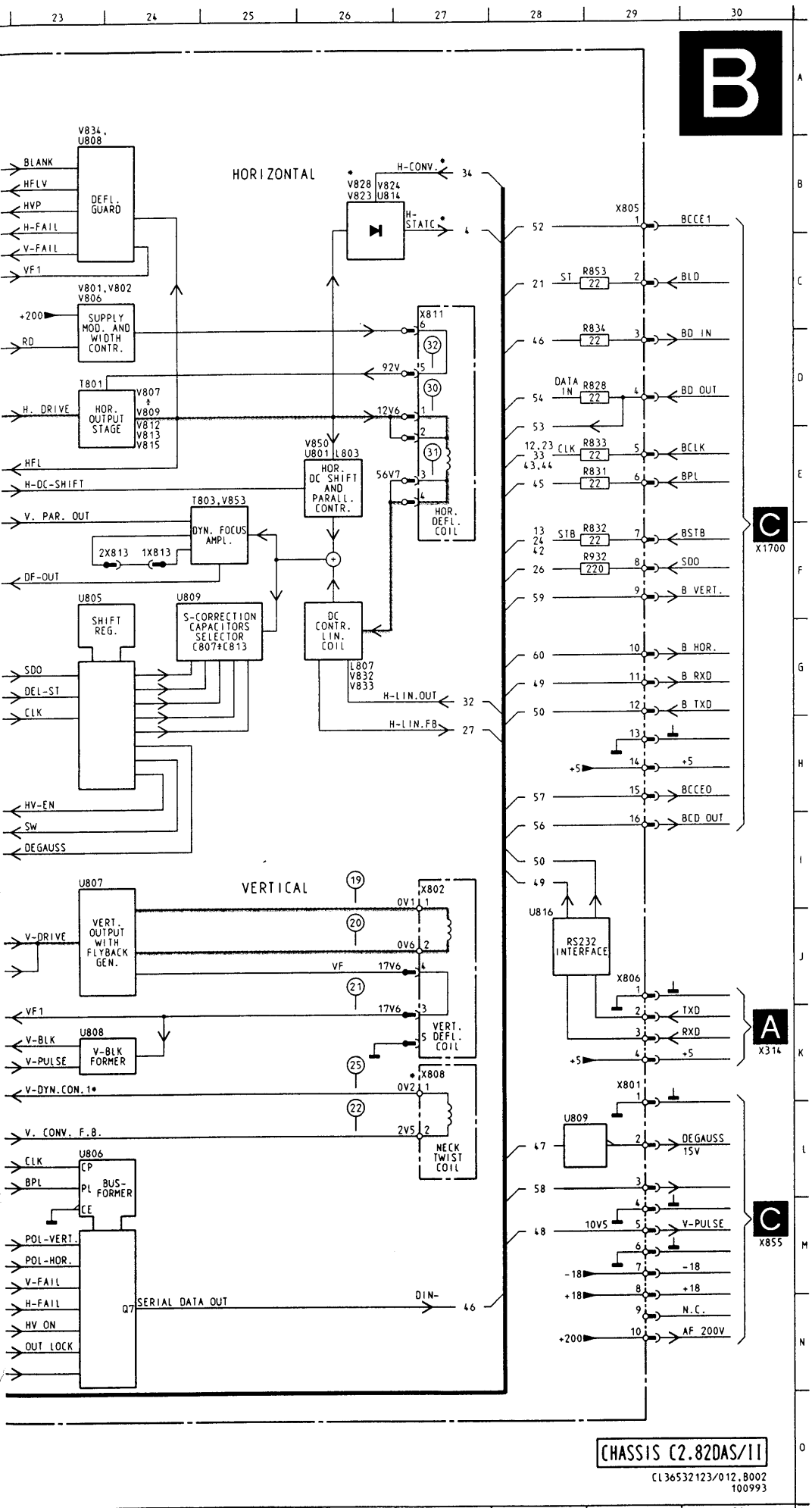


Functional block diagram

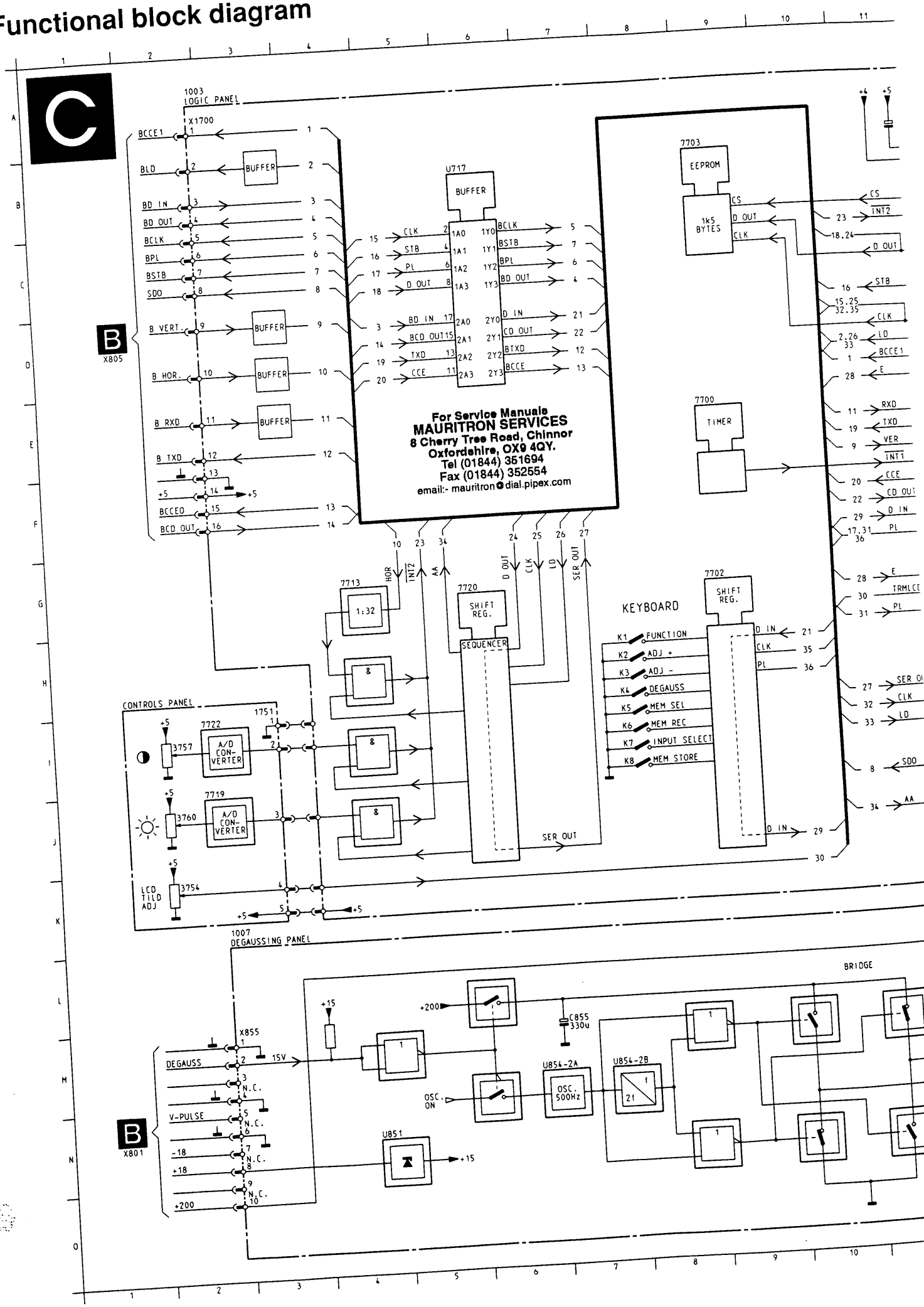



1010
LOW LEVEL PANEL
HORIZONTAL
H. WIDTH CONTROL
PARABOLA/SAWTOOTH
U2
U1
U6
PWM CIRCUIT
SLOW START CAP.
SOFT START 24
SOFT START 29
X1
X809
C863
C864
VE
VERTICAL
V. SAWT. OUT
V. DRIVE
V. SHIFT
V. PAR. OUT
COMP.
TILT ADJUSTMENT
VETR. OSC.
SAW TOOTH GENERATOR
S-SHAPE CORR.
PARABOLA GENERATOR
DIFF. AMPLIFIER
0 CROSSING DETECTOR
V. DYN. CONV.
V. CON. FB
DC V. CONV.
TRIM DAC
DATA V.
E/W KEY IN
BAL/PAR IN
V. CONV. IN
V834, U808
DEFL. GUARD
BLANK
HFLV
HVP
H-FAIL
V-FAIL
VF1
V801, V802 V806
SUPPLY MOD. AND WIDTH CONTR.
RD
T801
HOR. OUTPUT STAGE
H. DRIVE
V807 ÷ V809 V812 V813 V815
HFL
H-DC-SHIFT
V. PAR. OUT
DF-OUT
T803, V853
DYN. FOCUS AMPL.
V850 U801 L803
HOR. DC SHIFT AND PARALL. CONTR.
U805
SHIFT REG.
U809
S-CORRECTION CAPACITORS SELECTOR C807÷C813
DC CONTR. LIN. COIL
L807 V832 V833
SDO
DEL-ST
CLK
HV-EN
SW
DEGAUSS
U807
VERT. OUTPUT WITH FLYBACK GEN.
V-DRIVE
V-BLK
V-PULSE
V-DYN.CON.1
V. CONV. F.B.
U808
V-BLK FORMER
U806
BUS-FORMER
POL-VERT.
POL-HOR.
V-FAIL
H-FAIL
HV ON
OUT LOCK
SERIAL DATA OUT
U812
SDI SDO
CLK
STB
1N1 OUT1
1N2 OUT2
1N3 OUT3
1N4 OUT4
1N5 OUT5
1N6 OUT6
1N7 OUT7
1N8 OUT8
N.C.

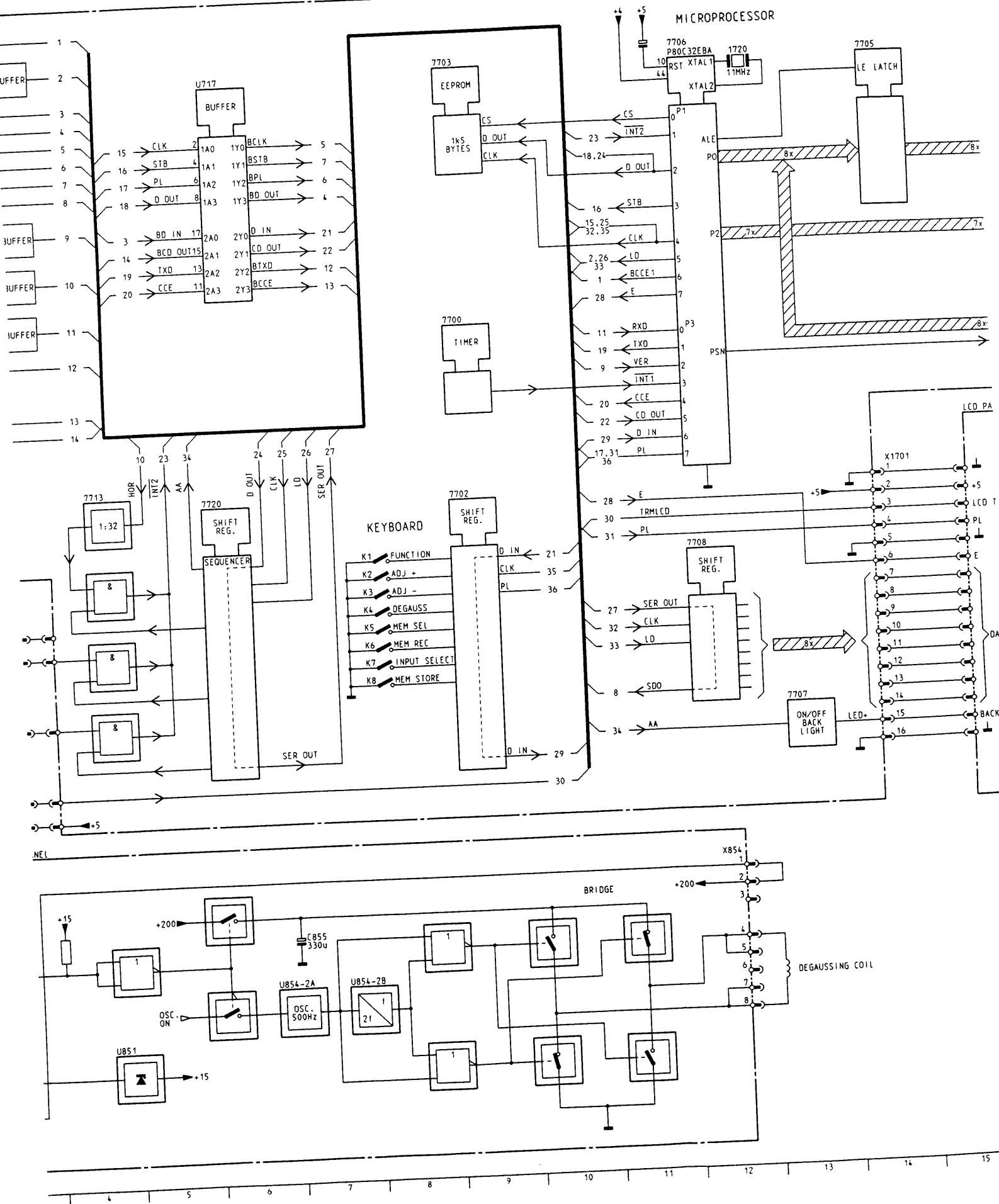
Functional block diagram



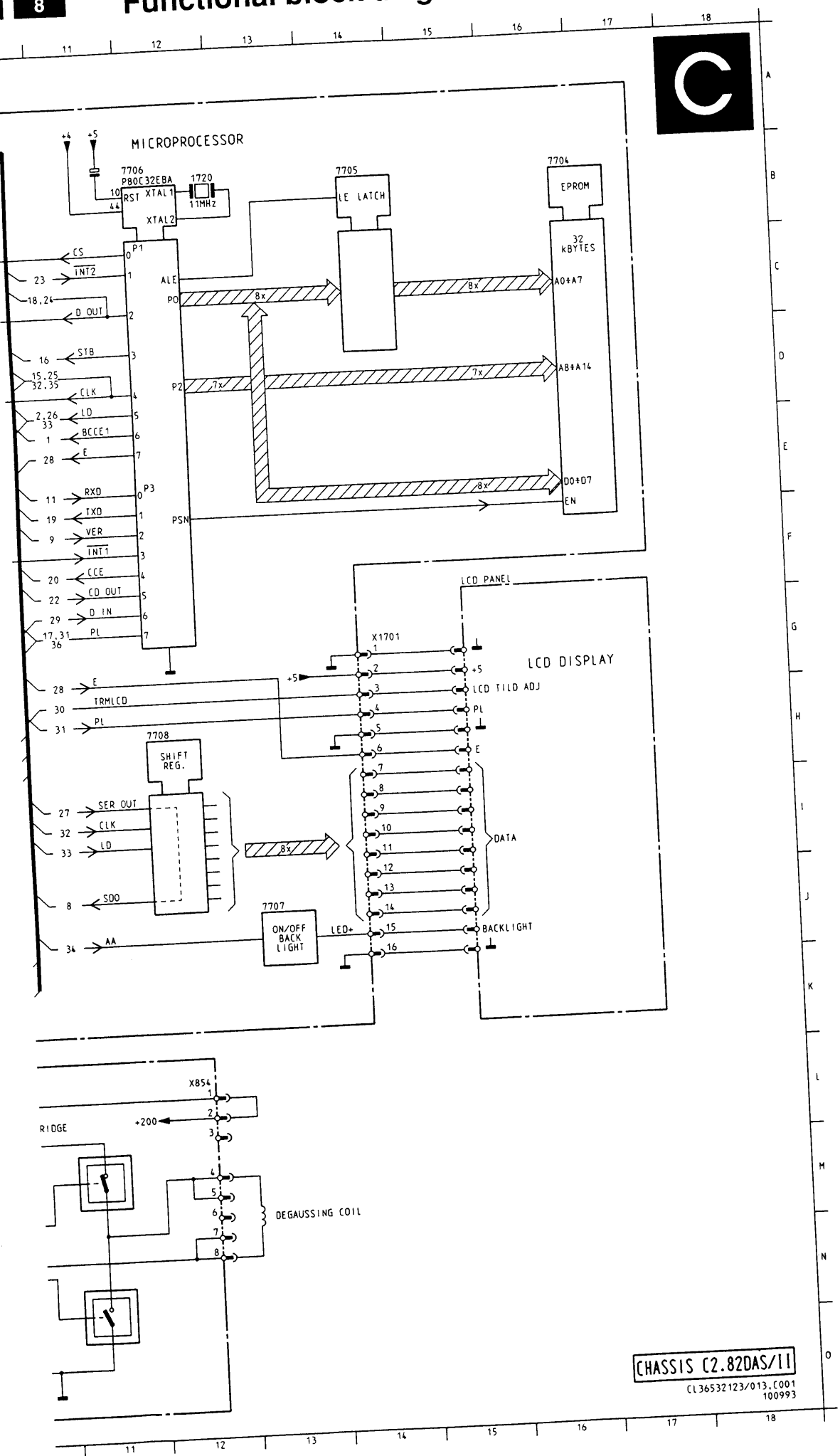
Functional block diagram



Functional block diagram

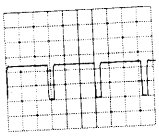


Functional block diagram



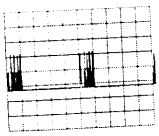
Wave forms diagram B and C

12 X804-1



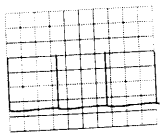
2V/DIV AC 10µS/DIV

17 X804-12



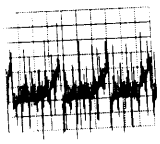
2V/DIV AC 2mS/DIV

21 X802-3



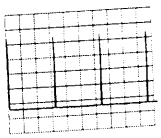
10V/DIV AC 5mS/DIV

25 X808-1



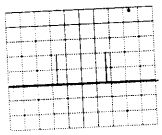
50mV/DIV AC 5mS/DIV

29 X818-4



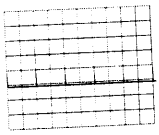
2V/DIV AC 10µS/DIV

13 X804-2



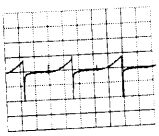
2V/DIV AC 5mS/DIV

18 X804-18



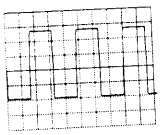
2V/DIV AC 5mS/DIV

22 X808-2



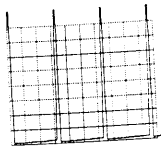
2V/DIV AC 5mS/DIV

26 X818-1



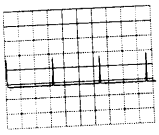
2V/DIV AC 10µS/DIV

30 X811-1



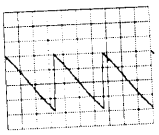
0.1kV/DIV DC 10µS/DIV

14 X804-5



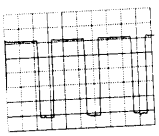
5V/DIV AC 10µS/DIV

19 X802-1



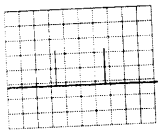
0.5V/DIV AC 5mS/DIV

23 X809-25



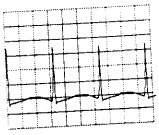
2V/DIV AC 10µS/DIV

27 X818-2



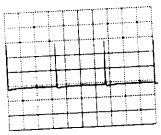
2V/DIV AC 5mS/DIV

31 X811-3



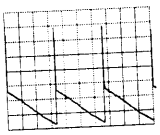
50V/DIV AC 10µS/DIV

15 X804-7



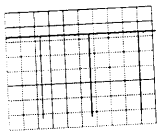
5V/DIV AC 5mS/DIV

20 X802-2



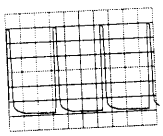
10V/DIV AC 5mS/DIV

24 X809-5



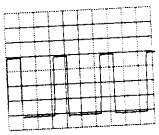
2V/DIV AC 5mS/DIV

28 X818-3



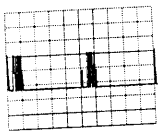
2V/DIV AC 10µS/DIV

32 X811-5



50V/DIV AC 10µS/DIV

16 X804-11



2V/DIV AC 2mS/DIV

7. Electrical adjustments

ADJUSTMENTS NEEDED AFTER REPLACEMENT OF A F.R.U. (FIELD REPLACEMENT UNIT)

General
In general, after swop a board (F.R.U.), no service adjustments are necessary. Only in some worst case situations and after CRT replacement readjustments have to be executed. Due to the fact that nearly all adjustments as chromaticity, geometry and convergence are controlled via the soft-ware program of the internal microcomputer and not can be changed by the external keys, external software for readjustments is available. This test software available on floppy can be applied to the monitor via a computer with RS232 output port. Also a standart 9 pin "D-shell female" to 9 pin "D-shell male" connection cable (service code 4822 321 21988) is needed to connect the computer to the 9 pin "D-shell" socket (female) at the rear of fthe monitor on the Video Panel.
The service code number for the floppy with printed user guide is 4822 727 19992.

1. **Logic Panel**
Remark: For reason of standardisation the Logic panel listed on parts list is supplied without Eprom item 7704. In case of replacement of the Logic Panel, the original Eprom (if not defect) or a new Eprom can be mounted. For the service code number of the Eprom see also parts list.
   - In case of replacement of the logic Panel, there is the possibility to place on the new Panel the EEprom (7703), original mounted on the defective Panel. In that case there is no need to make readjustments, because this EEprom contains all the original monitor set up adjustments.
   - If there is not above mentioned possibility, it is necessary to make a new monitor set up, including geometry, chromaticity and memory channels adjustments.
   - LCD polarisation (tilt) adjustment, 3754 on control panel
     Adjust 3754 for optimum character view.
     Remark: 3754 is reachable via a hole in the bottom of the front mask.

2. **Power Panel**
   - No adjustments. R648 (+200 adjustment) is already factory adjusted.

3. **Video panel**
   - Basically no adjustments necessary. But check for sure the chromaticity adjustments.

4. **Video interface Panel**
   - Basically no adjustments necessary. But check for sure the chromaticity adjustments.

5. **Degaussing Panel**
   - No adjustments.

6. **Main Panel**
   - Geometry adjustments

7. **High Voltage Box**
   - No adjustments. R850 (over voltage protection setting) and R851 (EHT setting) are already factory adjusted.

8. **C.R.T.**
   - Geometry adjustments
   - Focus adjustments
   - Chromaticity adjustments
   - Horizontal and Vertical convergence adjustments

8. Repair tips

TROUBLE SHOOTING VIA DISPLAY MESSAGES

PROBLEM
LCD does not turn ON when you turn ON the monitor.
Solution:
- Power cord is not connected to the power source.
- No power in that wall outlet.
- Monitor or fuse are faulty.

PROBLEM
One or two colors are missing.
Solution:
Video signal cables (red, blue or green) have not been connected properly.

PROBLEM
Colored spots appear on the monitor screen (bad colore purity).
Solution:
- Press the degauss button.
- Electromagnetic interference present.
- Move any electromechanical device away from the monitor.

LCD MESSAGE INDICATES - PRESET OFF
It means that the current timing has not been previously stored. The monitor is nonetheless working properly.
Solution:
You may store your timing as a new preset mode on this channel or continue working.

LCD MESSAGE INDICATES - H SYNC OFF or V SYNC OFF or H & V SYNCS OFF
It means that the video cable connections are not properly made.
Solution:
See sheet "connection facilities"
If the problem is not solved please check your graphic card.
Please verify the "input selection".

LCD MESSAGE INDICATES - V OUT OF RANGE
It means that the monitor does not recognize the vertical frequency of your graphic board.
Solution:
Please verify that your graphic card operates within the 50 to 160 Hz range of your monitor.

LCD MESSAGE INDICATES - H OUT OF RANGE
It means that the monitor does not recognize the horizontal frequency of your graphic board.
Solution:
Please verify that your graphic card operates within the 30 to 82 kHz range of your monitor.

LCD MESSAGE INDICATES - PLL UNLOCKED
It means that the logic board inside the monitor is defective.

LCD MESSAGE DISPLAYS - V DEF. FAILURE
It means that there is a local failure in the vertical deflection.

LCD MESSAGE DISPLAYS - H DEF. FAILURE
It means that there is a local failure in the horizontal deflection.

LCD MESSAGE DISPLAYS - HI VOL. FAILURE
It means that there is a local failure in the high voltage generator.
LCD MESSAGE DISPLAYS - GEN. FAILURE

It means that 2 or more failures have been detected at the same time.

TROUBLE SHOOTING BACKGROUNDS

When you are facing a problem, first of all try to understand which kind of problem it is and where it is coming from.
If you can see a picture on the screen, usually you should be able to understand the problem looking at the screen itself and take the appropriate corrective actions. When you find a problem looking at the screen, before changing any PCB, check if it is possible to solve the problem by readjusting the related controls.
Many times, when you see the picture, the problem is not real failure but only a misadjustment since in most cases of failure (or uncorrect operation) a protection circuit will blank the screen.
The monitor has a built in self diagnostic test performed by the Logic board which is able to check if some important circuits are properly working, such as deflections, EHT, and in case of failure an error message is displayed on the front panel LCD.
Additional diag. indicators are the LED placed on the Power supply.
By following the herebelow procedure, you should be able to find the defective board to be replaced.

A) AFTER TURNING THE MONITOR ON, THE CRT IS BLANKED BUT THE LCD IS LIGHTED.

- This means that the mains power is connected and the separated +5V switch mode power supply is working.
  At this moment, you should read on the LCD one of the following error messages:

1) H/V or HOR. or VERT. SYNC. OFF
- This means that the displayed type of sync. is missing; check the connections between monitor & video generator and check if the selected video input (BNC's or D-SUB) is the right one.
  If everything seems to be OK, check the internal cabling between Video, Video Interface, Main & Logic board. If the cabling is OK, the Video board is suspected to be failed.

2) H.DEF. FAILURE
- This means that the horizontal deflection is missing, nevertheless the vertical deflection is working and so the power supply output short circuit protection hasn't been activated.
  In this case you should check the deflection yoke connection (X811) and if all the supply voltages, especially the +200V, are present on the Main board (X807).
  If all seems to be OK, the Main board is suspected.

3) V.DEF. FAILURE
- Same meaning and procedure as point 2).

4) HI.VOL. FAILURE
- This means that the High Voltage that supplies the CRT is missing, nevertheless both horizontal & vertical deflections are properly working.
  In this case, first of all try to recover the problem by switching the monitor off and on again because the overcurrent protection of the High Voltage generator could be activated by a flashover discharge or really by a too high beam current (for example if the video input termination switch is in the wrong position); if this does not solve the problem, check the connection between the High Voltage generator box and the fuse F801 placed on the Main board. If all seems to be OK, the High Voltage generator is suspected.

5) GEN.(general) FAILURE
- This means that at least two of the above mentioned failures have been detected at the same time.
  It can happen when a local failure cause a short circuit on one or more supply voltages, activating in this way the protection of the power supply so that also the non-failed circuits cannot work or when the power supply itself is bad, or when a supply voltage is missing on the Main board. In this case, you should proceed in this way:

a) Check the LED placed on the power supply.
   V621 must be on because if you can see the LCD message the separated circuit which supplies the +5V must be working.
   If also the other 3 LEDs are on, means that also the main power supply is working. In this case check if any supply voltage is missing on the Main board (due to the cabling); if not, the Main board is suspected.

if the other 3 LEDs are off or blinking, disconnect the Power supply output connector X606 and check the LED again: if they are still off, the Power supply is suspected.
If they are on, means that with X606 connected the SMPS overcurrent protection is activated because there is a short circuit on one of the supply rails. In this case, plug in again X606 and disconnect one at time the supply connectors of all the other boards, following this order : Degauss board, EHT generator, Main board, Video board, Video Interface board. When the Power supply starts working, the PCB which has been disconnected is bad.

B) AFTER TURNING THE MONITOR ON, THE CRT IS BLANKED AND THE LCD IS OFF

In this case, check the LEDs on the Power supply.

1) All the LEDs are off:
check all the connections between the EMI filterbox, mains switch, main fuse (check the fuse itself) and the Power supply board: if all looks correct, replace the Power supply.

2) Only the LED V621 (+5V indicator) is off:
unplug the power supply connector X606 an check again the LED status

- if it is still off, replace the Power supply
- if it is on, means that there is a short circuit on the +5V line; in this case apply the procedure described at paragraph "GEN FAILURE" indication in order to find the defective board.

3) All the LEDs are on:
check if the +5V supply voltage is present on the Main board (X807) and if the cabling between the Main board itself and the Logic board is correct; if yes, the Logic board and/or the LCD assembly is suspected.