grass valley

Service Manual

3922 496 31181

Version: 09.02.02

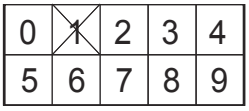
LDK 8000-Elite

Camera Head

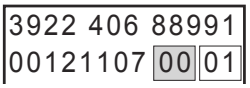
grass valley Service Manual LDK 8000-Elite Camera Head 3922 496 30181 Version: 09.02.02

Identification and Status

To indicate the status of a drawing, a box with the numbers 0 to 9 is shown in the bottom-right of the drawing. The number that is crossed-out is the status number of the drawing. For example, in the illustration below, the status is 1.



A sticker is used on the units themselves to identify them and to indicate their status. For example, in the illustration below, the top line is the 12-digit number that identifies the unit type.



The first four digits of the number on the second line represent a date code (year, week), the next four digits represent the serial number for that week.

The number in the grey area indicates the status of the unit. The last two digits represent the number that will be given to the next status. However, if these two digits are contained in a box, then this is the current status. For example, in the illustration above, the current status of the unit is 01.

Line 1	3922 407 00000
Line 2	123456AA0101
Line 3	VR/0123456789

Line 1
This is the code number of the printed circuit board assy. (PCB)

Line 2
This is the serial number of the PCB. The first 6 digits and the 2 letters are for internal use. The last four digits represent the date of the manufacturing: wwyy.
Example:
123456AA1407 means the PCB is manufactured in week 14 of the year 2007.

Line 3
This is the status of the PCB.
The digit after the first slash is the status. If there is no number before the slash, it means that the status is less than 10, a 1 before the slash means the status is between 10 and 19, a 2 before the slash means between 20 and 29 etc.
Example:
- VR4567891012 means status 4
- VR3/78901234 means status 37.

Example of LDK number:
LDK 4501/01 means 8926 **450 10101**
LDK 4500/00 means 8926 **450 00001**

Numbers of printed circuit board assy
- 3922 406 xxxxx or 3922 407 xxxxx

Number (screened in PCB layout) of printed circuit board assy: 3922 411xxxxx. (not a sparepart)

Safety Summary

This informaton is intended as a guide for trained and qualified personnel who are aware of the dangers involved in handling potentially hazardous electrical/electronic equipment. It is not intended to contain a complete list of all safety precautions which should be observed by personnel in using this or other electronic equipment.

The installation, maintenance and service of this equipment involves risks both to personnel and equipment and must be performed only by qualified personnel exercising due care.

Personnel engaged in the installation, operation, maintenance or servicing of this equipment are urged to become familiar with First Aid theory and practises.

During installation and operation of this equipment, local building safety and fire protection standards must be observed.

Before connecting the equipment to the power supply of the installation, the proper functioning of the protective earth lead of the installation needs to be verified.

Whenever it is likely that safe operation is impaired, the apparatus must be made inoperative and secured against any unintended operation. The appropriate servicing authority must then be informed. For example, safety is likely to be impaired if the apparatus fails to perform the intended function or shows visible damage.

CAUTION

Double pole/neutral fusing

To prevent risk of overheating, ventilate the product correctly.

Connect the product only to a power source with the specified voltage rating.

Only connect a Triax cable from the LDK 6 camera family to an LDK 6 CPU. Never connect it to any other base station.

Never connect the Triax cable from a camera to a CPU of a different family; never connect the LDK family to the TTV family.

Do not allow system ground currents to exceed 1.5A in the outer shield of the triax cable or 0.2A in other cable shields.

It is strickly prohibited to short circuit the inner and outer shields of a triax cable used to connect a camera to a base station.

Cautions and Warnings

When performing service, be sure to read and comply with the warning and caution notices appearing in the manuals. Warnings indicate danger that requires correct procedures or practices to prevent death or injury to personnel. Cautions indicate procedures or practices that should be followed to prevent damage or destruction to equipment or property.

WARNING

THE CURRENT AND VOLTAGES PRESENT IN THIS EQUIPMENT ARE DANGEROUS. ALL PERSONNEL MUST AT ALL TIMES FOLLOW THE SAFETY REGULATIONS.

ALWAYS DISCONNECT POWER BEFORE REMOVING COVERS OR PANELS.

ALWAYS DISCHARGE HIGH VOLTAGE POINTS BEFORE SERVICING.

NEVER MAKE INTERNAL ADJUSTMENTS, PERFORM MAINTENANCE OR SERVICE WHEN ALONE OR WHEN FATIGUED.

IN CASE OF AN EMERGENCY ENSURE THAT THE POWER IS DISCONNECTED.

ANY INTERRUPTION OF THE PROTECTION CONDUCTOR INSIDE OR OUTSIDE THE APPARATUS, OR DISCONNECTION OF THE PROTECTIVE EARTH TERMINAL, IS LIKELY TO MAKE THE APPARATUS DANGEROUS. INTENTIONAL INTERRUPTION IS PROHIBITED.

FOR SAFETY REASONS THE CPU MUST BE MOUNTED IN A 19-inch RACK WHICH HAS SAFETY COVERS ACCORDING TO IEC65.

WHEN TWO CPUs ARE MOUNTED ABOVE EACH OTHER THE MINIMUM DISTANCE BETWEEN THEM MUST BE 50MM OR THE RACK MUST BE FORCE-AIR COOLED.

USE ONLY FUSES OF THE TYPE AND RATING SPECIFIED.

Symbol	Colour	Explanation
	Red	High voltage terminal at which a voltage, with respect to an other terminal, exists or may be adjusted to 1000V or more.
	Yellow/Black	Live part.
	Yellow/Black	This marking indicates that the operator must refer to an explanation in the Instruction Manual, or that a specific component must be replaced by the component specified in the documentation for safety reasons.
	White/Black	Protective earth (ground) terminal.

Cathode ray tubes

Components marked ⚠ on the circuit diagram are critical for safety and include those specified to comply with X-ray emission standards for units using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

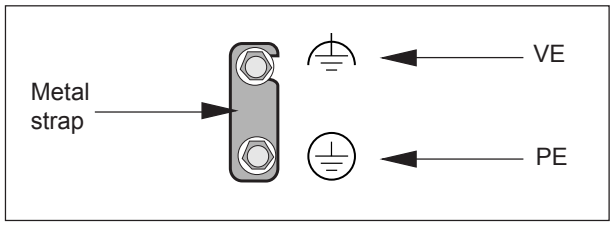
When servicing units that use cathode ray tubes (CRTs), the cathode ray tubes themselves, the high voltage circuits and related circuits are specifically chosen so that they comply with recognized codes pertaining to X-ray emission.

Consequently, when servicing, replace the cathode ray tubes and other parts with specified parts only. Do not attempt to modify these circuits as any unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

Handle the cathode ray tube only when wearing shatterproof goggles and after discharging the high voltage completely.

Earthing

The rear of a CPU has two separate screw terminals for protective earth ⏚ (PE) and video earth ⏚ (VE).



These are normally connected by a metal strap. The protective earth terminal is internally connected to the protective earth conductor of the power cable. If required, the central earth connection wire of the studio can be connected to terminal PE.

In normal circumstances the connection between the protective earth and the video earth should not be broken.

The metal strap may be removed only if the studio (or OB van) is equipped with separate protective and video earth systems. Under these circumstances the video earth terminal must be connected to the central functional earth potential (video earth) of the studio. This earth potential should have functional protective and noiseless earth (FPE) qualities as stated in the VDE regulation 0800/part2. A low impedance interconnection of both earth conductors must be provided at the central studio earthing point.

WARNING

THE UNIT MUST ALWAYS BE CONNECTED TO PROTECTIVE EARTH.

Mains Lead Wiring for UK Users

The wires in the mains lead are coloured in accordance with the following code:

GREEN AND YELLOW	-	EARTH
BLUE	-	NEUTRAL
BROWN	-	LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:

- The wire coloured GREEN AND YELLOW must be connected to the terminal on the plug marked with the letter E or by the safety earth symbol ⏚ or coloured GREEN or GREEN AND YELLOW.
- The wire coloured BROWN must be connected to the terminal marked with the letter L or coloured RED.
- The wire coloured BLUE must be connected to the terminal marked with the letter N or coloured BLACK.

Ensure that your equipment is connected correctly - if you are in any doubt consult a qualified electrician.

CONTENST LIST 3922 496 31181 Service Manual Camera Head LDK 8000 Elite

Tab	Part number	Drawing number	Description
1	8926 800 07001	8926 800 02001	STND HDTV CAMHEAD
	8926 800 07101	8927 800 02001	WRLD HDTV CAMHEAD
	3922 407 49831		SET OF ADDITIONAL SUPPLIES
2	3922 407 55171	3922 407 44921	FRONT 8000 STANDARD
	3922 407 55181	3922 407 44931	FRONT 8000 WORLDCAM
	3922 407 55111	3922 407 49471	FRONT MODULE HDTV NEXT
3	3922 406 53531	3922 406 53531	FRONT SWITCH PANEL
4	3922 407 54791		GNDLS HEAD BASIC HDTV ELITE
	3922 407 54761	3922 407 49811	CAMERA HEAD BASIC HDTV ELITE
5	3922 407 54771	3922 407 53021	COVER RIGHT ASSY ELITE
	3922 406 53101	3922 406 53101	CONNECTOR BOARD COVER RIGHT
	3922 406 54701	3922 406 54701	DVP BOARD HDTV
6	3922 407 49361	3922 407 49361	COVER LEFT ASSY
	3922 406 53671	3922 406 53671	LEFT SWITCH PANEL
7	3922 407 59251	3922 407 59251	SHOULDERPAD ASSY
8	3922 407 40211	3922 407 40211	HANDGRIP ASSY
	3922 407 39501	3922 407 39501	ZOOM CONTROL ASSY
	3922 406 50301	3922 406 50301	ZOOMGRIP SWITCH BOARD
9	3922 406 53071	3922 406 53071	MOTHERBOARD CAM HD
10	3922 406 54371	3922 406 53041	SYNC. MON. DIG. BRD
11	3922 406 52971	3922 406 52971	DATA BOARD
12	3922 406 51161	3922 406 51161	FRONT DRIVER MULTIFORMAT BOARD
13	3922 407 27241	3922 407 27241	FRONT EXTENDER

8926 800 07001;2 LDK8000/70 STANDARD HDTV CAM

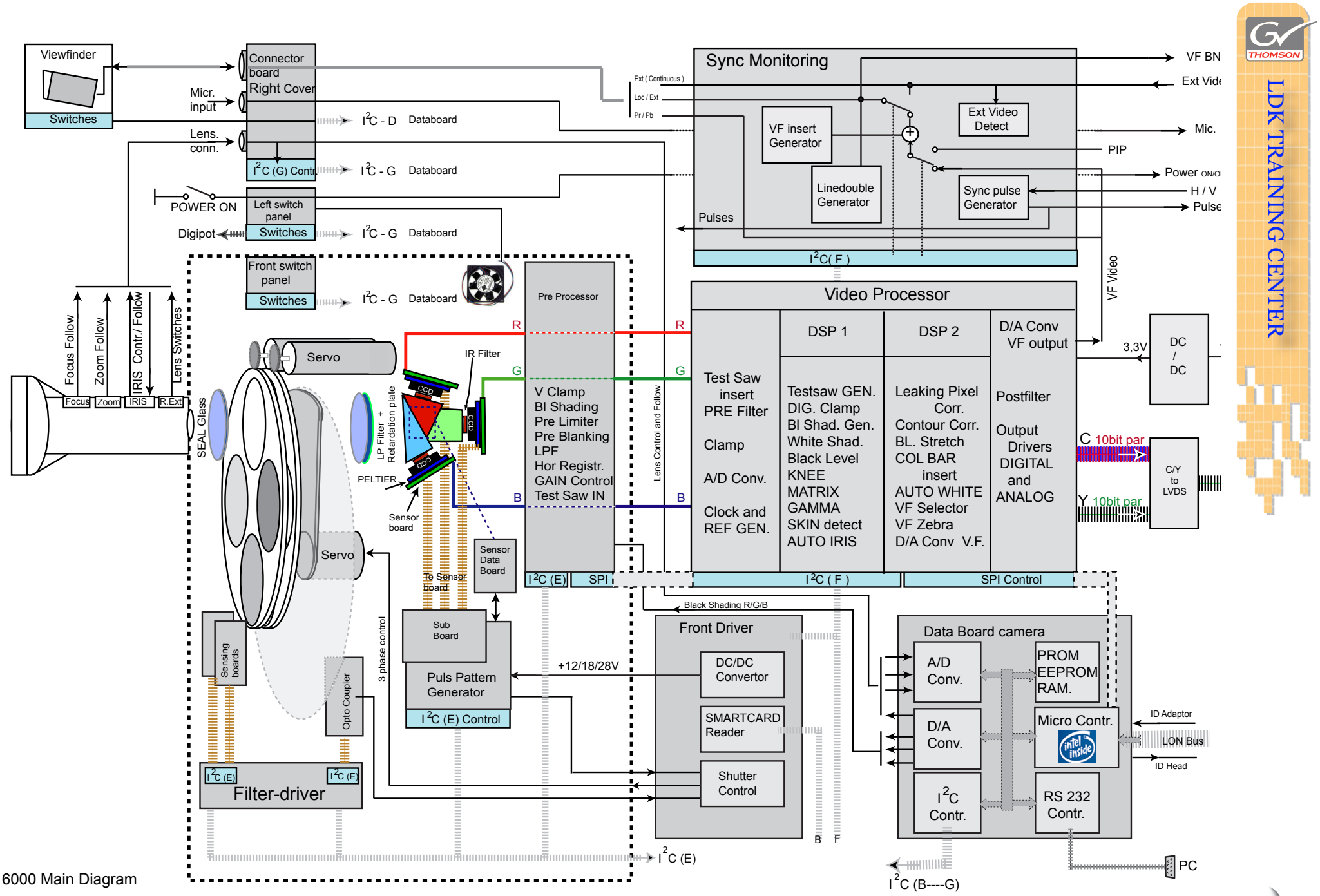
Ref	Description	Part 12nc	Service part
1	FRONTMODULE HDTV NEXT		
2	CAM HEAD BASIC HDTV ELITE		
3	COOLING LOGO COVER 8000	3922 407 54681	Yes
70	FRONT 8000 STANDARD	3922 407 55171	Yes
90	APPL SW LDK8000 PH2/SPORT	3922 407 52991	Yes
GNDLS	GNDLS HEAD HDTV ELITE		

8926 800 07101;2 LDK8000/71 WORLDCAM HDTV CAM

Ref	Description	Part 12nc	Service part
0	COMMON DOC'S LDK 8000E		
1	FRONTMODULE HDTV NEXT		
2	CAM HEAD BASIC HDTV ELITE		
3	COOLING LOGO COVER 8000	3922 407 54681	Yes
70	FRONT 8000 WORLDCAM	3922 407 55181	Yes
90	APPL SW LDK8000 PH2/SPORT	3922 407 52991	Yes
GNDLS	GNDLS HEAD HDTV ELITE		

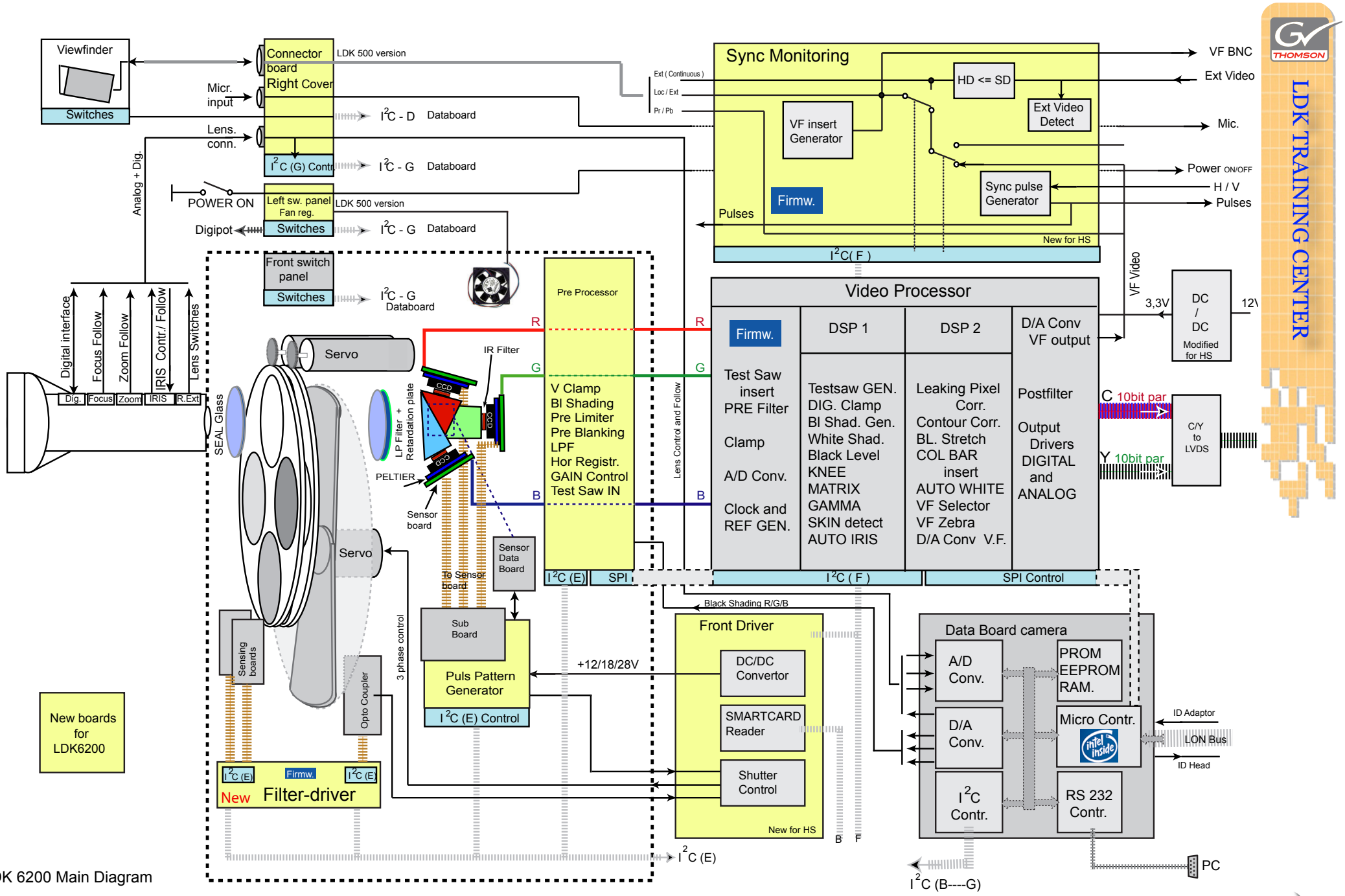


page 2	LDK 6000
page 3	LDK 6200
page 4	LDK 8000
page 5	LDK 8000 sport
page 6	LDK 8000 elite
page 7	LDK 6000_6200 DVP (Dig. Video Proc.)
page 8	Opening Left cover + board location
page 9-10	Right cover LDK 8000_8000sport + DVP details
page 11	LDK 8000 Sync Monitoring board
page 12	Software overview. (new platform)



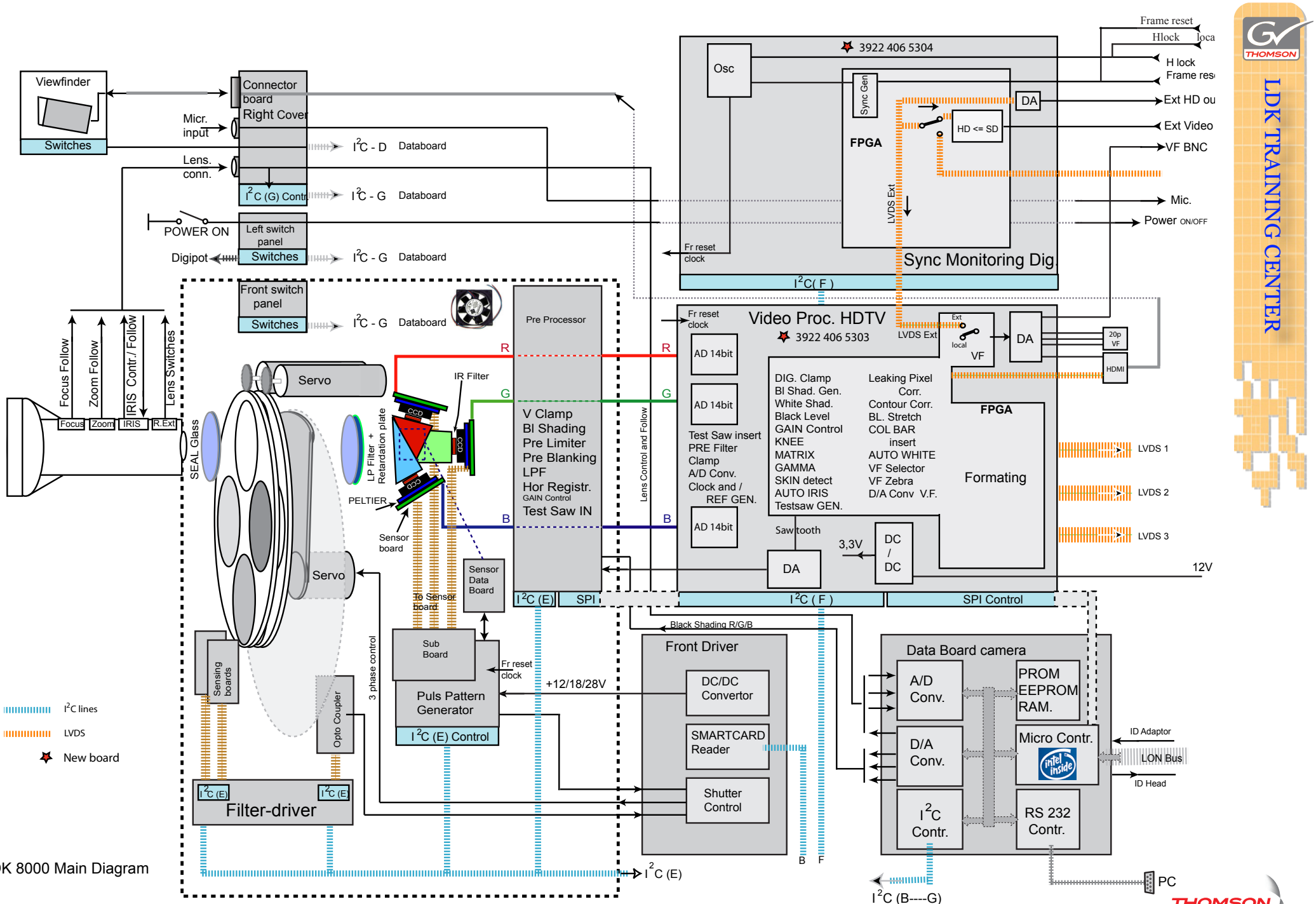
LDK 6000 Main Diagram

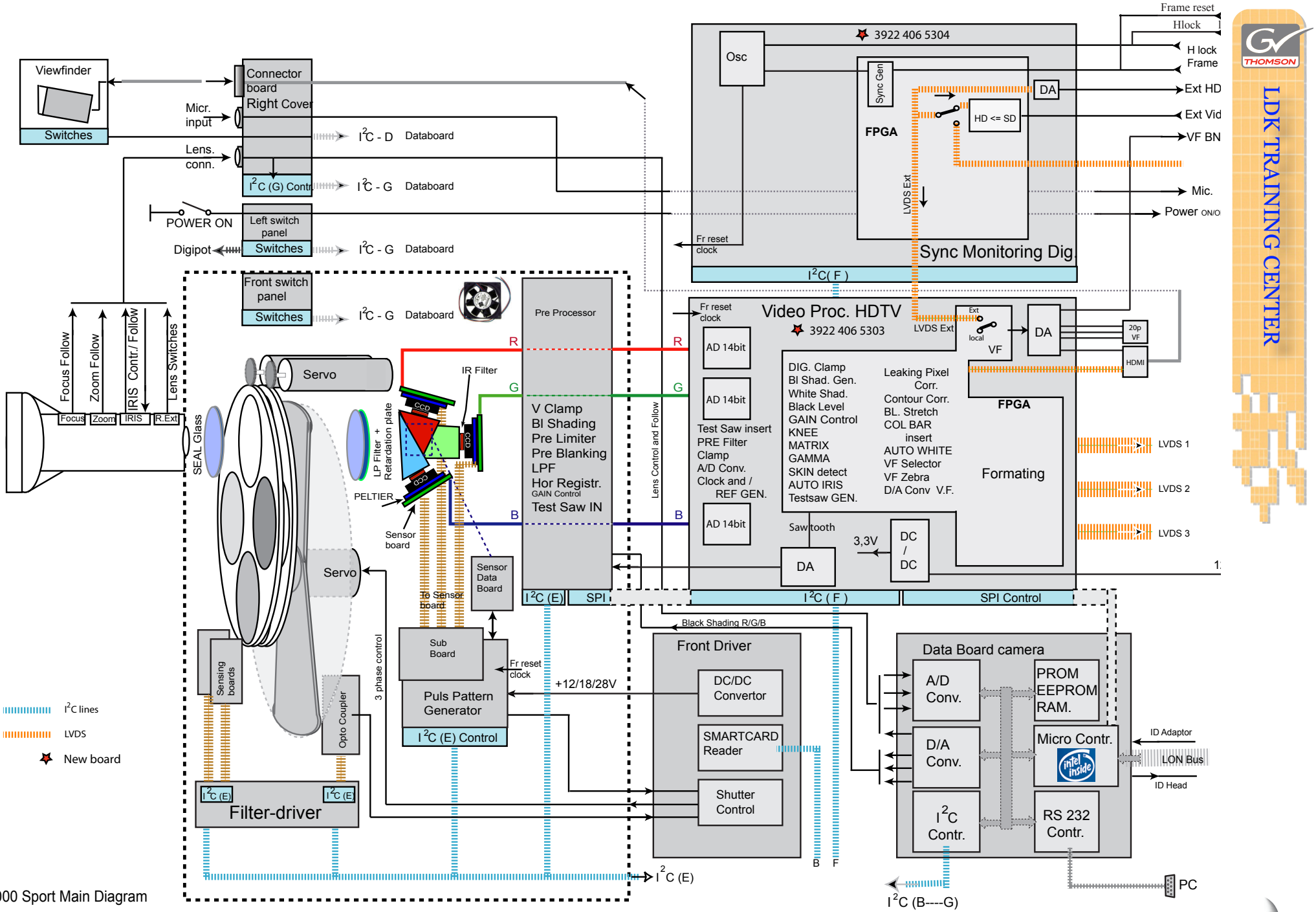
HD Heads



LDK 6200 Main Diagram

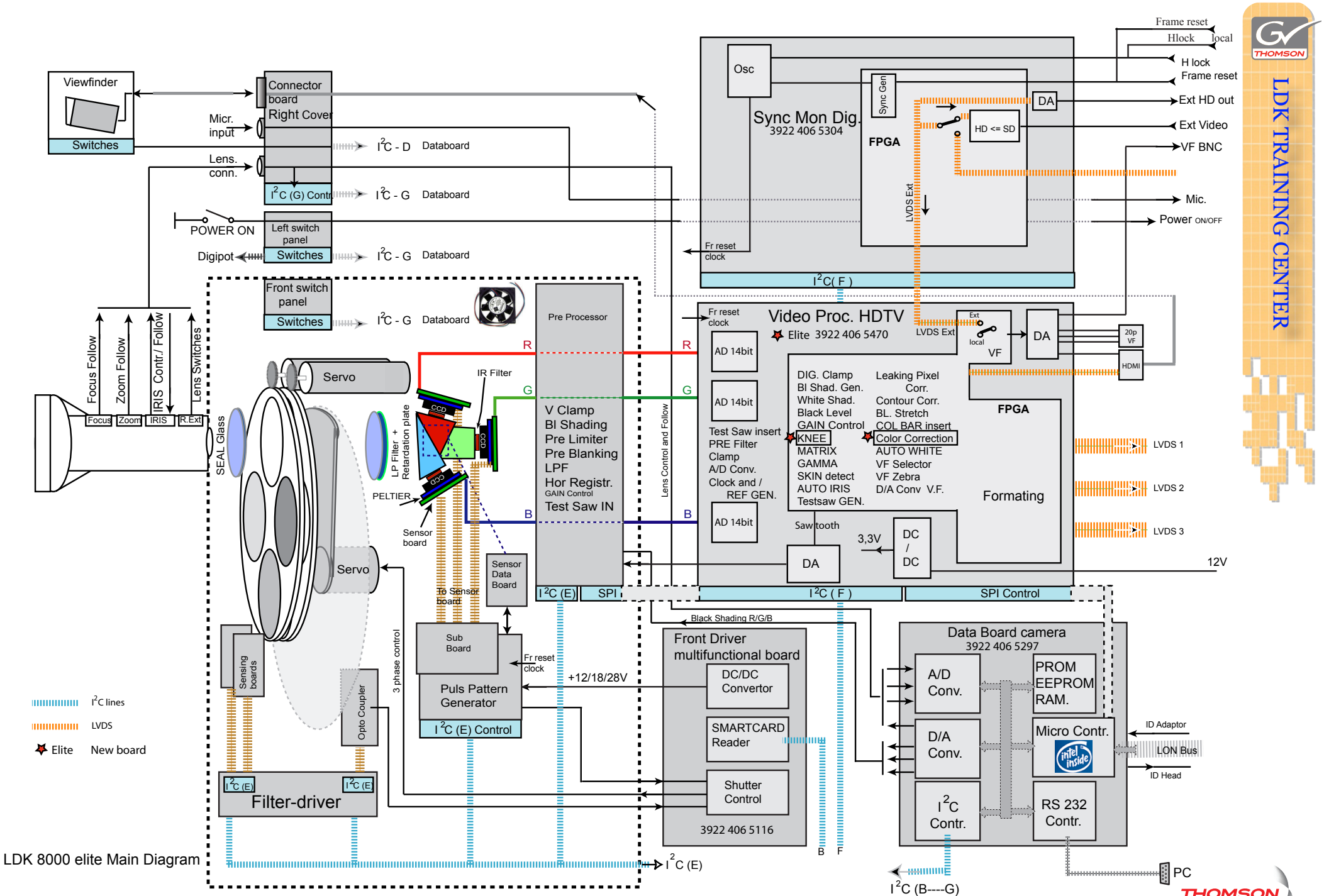
HD Heads


LDK TRAINING CENTER
THOMSON
Viewfinder
Switches
Connector board
Right Cover
Micr. input
Lens. conn.
I²C - D
Databoard
I²C (G) Contr
I²C - G
Databoard
POWER ON
Left switch panel
Digipot
Switches
I²C - G
Databoard
Front switch panel
Switches
I²C - G
Databoard
Focus Follow
Zoom Follow
IRIS Contr./ Follow
Lens Switches
Focus
Zoom
IRIS
R.Ext
Servo
Servo
SEAL Glass
IR Filter
LP Filter + Retardation plate
CCD
PELTIER
Sensor board
Pre Processor
V Clamp
Bl Shading
Pre Limiter
Pre Blanking
LPF
Hor Registr.
GAIN Control
Test Saw IN
R
G
B
Lens Control and Follow
Sensor Data Board
To Sensor board
I²C (E)
SPI
Sub Board
Puls Pattern Generator
I²C (E) Control
Fr reset clock
+12/18/28V
3 phase control
Sensing boards
Opto Coupler
I²C (E)
I²C (E)
Filter-driver
I²C (E)
3922 406 5304
Osc
Sync Gen
FPGA
HD <= SD
DA
LVDS Ext
Fr reset clock
Sync Monitoring Dig
I²C(F)
Frame reset
Hlock
H lock
Frame res
Ext HD ou
Ext Video
VF BNC
Mic.
Power ON/OFF
Video Proc. HDTV
3922 406 5303
Fr reset clock
AD 14bit
AD 14bit
AD 14bit
Test Saw insert
PRE Filter
Clamp
A/D Conv.
Clock and / REF GEN.
DIG. Clamp
Bl Shad. Gen.
White Shad.
Black Level
GAIN Control
KNEE
MATRIX
GAMMA
SKIN detect
AUTO IRIS
Testsaw GEN.
Leaking Pixel Corr.
Contour Corr.
BL. Stretch
COL BAR insert
AUTO WHITE
VF Selector
VF Zebra
D/A Conv V.F.
FPGA
Formating
LVDS Ext
Ext
local
VF
DA
20p VF
HDMI
LVDS 1
LVDS 2
LVDS 3
Sawtooth
DA
3,3V
DC / DC
12V
I²C (F)
SPI Control
Black Shading R/G/B
Front Driver
DC/DC Convertor
SMARTCARD Reader
Shutter Control
B
F
Data Board camera
A/D Conv.
D/A Conv.
I²C Contr.
PROM EEPROM RAM.
Micro Contr.
RS 232 Contr.
ID Adaptor
LON Bus
ID Head
PC
I²C (B----G)
I²C lines
LVDS
New board
LDK 8000 Main Diagram
HD Heads
THOMSON
images & beyond
Page 4 of x

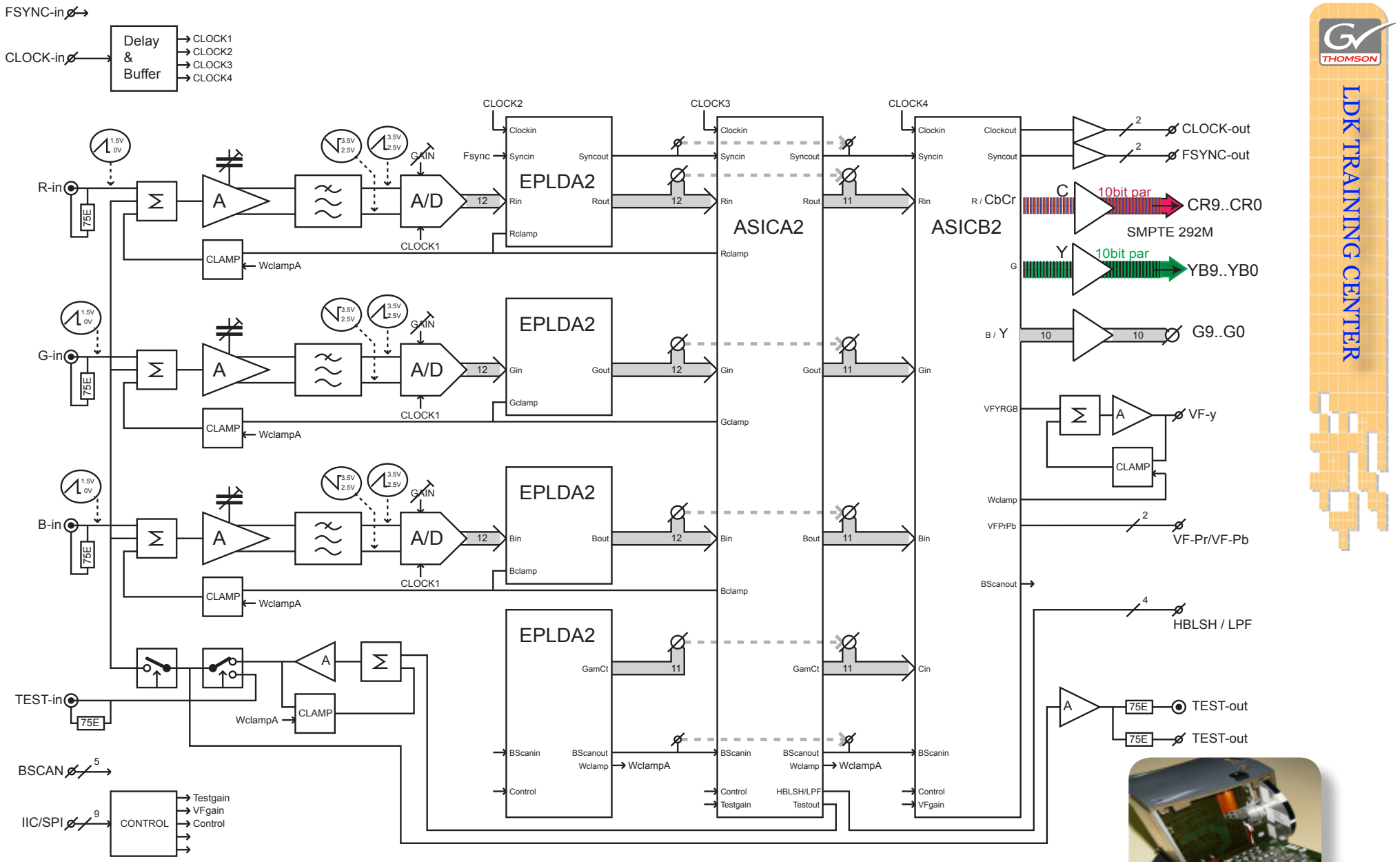


LDK 8000 Sport Main Diagram

HD Heads


Viewfinder
Switches
Connector board
Right Cover
Micr. input
Lens. conn.
I²C - D
Databoard
I²C (G) Contr
I²C - G
Databoard
POWER ON
Left switch panel
Switches
Digipot
I²C - G
Databoard
Front switch panel
Switches
I²C - G
Databoard
Focus Follow
Zoom Follow
IRIS Contr./ Follow
Lens Switches
Focus
Zoom
IRIS
R.Ext
SEAL Glass
Servo
Servo
IR Filter
CCD
LP Filter + Retardation plate
PELTIER
Sensor board
Sensor Data Board
To Sensor board
Pre Processor
V Clamp
Bl Shading
Pre Limiter
Pre Blanking
LPF
Hor Registr.
GAIN Control
Test Saw IN
R
G
B
Lens Control and Follow
Osc
Sync Mon Dig.
3922 406 5304
Sync Gen
FPGA
HD <= SD
DA
LVDS Ext
Fr reset clock
I²C(F)
Frame reset
Hlock
local
H lock
Frame reset
Ext HD out
Ext Video
VF BNC
Mic.
Power ON/OFF
Video Proc. HDTV
Elite 3922 406 5470
AD 14bit
AD 14bit
AD 14bit
Test Saw insert
PRE Filter
Clamp
A/D Conv.
Clock and / REF GEN.
DIG. Clamp
Bl Shad. Gen.
White Shad.
Black Level
GAIN Control
KNEE
MATRIX
GAMMA
SKIN detect
AUTO IRIS
Testsaw GEN.
Leaking Pixel Corr.
Contour Corr.
BL. Stretch
COL BAR insert
Color Correction
AUTO WHITE
VF Selector
VF Zebra
D/A Conv V.F.
FPGA
Formating
Ext
local
VF
DA
20p VF
HDMI
LVDS 1
LVDS 2
LVDS 3
Saw tooth
3,3V
DC / DC
12V
DA
I²C (E)
SPI
I²C (F)
SPI Control
Black Shading R/G/B
Sub Board
Puls Pattern Generator
I²C (E) Control
Fr reset clock
+12/18/28V
3 phase control
Sensing boards
Opto Coupler
Filter-driver
I²C (E)
I²C (E)
Front Driver multifunctional board
DC/DC Convertor
SMARTCARD Reader
Shutter Control
3922 406 5116
B
F
I²C (E)
Data Board camera
3922 406 5297
A/D Conv.
D/A Conv.
I²C Contr.
PROM EEPROM RAM.
Micro Contr.
intel inside
RS 232 Contr.
ID Adaptor
LON Bus
ID Head
PC
I²C (B----G)
I²C lines
LVDS
Elite New board
LDK 8000 elite Main Diagram
LDK TRAINING CENTER
THOMSON

HD Heads







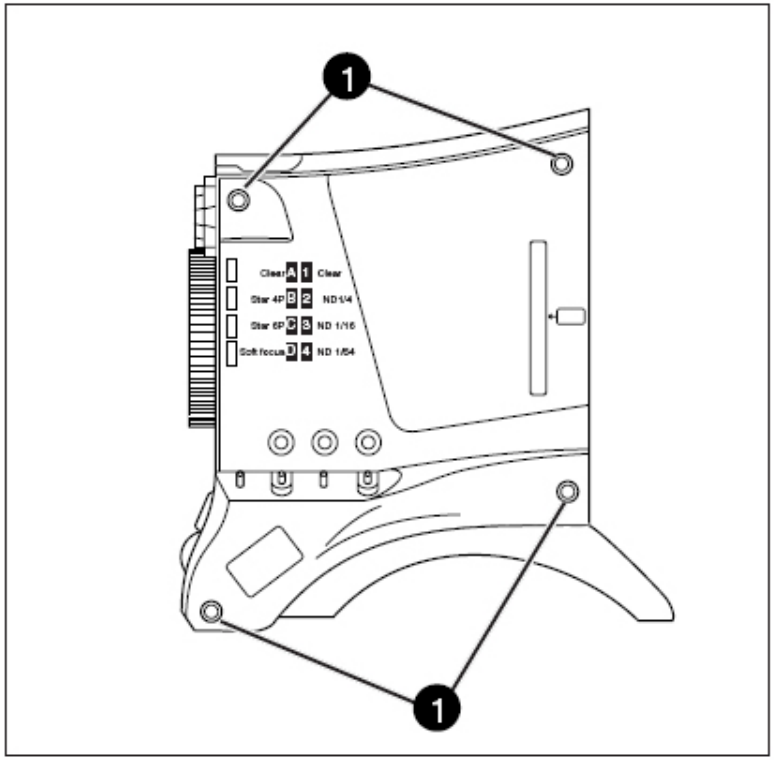
LDK 6000_6200 DVP

HD Heads

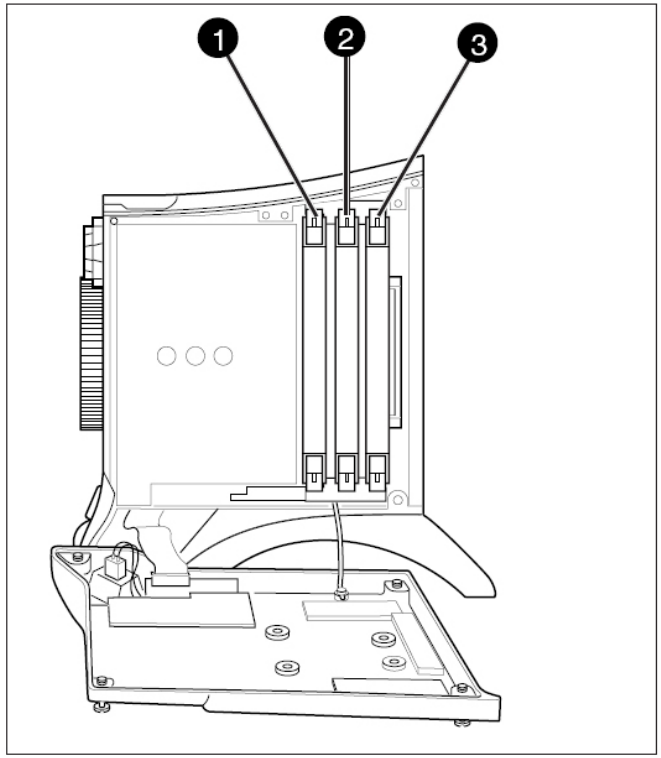
Opening the left side cover

To open the left side cover proceed as follow:

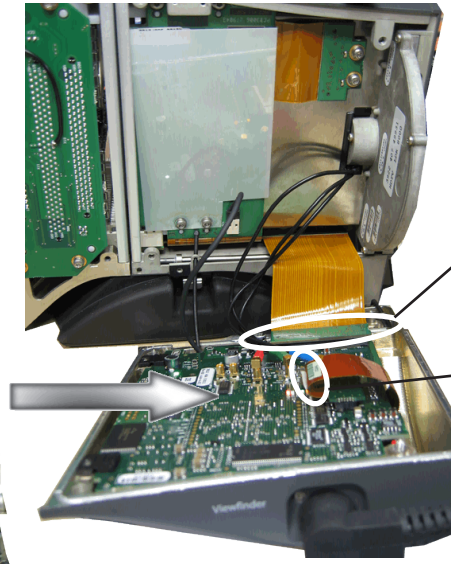
a. Loosen the four screws ❶ at the front of the camera.
b. Swing down the cover



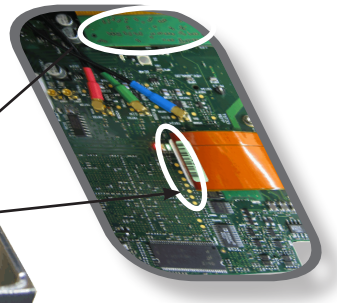
❶ Sync monitoring board
❷ Data board
❸ Front driver board

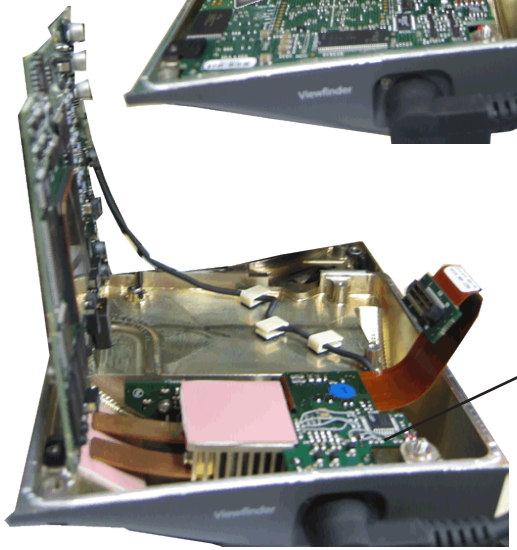


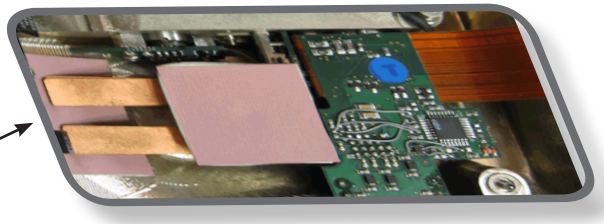




Remove connectors

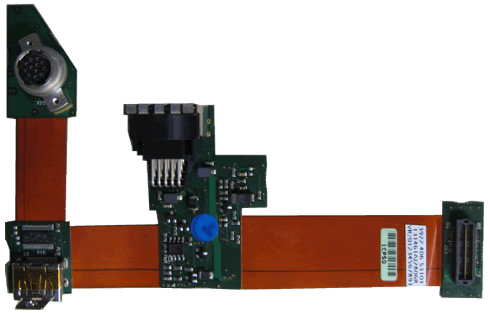








DVP Board HDTV
- 3922 406 53031 LDK 8000 std
- 3933 406 54701 LDK 8000 elite



Conn board Right Cover
- 3922 406 53101

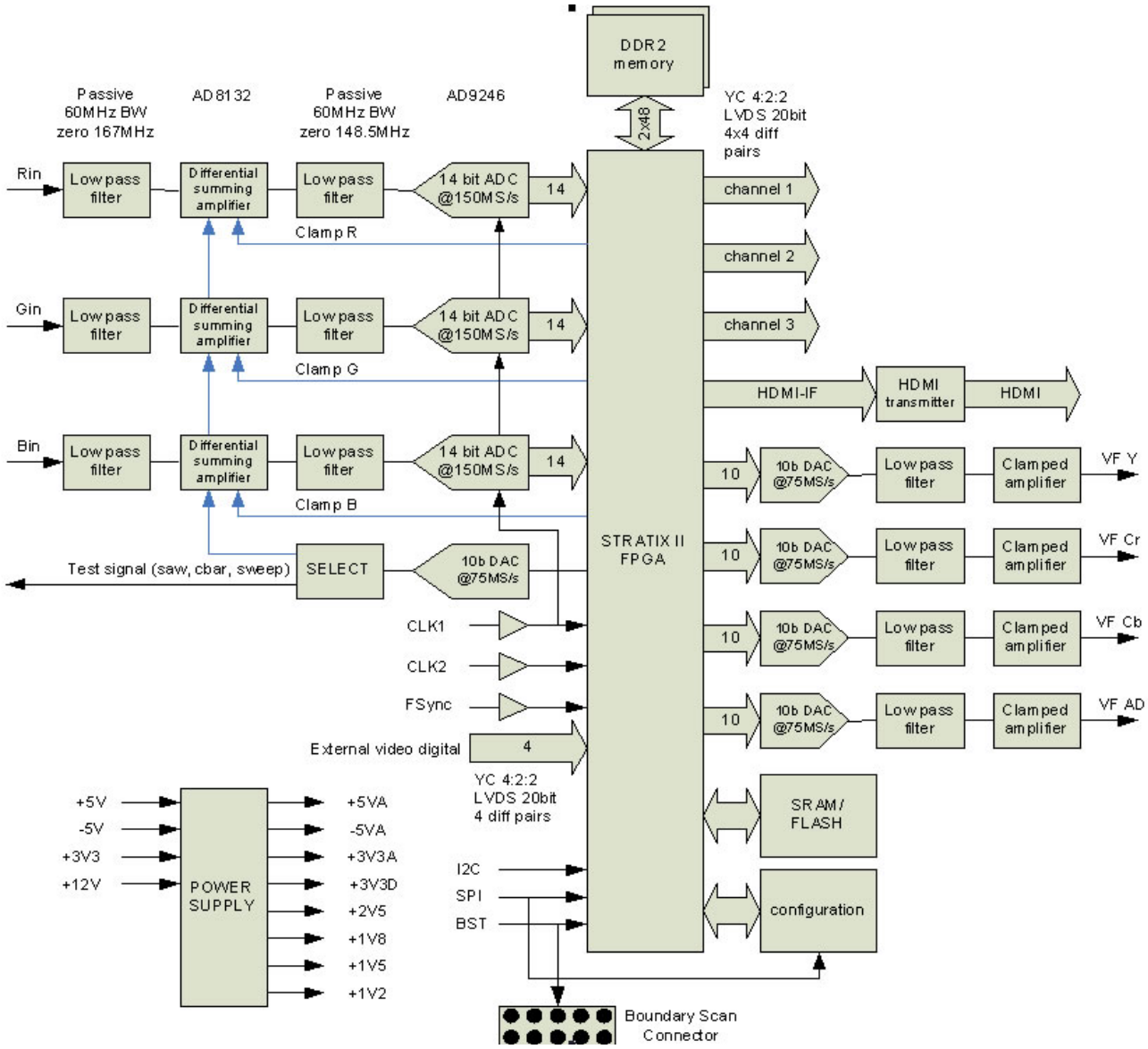
Changed
LDK 6000 => 8000

Digital Video processor LDK 8000 (+elite)

The Digital Video Processor LDK8000 board digitizes and processes camera video signals and deliver these signals to subsequent system parts for transmission or recording.
Also a separate video signal to be displayed on a viewfinder needs to be derived.

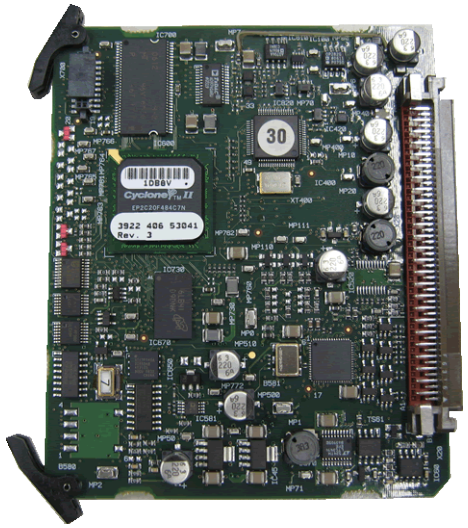
Main functions of the board are:

1. Digitize RGB video signal from pre-processor at 14bit precision and maximum 148.5MSPS.
2. Accept a digital external video signal from the Sync Mon Dig board to be displayed in the viewfinder.
3. Process video signal (FPGA)
   Corrections for analogue phenom ena origination in front.
   Format conversion like progressive segmented frame conversion and 3:2 pull down conversion.
   “Asic a2” and “Asic b2” processing viewfinder signal processing.
4. Generate analogue YCrCb output signals for a viewfinder with analogue interface.
5. Generate digital YCrCb output signals for a viewfinder with HDMI interface.
6. Generate 3 channels of lvds formatted digital interface to the DAC output board.



Sync Monitoring board LDK 8000

3922 406 53041



As the VF-functionality will move to the DVP-board,
also this board needs a re-design.
The board will have two main functions:
Master sync generator.

This board distributes the clock pulses for the camera to the DVP-board, the front module and the DAC-output board (adapter). The signals H-LOCK and FRAME RESET coming from the adapter are used to synchronize the camera with the base station or the Ext Ref input signal.
The frequency of the clock pulses depends on the video standard in which the camera is operating (37,125, 55 MHz or 74.25 MHz).

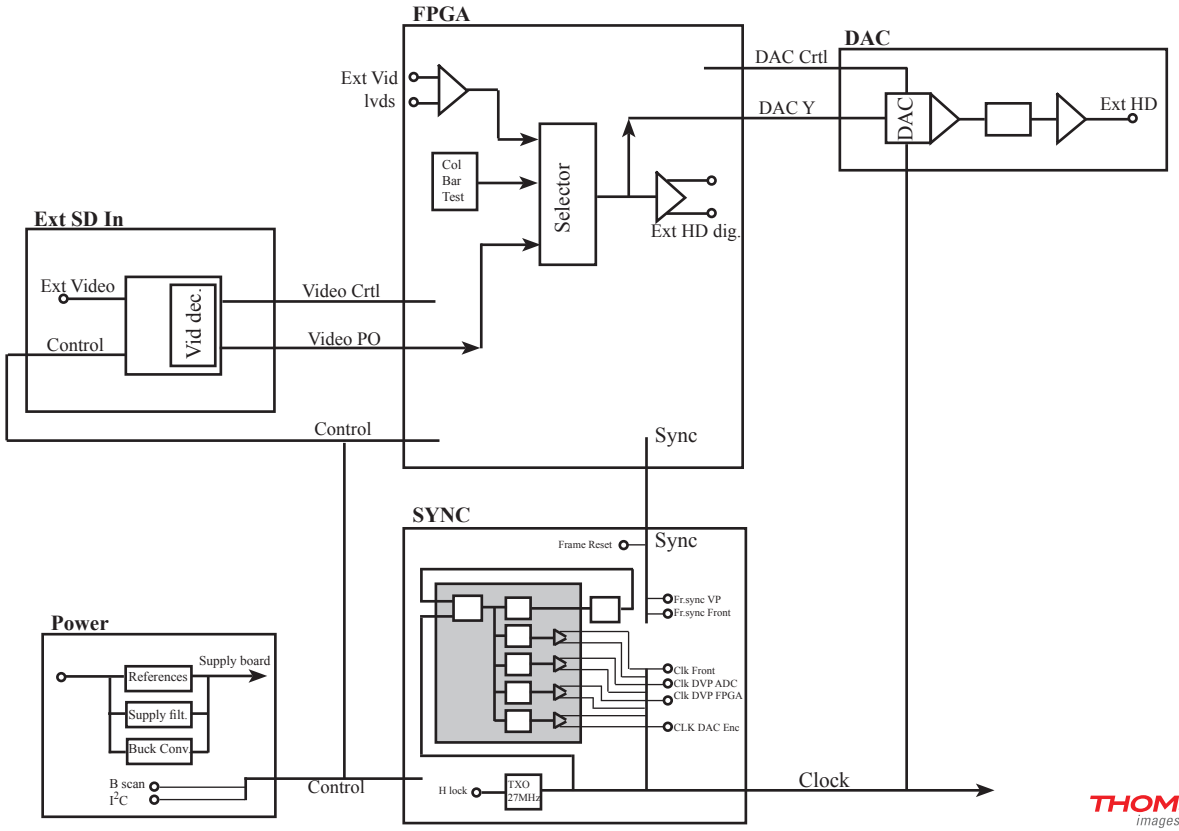
Frame rate converter for the external signal.

As it takes too much interconnection for the DAC-output board to do the up-conversion of the (SD) Ext VF signal, this up-conversion is implemented on this board.

The analog SD-signal enters the camera head and is converted to an (HD-) LVDS signal for the DVP-board.
At the DVP-board the signal is mixed/switched with the local VF-signal.
The board also has a LVDS input for the external signal.
This is the EXT input when a 10Ge fiber adapter is being used (future).In this case the signal can be transmitted directly to the DVP-board.

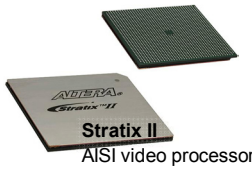
Another reason to choose for this function on this board and not in the adapter is the compatibility with the old triax-adapter

The VF-functionality
(inserting text, cadres, switching, DA conversion etc)
is transferred to the DVP-board.
The FPGA for this new Sync-monitoring can be cheaper as it has less functionality and also the dissipation of this board will drop.



Introduction New Software platform.

The old (previous) platform was still based on the LDK 100 (SD) technology.
With the introduction of the LDK 8000 new videoprocessing components were used for development, this is the reason why it was needed to introduce a new platform. This update will improve the overall performance and stability from the the LDK 8000 type camera.
Several new features (see changes) are also part of this update.
2 different DVP boards will be available
5436 / 5470(elite)



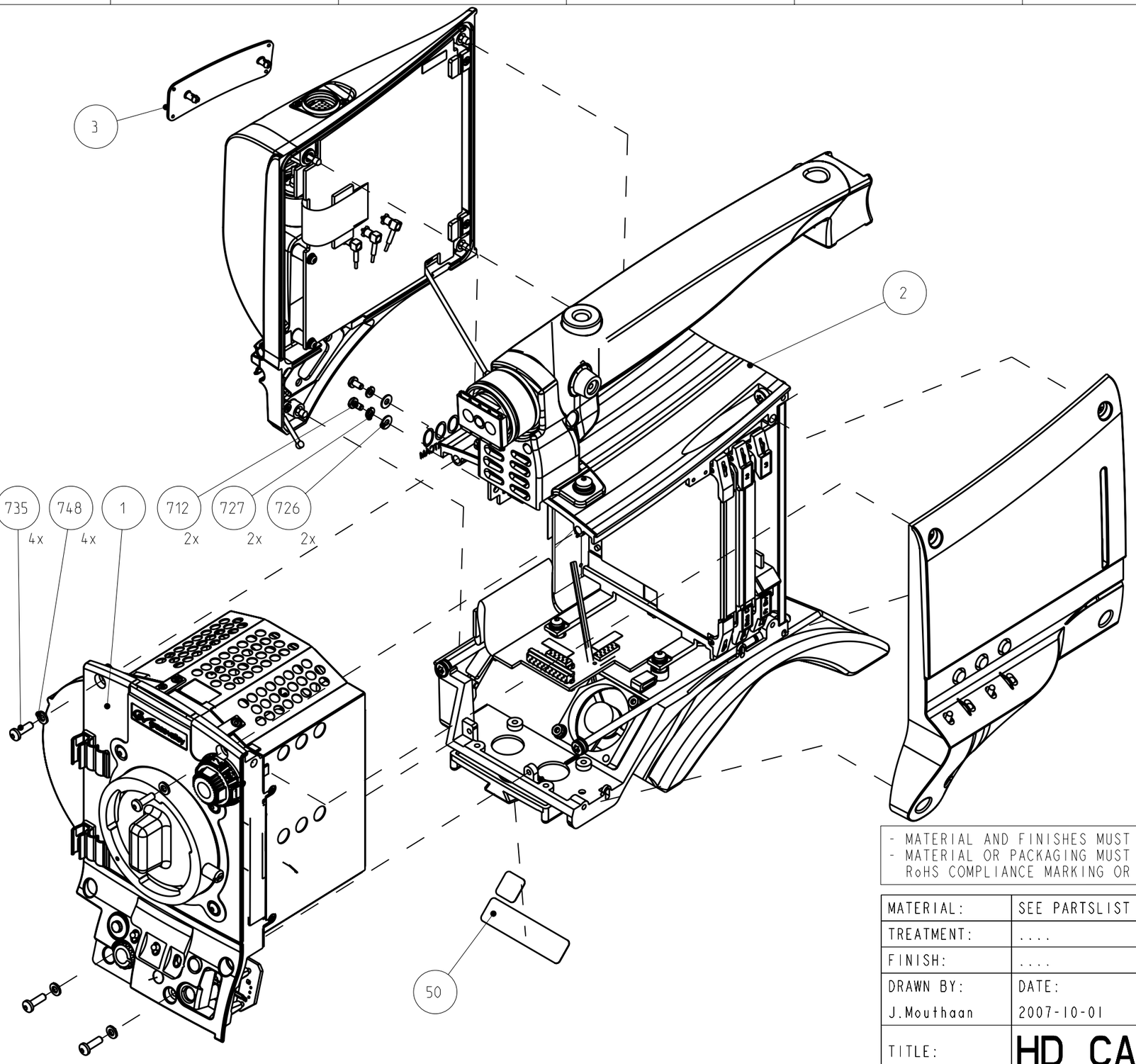
AISI video processor
90 or 130 (elite) version

LDK 8000 Old Platform -> New Platform differences

	Old platform		New platform (AISI* software)			
	LDK 8000		8000 update		8000 Elite	
	type	*Application*	*type*	*Application*	*type*	*Application*
databoard	5297	**(5070) v7**	5297	**(5299) v6**	5297	**(5299) v6**
		Firmware		*Firmware*		*Firmware*
DVP board	5303	(5026) v..	5436	(5313) v5	5470	(5429)S72_16
NIOS*		(5298)0.2		(5298) v2		(5298) v3
SyncMon	5304	(5027)v19	5437	(5314) v5	5437	(5314) v5
			Changes		**Changes**	
			- SmartCard improvements (OCP/CAM)			
			- Video parameters improvements.			
			Detail and Negative detail for skin			
			Skin detail level for Skin 1 and 2			
			Soft detail			
			Matrix setting XGL added			
			Knee (smooth curve)			
			Knee (detail/desat)			
			Gamma J & S curve added			
			- Improved Pixel correction Algorithm			
			- New colorbar in camera head			
					- Advanced Colour Correction	
					- Noise reducer (before Gamma/Knee)	
			See USER manual for details			
After **STANDARD FACTORY RECALL** no visual differences between camera versions *differences will only be visible when using the new features.*						
			After downloading application software Current settings stays intact.			

Remarks

In Security menu function **Green Button**	selection **STD or 8000** is **removed** (application v5 new platform)
	selection **STD or 8000 set to STD** (application v3 new platform)
STRATIX II	* AISI = in fpga firmware (Video)
	* NIOS = in fpga boot firmware (micr. controller)



950 TO BE APPLIED ON
HELICOILS WHEN NECESSARY
MIN. DRYING TIME: 30 MIN.

COMMON DOCUMENTS: 3922 407 53031

ALSO VALID FOR
8926 800 0210

- MATERIAL AND FINISHES MUST BE RoHS COMPLIANT
- MATERIAL OR PACKAGING MUST BE MARKED WITH RoHS COMPLIANCE MARKING OR LABEL

Rev	Name	Date
.	....	....-..-..
.	....	....-..-..
.	....	....-..-..
.	....	....-..-..
1	VH	2008-08-20

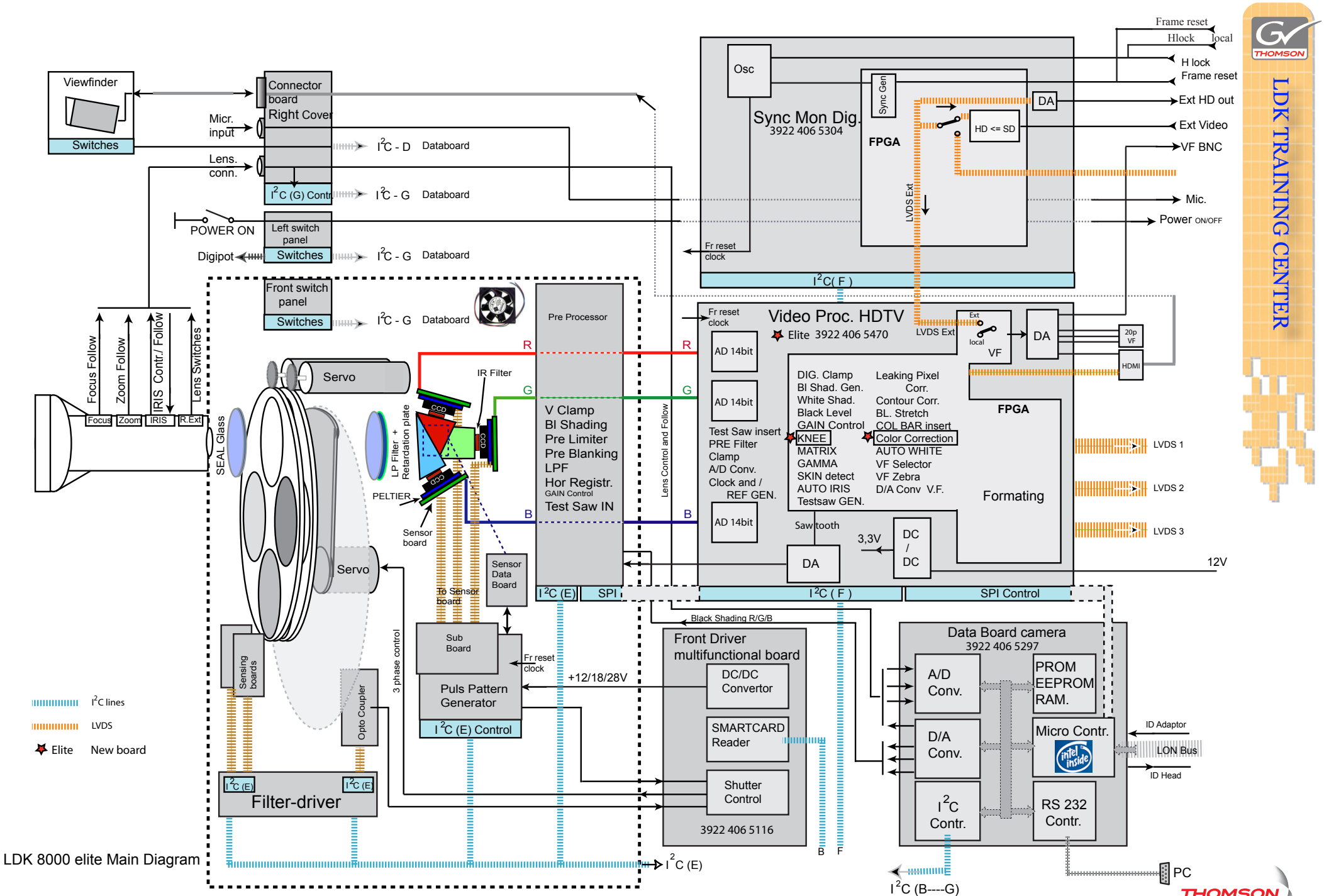
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TREATMENT:	....				1:2
FINISH:	....				
DRAWN BY:	DATE:	GENERAL ROUGHNESS:	TOLERANCES UNLESS OTHERWISE STATED:		UNIT
J.Mouthaan	2007-10-01	Ra 3.2 n um	DIMENSION:±0,2	ANGLE: ±1°	mm

TITLE: **HD CAM HEAD LDK8000/20**

grass valley

DOCUMENT NUMBER	FORMAT	SHEET
8926 800 0200	A3	1/1
RELEASE LEVEL: Released	110-01	.

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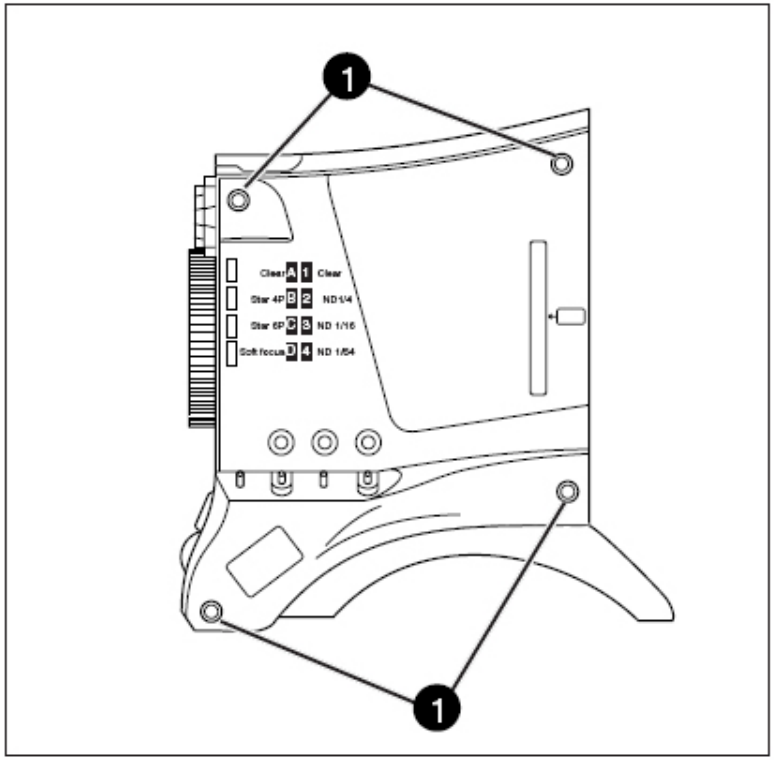

Viewfinder
Switches
Connector board
Right Cover
Micr. input
Lens. conn.
I²C - D
Databoard
I²C (G) Contr
I²C - G
Databoard
POWER ON
Left switch panel
Switches
Digipot
I²C - G
Databoard
Front switch panel
Switches
I²C - G
Databoard
Focus Follow
Zoom Follow
IRIS Contr./ Follow
Lens Switches
Focus
Zoom
IRIS
R.Ext
SEAL Glass
Servo
Servo
IR Filter
CCD
LP Filter + Retardation plate
PELTIER
Sensor board
Sensor Data Board
To Sensor board
Pre Processor
V Clamp
Bl Shading
Pre Limiter
Pre Blanking
LPF
Hor Registr.
GAIN Control
Test Saw IN
R
G
B
Lens Control and Follow
Osc
Sync Mon Dig.
3922 406 5304
Sync Gen
FPGA
HD <= SD
DA
LVDS Ext
Fr reset clock
I²C(F)
Frame reset
Hlock
local
H lock
Frame reset
Ext HD out
Ext Video
VF BNC
Mic.
Power ON/OFF
Video Proc. HDTV
Elite 3922 406 5470
AD 14bit
AD 14bit
AD 14bit
Test Saw insert
PRE Filter
Clamp
A/D Conv.
Clock and / REF GEN.
DIG. Clamp
Bl Shad. Gen.
White Shad.
Black Level
GAIN Control
KNEE
MATRIX
GAMMA
SKIN detect
AUTO IRIS
Testsaw GEN.
Leaking Pixel Corr.
Contour Corr.
BL. Stretch
COL BAR insert
Color Correction
AUTO WHITE
VF Selector
VF Zebra
D/A Conv V.F.
FPGA
Formating
Ext
local
VF
DA
20p VF
HDMI
LVDS 1
LVDS 2
LVDS 3
Saw tooth
3,3V
DC / DC
12V
DA
I²C (E)
SPI
I²C (F)
SPI Control
Black Shading R/G/B
Sub Board
Puls Pattern Generator
I²C (E) Control
Fr reset clock
+12/18/28V
3 phase control
Sensing boards
Opto Coupler
Filter-driver
I²C (E)
I²C (E)
Front Driver multifunctional board
DC/DC Convertor
SMARTCARD Reader
Shutter Control
3922 406 5116
B
F
I²C (E)
Data Board camera
3922 406 5297
A/D Conv.
D/A Conv.
I²C Contr.
PROM EEPROM RAM.
Micro Contr.
intel inside
RS 232 Contr.
ID Adaptor
LON Bus
ID Head
PC
I²C (B----G)
I²C lines
LVDS
Elite New board
LDK 8000 elite Main Diagram
LDK TRAINING CENTER
THOMSON

HD Heads

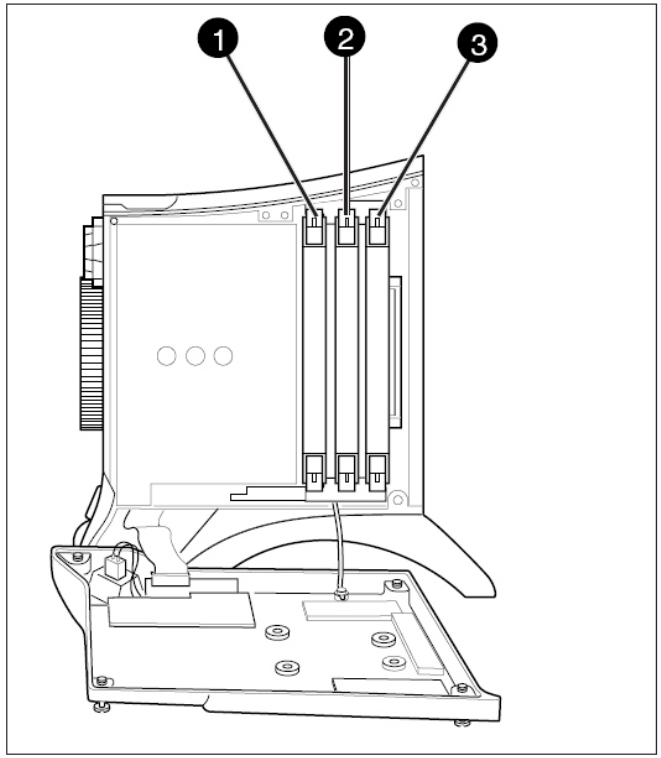
Opening the left side cover

To open the left side cover proceed as follow:

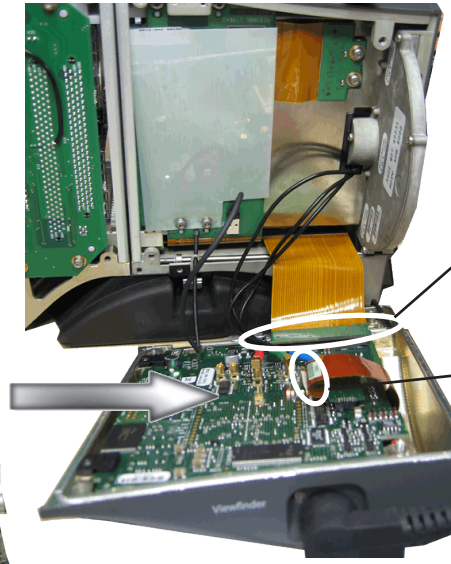
a. Loosen the four screws ❶ at the front of the camera.
b. Swing down the cover



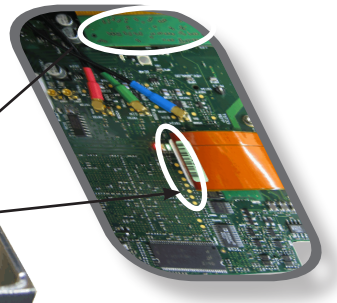
❶ Sync monitoring board
❷ Data board
❸ Front driver board

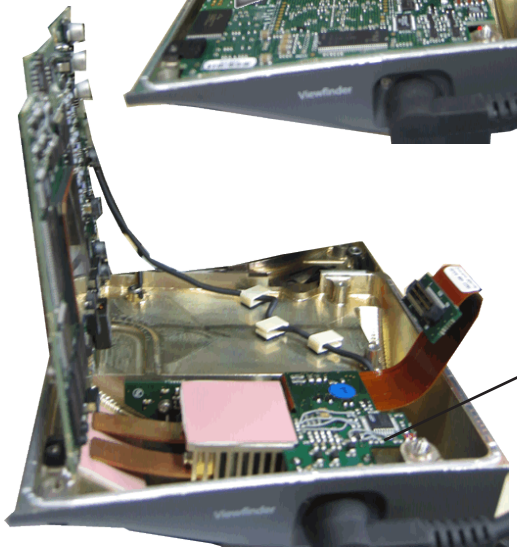


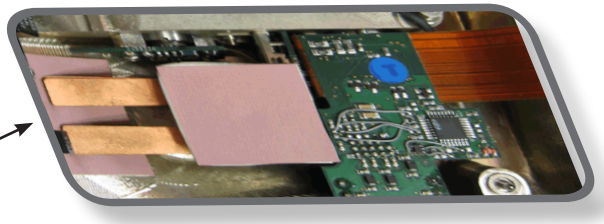




Remove connectors

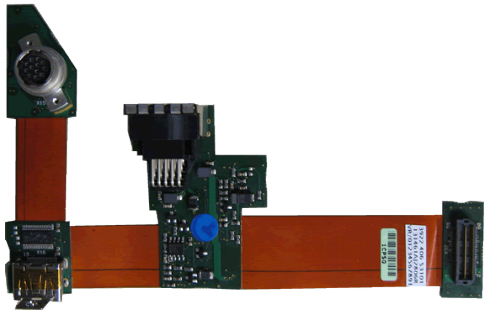








DVP Board HDTV
- 3922 406 53031 LDK 8000 std
- 3933 406 54701 LDK 8000 elite



Conn board Right Cover
- 3922 406 53101

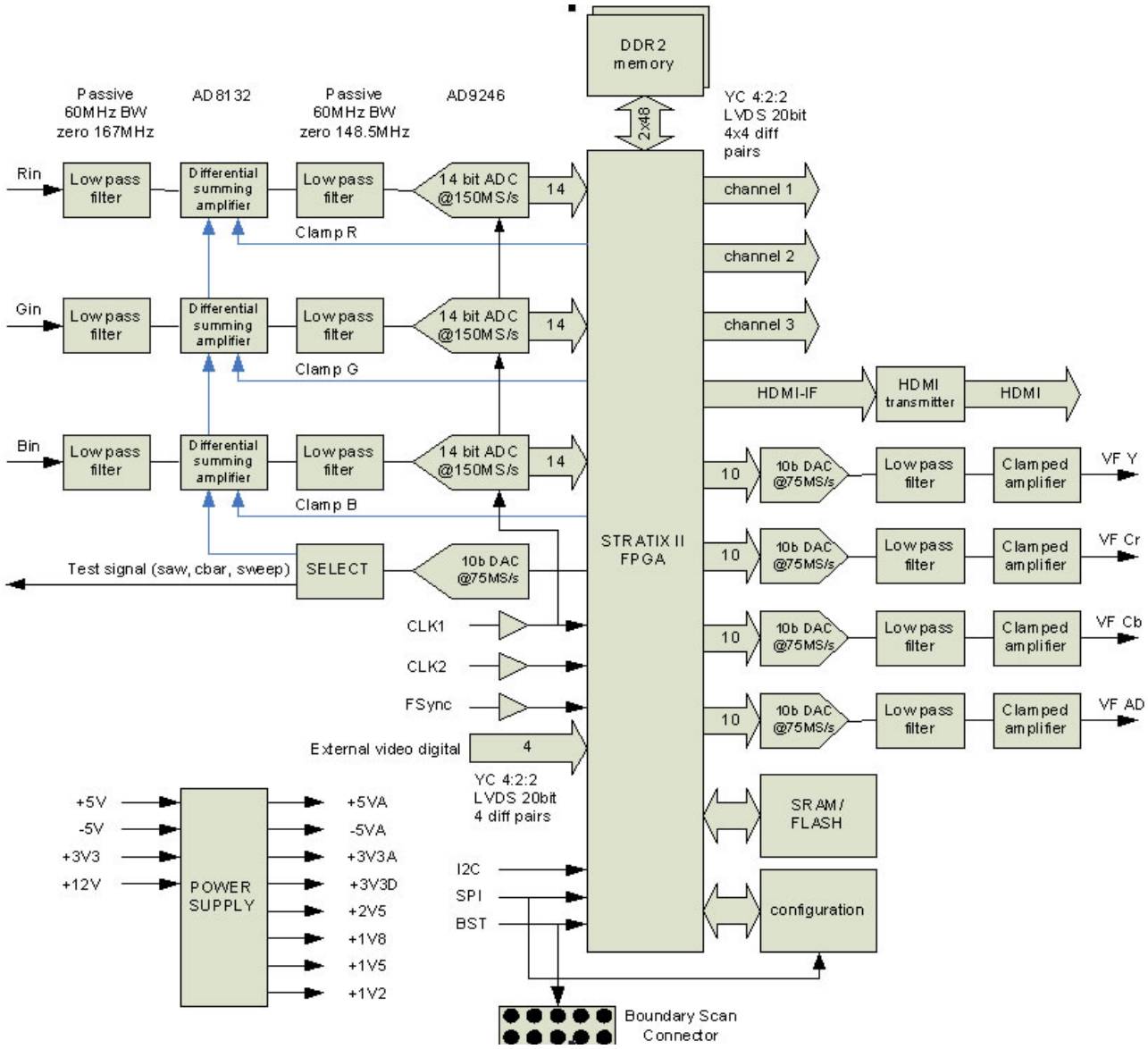
Changed
LDK 6000 => 8000

Digital Video processor LDK 8000 (+elite)

The Digital Video Processor LDK8000 board digitizes and processes camera video signals and deliver these signals to subsequent system parts for transmission or recording.
Also a separate video signal to be displayed on a viewfinder needs to be derived.

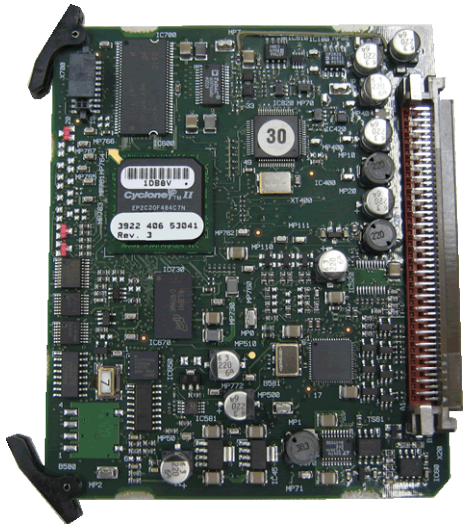
Main functions of the board are:

1. Digitize RGB video signal from pre-processor at 14bit precision and maximum 148.5MSPS.
2. Accept a digital external video signal from the Sync Mon Dig board to be displayed in the viewfinder.
3. Process video signal (FPGA)
   Corrections for analogue phenom ena origination in front.
   Format conversion like progressive segmented frame conversion and 3:2 pull down conversion.
   “Asic a2” and “Asic b2” processing viewfinder signal processing.
4. Generate analogue YCrCb output signals for a viewfinder with analogue interface.
5. Generate digital YCrCb output signals for a viewfinder with HDMI interface.
6. Generate 3 channels of lvds formatted digital interface to the DAC output board.



Sync Monitoring board LDK 8000

3922 406 53041



As the VF-functionality will move to the DVP-board,
also this board needs a re-design.
The board will have two main functions:
Master sync generator.

This board distributes the clock pulses for the camera to the DVP-board, the front module and the DAC-output board (adapter). The signals H-LOCK and FRAME RESET coming from the adapter are used to synchronize the camera with the base station or the Ext Ref input signal.
The frequency of the clock pulses depends on the video standard in which the camera is operating (37,125, 55 MHz or 74.25 MHz).

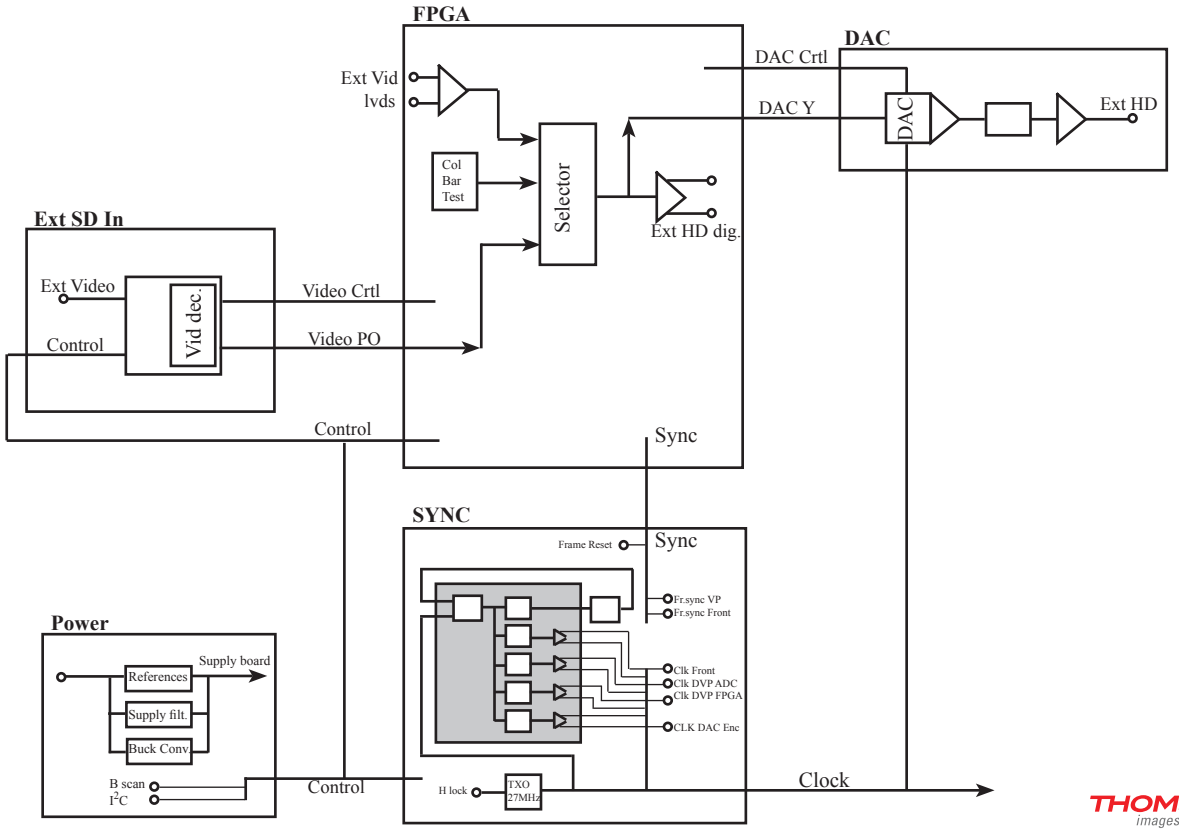
Frame rate converter for the external signal.

As it takes too much interconnection for the DAC-output board to do the up-conversion of the (SD) Ext VF signal, this up-conversion is implemented on this board.

The analog SD-signal enters the camera head and is converted to an (HD-) LVDS signal for the DVP-board.
At the DVP-board the signal is mixed/switched with the local VF-signal.
The board also has a LVDS input for the external signal.
This is the EXT input when a 10Ge fiber adapter is being used (future).In this case the signal can be transmitted directly to the DVP-board.

Another reason to choose for this function on this board and not in the adapter is the compatibility with the old triax-adapter

The VF-functionality
(inserting text, cadres, switching, DA conversion etc)
is transferred to the DVP-board.
The FPGA for this new Sync-monitoring can be cheaper as it has less functionality and also the dissipation of this board will drop.

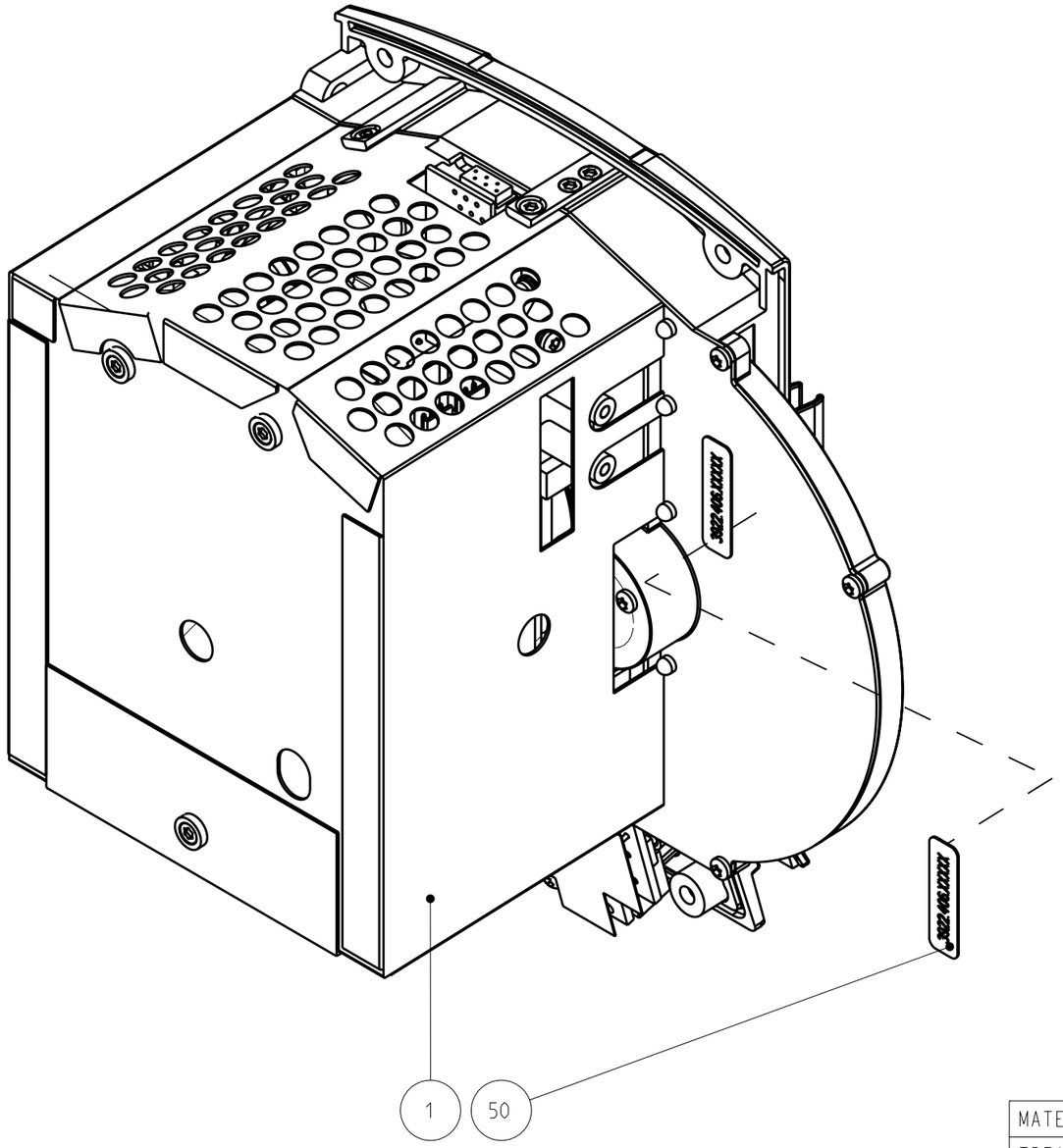


3922 407 49831;X SET OF ADD.SUPPL. LDK8000 Elite

Ref	Description	Part 12nc	Service part
1	SMART CARD LDK 100	3922 401 49042	Yes
2	OWNER SETUP/PINCODE CARD		
5	RAIN/OFF USE COVER	3922 401 49584	Yes
7	USER'S GUIDE LDK 5021	3922 496 47341	Yes

3922 407 55171;2 FRONT 8000 STANDARD

Ref	Description	Part 12nc	Service part
1	FRONTMODULE HDTV NEXT		
50	TYPEPLATE SAM		
90	SET OF FW 8000 STANDARD		



ALSO VALID FOR:
3922 407 5442
3922 407 5517

Rev	Name	Date
.	....	....-..-..
.	....	....-..-..
.	....	....-..-..
.	....	....-..-..
1	VH	2008-08-20

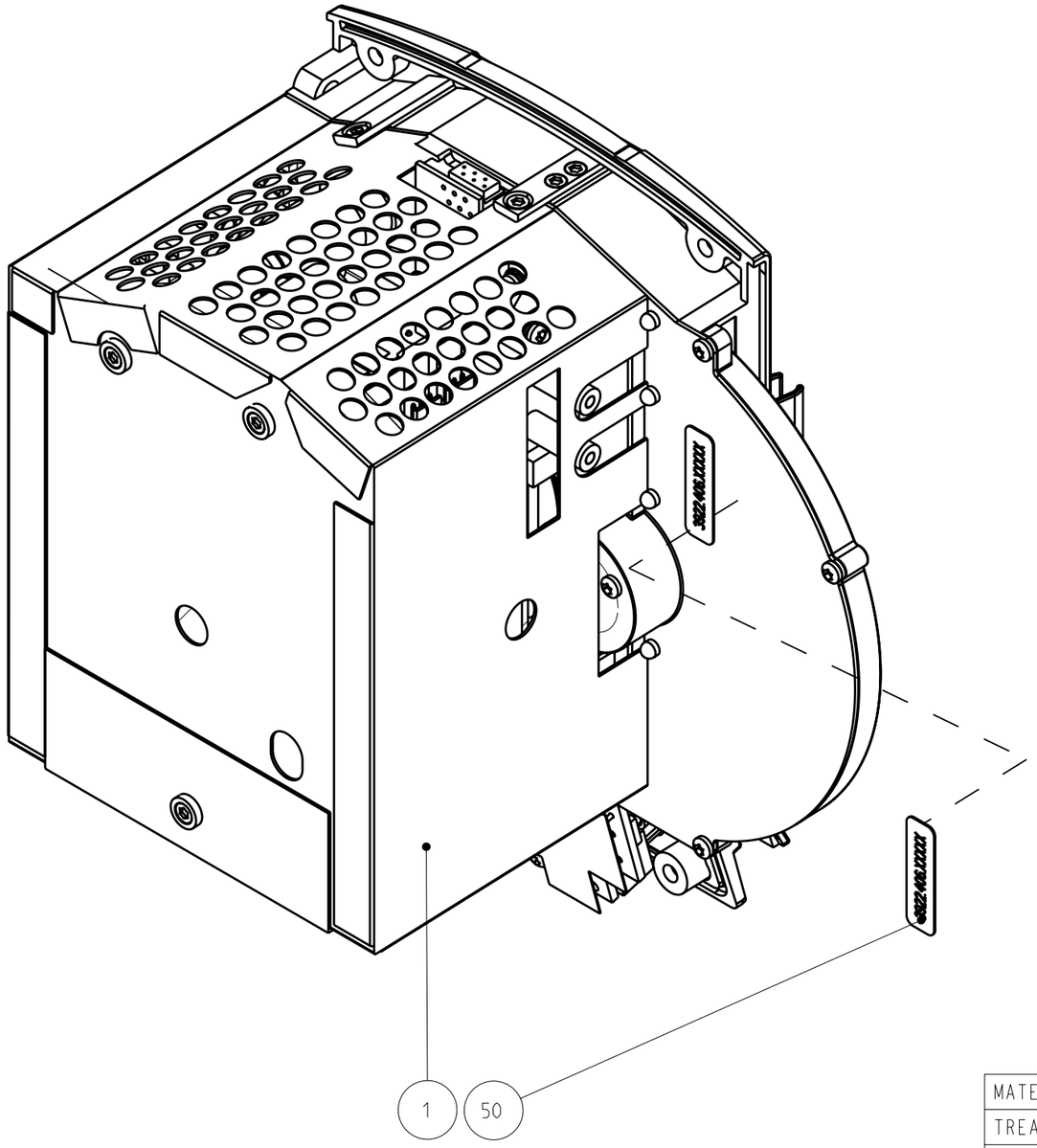
MATERIAL:	SEE PARTSLIST				SCALE
TREATMENT:	....				1:1
FINISH:	....				
DRAWN BY: J. DAM	DATE: 2006-12-17	GENERAL ROUGHNESS: Ra 3.2 n um	TOLERANCES UNLESS OTHERWISE STATED: DIMENSION:±0,2	ANGLE: ±1°	UNIT mm
TITLE:	FRONT 8000 STANDARD				

DOCUMENT NUMBER	FORMAT	SHEET
3922 407 4992	A3	1/1
RELEASE LEVEL:	110-01	.

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3922 407 55181;2 FRONT 8000 WORLDCAM

Ref	Description	Part 12nc	Service part
1	FRONTMODULE HDTV NEXT		
50	TYPEPLATE SAM		
90	SET OF FW 8000 WORLDCAM		



ALSO VALID FOR:
3922 407 5443
3922 407 5518

Rev	Name	Date
.	....	....-..-..
.	....	....-..-..
.	....	....-..-..
.	....	....-..-..
1	VH	2008-08-20

MATERIAL:	SEE PARTSLIST				SCALE
TREATMENT:	....				1:1
FINISH:	....				
DRAWN BY: J. DAM	DATE: 2006-12-17	GENERAL ROUGHNESS: Ra 3.2 n um	TOLERANCES UNLESS OTHERWISE STATED: DIMENSION:±0,2	ANGLE: ±1°	UNIT mm
TITLE:	FRONT 8000 WORLDCAM				

DOCUMENT NUMBER	FORMAT	SHEET
3922 407 4993	A3	1/1
RELEASE LEVEL:	110-01	.

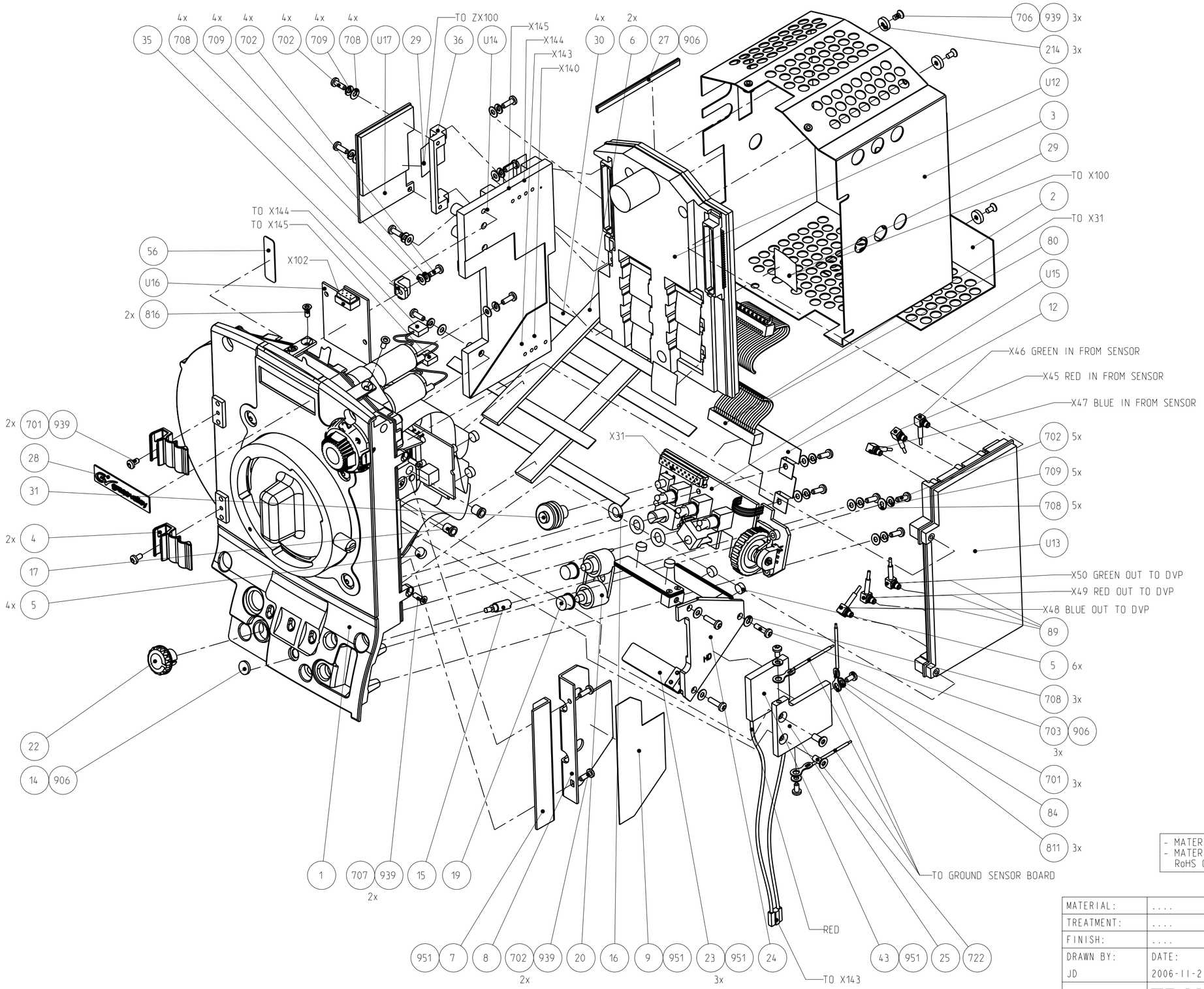
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3922 407 55111;5 FRONTMODULE HDTV NEXT

Ref	Description	Part 12nc	Service part
1	OPTICAL MODULE HDTV NEXT		
2	PLATE		
3	EMC BOX ASSY	3922 407 38524	Yes
4	CABLECLAMP	3922 400 10041	Yes
5	COMPRESSION RUBBER		
6	CELRUBBER ZK/CR FEST 10X2MM		
7	COOLING PLATE		
8	COOLING PLATE		
9	INSULATING PLATE		
12	INSULATING FOIL		
14	IR FILTER LDK100	3922 401 48661	Yes
15	SPACER		
16	O-RING 4.47x1.78 COMPOUND VITO		
17	SPRING LOADED BALL BUSH 4		
19	PUSH KNOB	3922 400 08732	Yes
20	RUBBER KNOB		
22	AUDIO LEVEL KNOB	3922 400 08513	Yes
23	COOLINGSTRIP ASSY		
24	COOLING PLATE HD		
25	HEAT TRANSFER		
27	CONTINUOUS GROMMET STRIP		
28	WORDMARK GRASS VALLEY 35MM		
29	FLEX 30P L=85MM		
30	ISOLATIE STICKER		
31	SWITCHRUBBER	3922 400 09931	Yes
35	BRACKET		
36	BLOCK		
43	PELTIER ASSY		
56	PRODUCT ID STICKER MECHANIC		
80	FLATCABLE FRONT		
84	WIRE ASSY		
89	COAX CABLE SET LONG		
214	CSK WASHER STL ST M2		
290	WIRE TIE 2,3X92 PA		
701T	PAN SCR STL ST M2x4		
702T	PAN SCR STL ST M2X6		
703T	PAN SCR STL ST M2X8		
706	CSK SCR STL ST M2x4		
708	WASH STL ST 2,2X5		
709	SPR WASH STL ST 2,1X4.4		
722T	CSK SCR STL ST M2,5x6		
730	SOLDER TAG SINGLE M2,5 BR SN		
811	LOCK WASH STL ST A4 2,2X4,5		
816	CSK SCR STL ST M2x5		
906	RUBBER GLUE SYNTHETIC NBR 042		
939	SCREW LOCK 222		
951	HEAT SINK COMPOUND		
U12	PPG HDTV		
U13	PRE PROCESSOR BOARD		

3922 407 55111;5 FRONTMODULE HDTV NEXT

Ref	Description	Part 12nc	Service part
U14	FILTERWHEEL DRIVER		
U15	FRONT SWITCH PANEL		
U16	INTERCON. BRD. ZOOMCONTR.		
U17	PPG SUBBOARD		



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- MATERIAL OR PACKAGING MUST BE MARKED WITH RoHS COMPLIANCE MARKING OR LABEL

STATUS	01	
1	JD	2007-03-28
Rev	Name	Date

MATERIAL:	....					SCALE
TREATMENT:	....					4:5
FINISH:	....					
DRAWN BY:	DATE:	GENERAL ROUGHNESS:	TOLERANCES UNLESS OTHERWISE STATED:			UNIT
JD	2006-11-21	Ra 3.2 n um	DIMENSION:±0,2	ANGLE:	±1°	mm

TITLE: **FRONT MODULE HDTV NEXT**

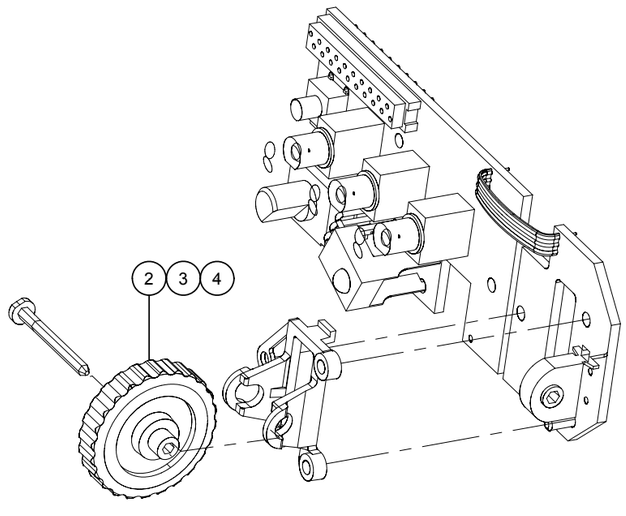
grass valley

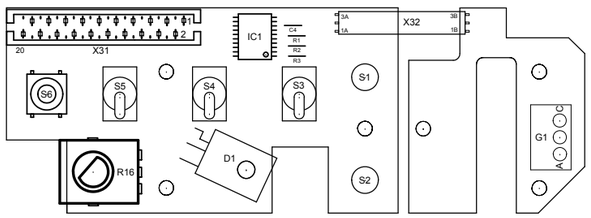
DOCUMENT NUMBER	FORMAT	SHEET
3922 407 4947	A2	1/1
RELEASE LEVEL:	110-01	.

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3922 406 53531;4 FRONT SWITCH PANEL

Ref	Description	Part 12nc	Spare part
	No spare parts available, only complete board		





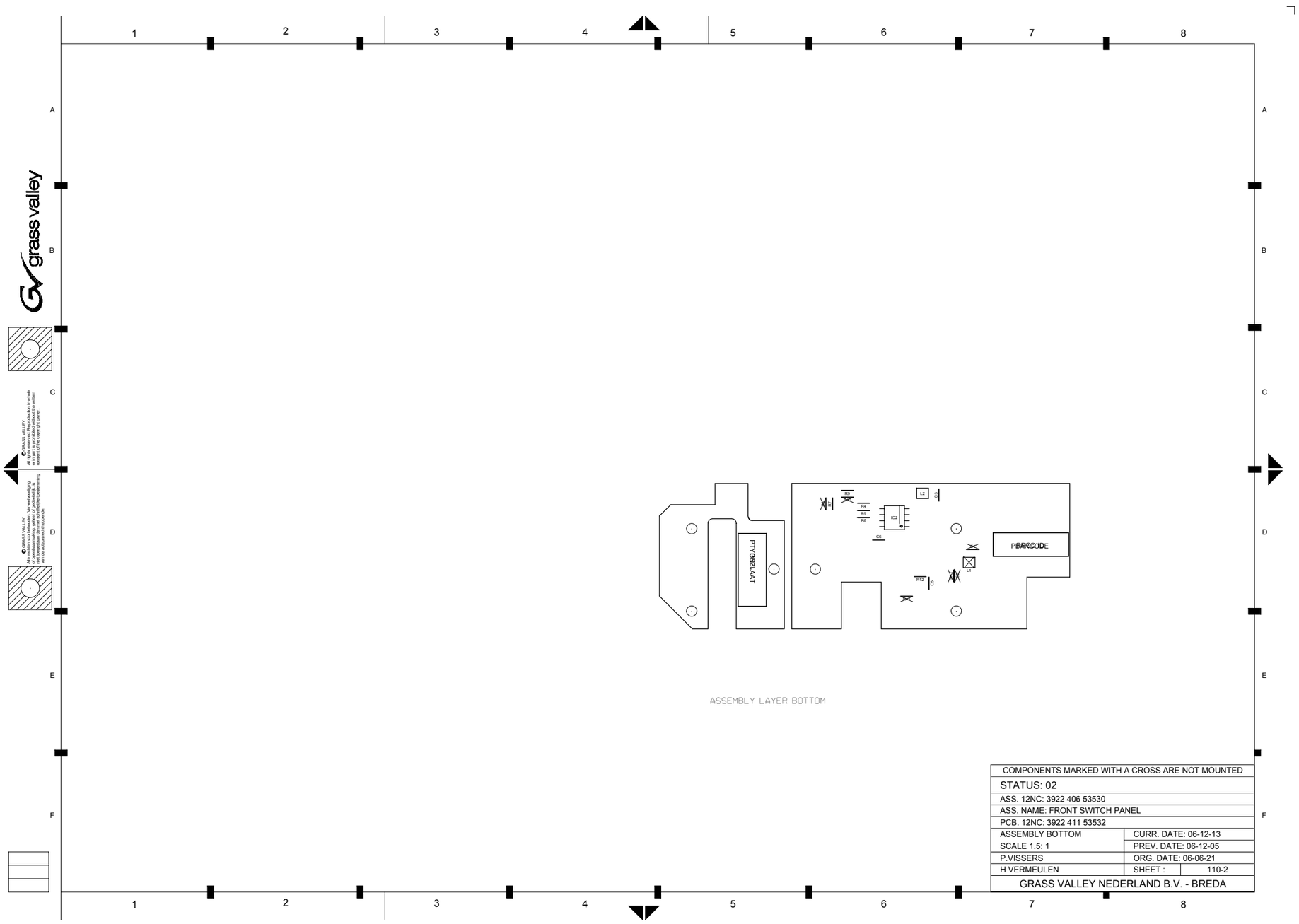
ATTENTION: THE ROTARY SWITCH MUST BY FLAT ON THE PCB
DURING WAVE SOLDERING

ASSEMBLY LAYER TOP

COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED	
STATUS: 02	
ASS. 12NC: 3922 406 53530	
ASS. NAME: FRONT SWITCH PANEL	
PCB. 12NC: 3922 411 53532	
ASSEMBLY TOP	CURR. DATE: 06-12-13
SCALE 1.5: 1	PREV. DATE: 06-12-05
P.VISSERS	ORG. DATE: 06-06-21
H VERMEULEN	SHEET : 110-1
GRASS VALLEY NEDERLAND B.V. - BREDA	

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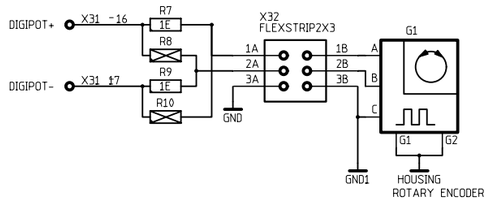


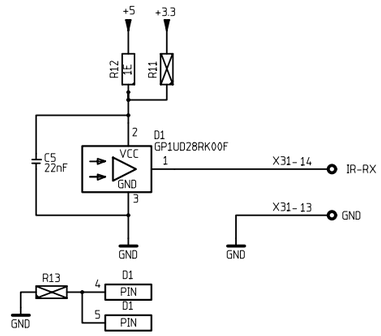
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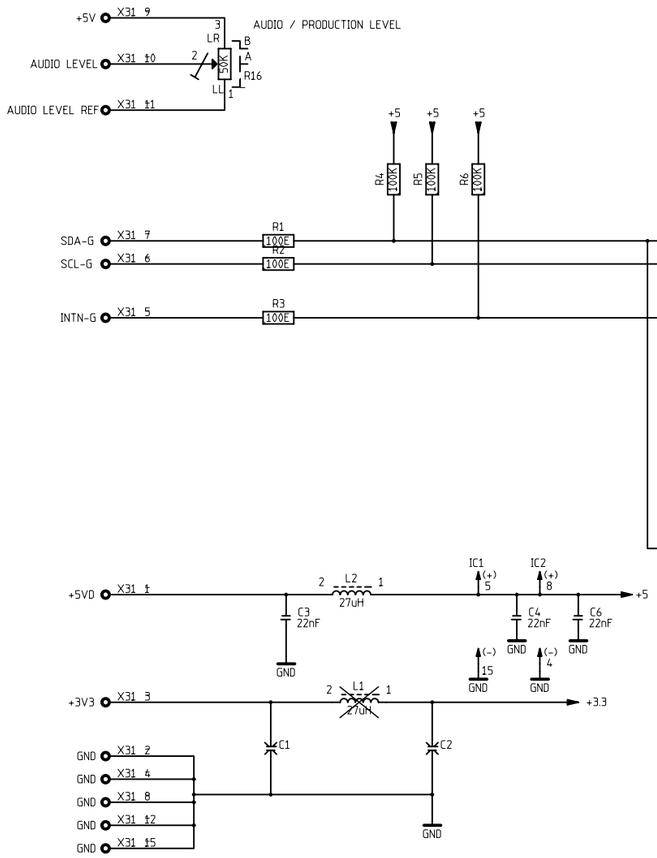
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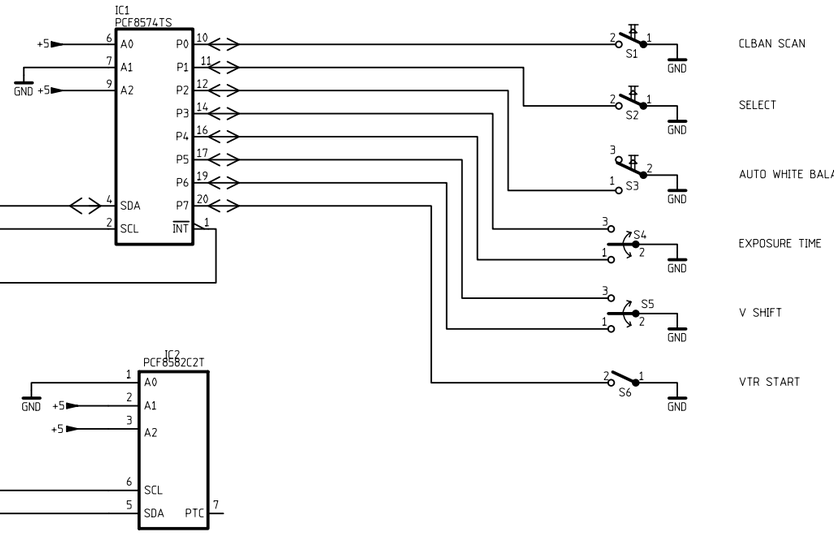
COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED		
STATUS: 02		
ASS. 12NC: 3922 406 53530		
ASS. NAME: FRONT SWITCH PANEL		
PCB. 12NC: 3922 411 53532		
ASSEMBLY BOTTOM	CURR. DATE: 06-12-13	
SCALE 1.5: 1	PREV. DATE: 06-12-05	
P.VISSERS	ORG. DATE: 06-06-21	
H VERMEULEN	SHEET :	110-2
GRASS VALLEY NEDERLAND B.V. - BREDA		

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COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED	
ASS.NO : 3922 406 53530 ASS.NAME : FRONT SWITCH PANEL	
STATUS : 02	
PCB NO. : 3922 411 53532	
SHEET NAME : SHEET NAME	
P. VISSERS	CURR. DATE :2006-12-13
CIRCUIT DIAGRAM	PREV. DATE:2006-12-05
1 SHEET 130 -1	ORG. DATE : 2006-06-21
GRASS VALLEY NEDERLAND B.V. - BREDA	

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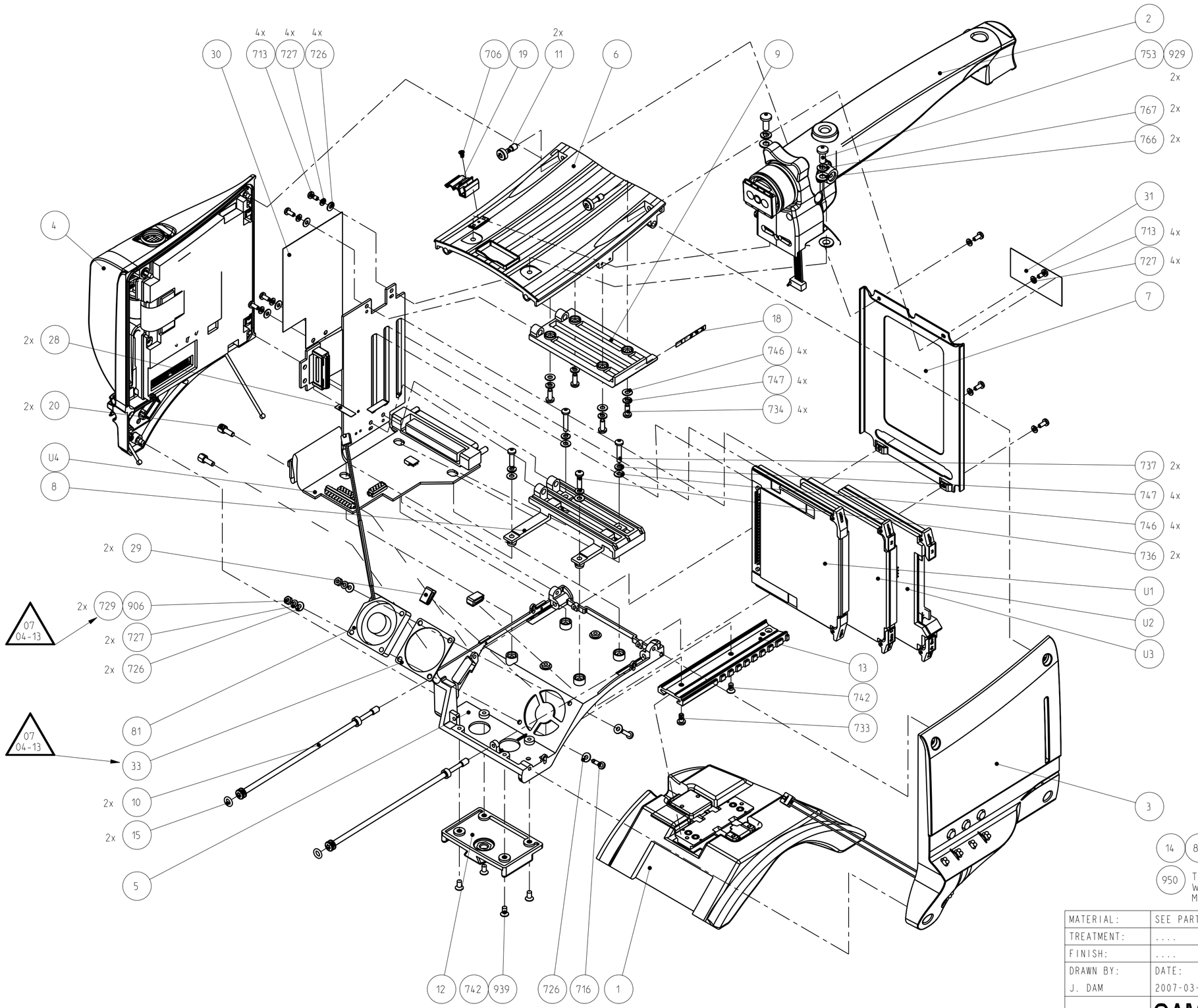
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3922 407 54791;2 GNDLS HEAD HDTV ELITE

Ref	Description	Part 12nc	Service part
1	FRONTMODULE HDTV NEXT	3922 407 55111	No
2	CAM HEAD BASIC HDTV ELITE	3922 407 54761	No

3922 407 54761;2 CAM HEAD BASIC HDTV ELITE

Ref	Description	Part 12nc	Service part
1	SHOULDERPAD ASSY	3922 407 59251	Yes
2	DIG.ZOOM HANDGRIP ASSY	3922 407 40211	Yes
3	HEAD COVER LEFT ASSY	3922 407 49361	Yes
4	HEAD COVER RIGHT ASSY ELITE	3922 407 54771	Yes
5	BOTTOM	3922 407 33392	Yes
6	TOP	3922 407 24921	Yes
7	DOCKPLATE HEAD	3922 407 53281	Yes
8	PRINTRAIL BOTTOM	3922 400 08392	Yes
9	PRINTRAIL TOP	3922 400 08401	Yes
10	DOCKSCREW M4	3922 404 21524	Yes
11	DOCKSCREW M4X14	3922 404 22583	Yes
12	V-BLOCK	3922 402 03752	Yes
13	SUPPORT GUIDE	3922 404 23034	Yes
14	SET OF ADD.SUPPL. LDK8000		
15	O-RING 4.1x1.6 VITON		
16	PRESSURE STRIP 44 MM		
17	CELRUBBER ZK/CR FEST 10X4MM		
18	CAMERA LABEL		
19	CABLECLAMP	3922 400 10041	Yes
20	HEX LOCK SCREW		
21	DOCKING PLATE SEAL FOAM		
28	INSULATING PLATE		
29	CLAMP TMC-6		
30	INSULATION PLATE MTHR BRD	3922 405 05041	Yes
31	WARNINGLABEL		
33	GASKET HEAD FAN		
80	WIRE ASSY CAMERA HEAD	3922 407 26051	Yes
81	FAN ASSY 120 MM	3922 407 38792	Yes
706	CSK SCR STL ST M2x4	2522 203 04002	Yes
713	PAN SCR STL ST M2,5x6	2522 201 08017	Yes
716	PAN SCR STL ST M2,5X12	2522 201 08021	Yes
726	WASH STL ST 2,7X6,5	2522 600 27137	Yes
727	SPR WASH STL ST 2,6X5,1	2522 613 12063	Yes
729	HEX NUT STL ST M2,5	2522 401 09064	Yes
733	PAN SCR STL ST M3X6	2522 201 08031	Yes
734	PAN SCR STL ST M3X8	2522 201 08032	Yes
736	PAN SCR STL ST M3X12	2522 201 08034	Yes
737	PAN SCR STL ST M3X16	2522 201 08036	Yes
742	CSK SCR STL ST M3X6	2522 203 04023	Yes
746	WASH STL ST 3,2X7	2522 600 27017	Yes
747	SPR WASH STL ST 3,1X5,7	2522 613 12005	Yes
753	PAN SCR STL ST M4X10	2522 201 08049	Yes
766	WASH STL ST 4,3X9	2522 600 27026	Yes
767	SPR WASH STL ST 4,1X7,1	2522 613 12009	Yes
906	RUBBER GLUE SYNTHETIC NBR 042		
U1	SYNC. MON. DIG. BRD	3922 406 54371	Yes
U2	DATA BOARD	3922 406 52971	Yes
U3	FRONT DRIVER MULTI FORMAT	3922 406 51161	Yes
U4	MOTHERBOARD CAM HD	3922 406 53071	Yes



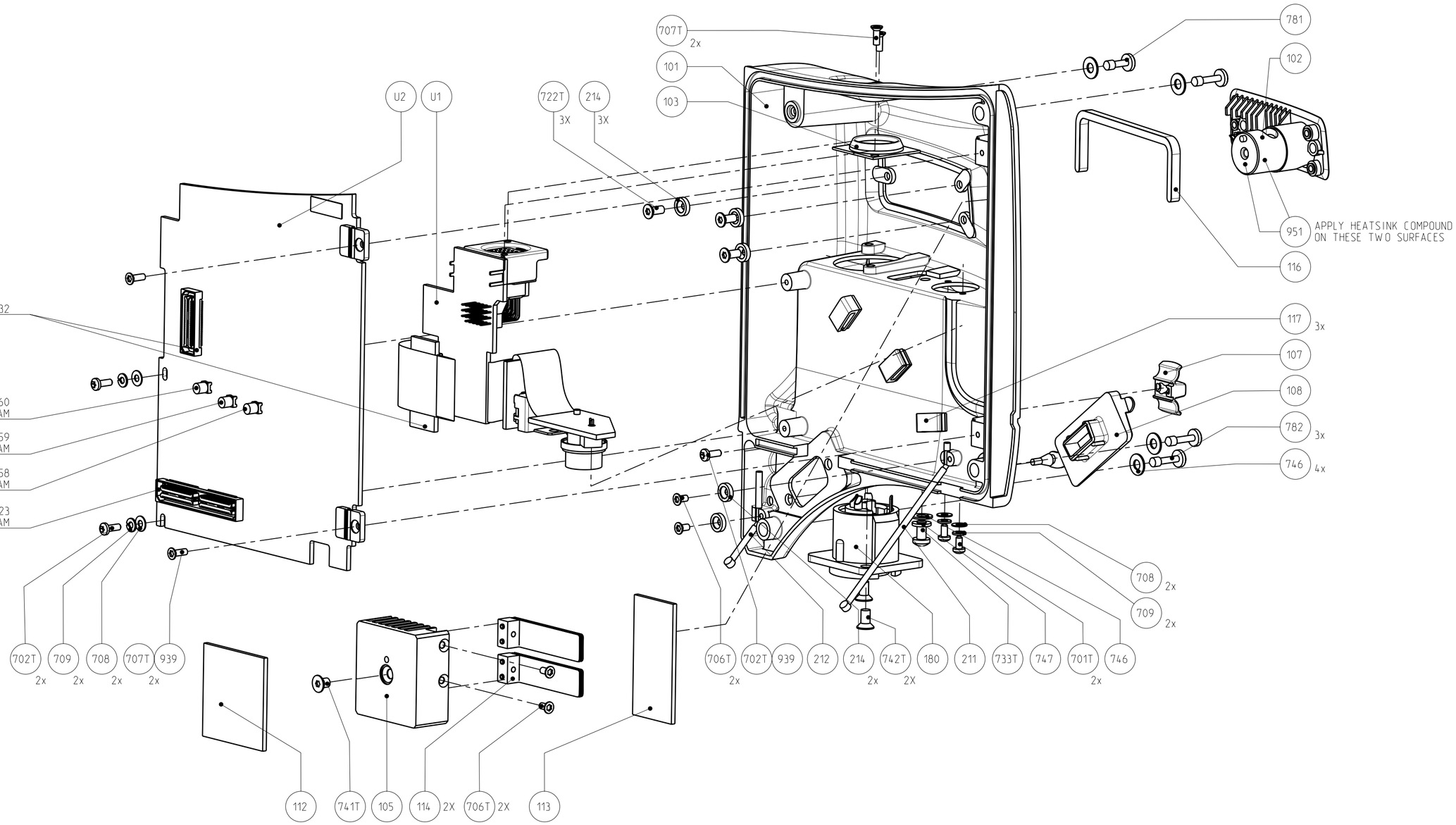
Rev	Name	Date
.	....	....-..-..
.	....	....-..-..
.	....	....-..-..
.	....	....-..-..
1	JD	2007-04-13

MATERIAL:	SEE PARTLIST				SCALE
TREATMENT:	....				1:2
FINISH:	....				
DRAWN BY: J. DAM	DATE: 2007-03-21	GENERAL ROUGHNESS: Ra 3.2 n um	TOLERANCES UNLESS OTHERWISE STATED: DIMENSION: ±0,2 ANGLE: ±1°		UNIT mm
TITLE:	CAMERA HEAD BASIC 8000				
grass valley	DOCUMENT NUMBER: 3922 407 4981			FORMAT: A2	SHEET: 1/1
	RELEASE LEVEL:			110-01	.

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3922 407 54771;1 HEAD COVER RIGHT ASSY ELITE

Ref	Description	Part 12nc	Service part
101	COVER RIGHT PAINTED	3922 407 49381	Yes
102	COOLING LOGO MACHINED	3922 407 53241	Yes
103	SEALING VF-CONNECTOR	3922 400 08501	Yes
105	FPGA COOLING	3922 404 39643	Yes
107	CABLECLAMP	3922 400 10051	Yes
108	RAINCOVER RS232	3922 400 09031	Yes
112	GAP PAD FPGA .060 INCH	3922 405 04771	Yes
113	GAP PAD	3922 405 03482	Yes
114	COOLINGSTRIP ASSY	3922 407 38232	Yes
116	COOLING LOGO SEALING	3922 405 05012	Yes
117	CLAMP TMC-6	2422 015 17594	Yes
180	NTRIK MIC CABLE ASSY	3922 407 50382	Yes
211	COVER HINGE LONG	3922 400 09132	Yes
212	COVER HINGE SHORT	3922 400 09142	Yes
214	CSK WASHER STL ST M2	2522 700 06045	Yes
701T	PAN SCR STL ST M2x4	2522 201 08002	Yes
702T	PAN SCR STL ST M2X6	2522 201 08004	Yes
706T	CSK SCR STL ST M2x4	2522 203 04002	Yes
707T	CSK SCR STL ST M2x6	2522 203 04004	Yes
708	WASH STL ST 2,2X5	2522 600 27151	Yes
709	SPR WASH STL ST 2,1X4.4	2522 613 12001	Yes
722T	CSK SCR STL ST M2,5x6	2522 203 04013	Yes
733T	PAN SCR STL ST M3X4	2522 201 08028	Yes
741T	CSK SCR STL ST M3X4	2522 203 04021	Yes
742T	CSK SCR STL ST M3X6	2522 203 04023	Yes
746	WASH STL ST 3,2X7	2522 600 27017	Yes
747	SPR WASH STL ST 3,1X5,7	2522 613 12005	Yes
781	PAN CAP SCR STL.ST M3x10	2522 200 03024	Yes
782	PAN CAP SCR STL.ST M3x12	2522 200 03025	Yes
939	SCREW LOCK 222		
951	HEAT SINK COMPOUND		
U1	CONN.BRD RIGHT COVER	3922 406 53101	Yes
U2	DVP BOARD HDTV	3922 406 54701	Yes



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- MATERIAL OR PACKAGING MUST BE MARKED WITH RoHS COMPLIANCE MARKING OR LABEL

Rev	Name	Date
1	....	

MATERIAL:	SEE PARTSLIST				SCALE
TREATMENT:	....				1:1
FINISH:	....				
DRAWN BY: J.Mouthaan	DATE: 2007-10-01	GENERAL ROUGHNESS: Ra 3.2 n um	TOLERANCES UNLESS OTHERWISE STATED: DIMENSION:±0,2	ANGLE: ±1°	UNIT mm
TITLE:	HEAD COVER RIGHT ASSY				

DOCUMENT NUMBER	FORMAT	SHEET
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RELEASE LEVEL: Released	110-01	.

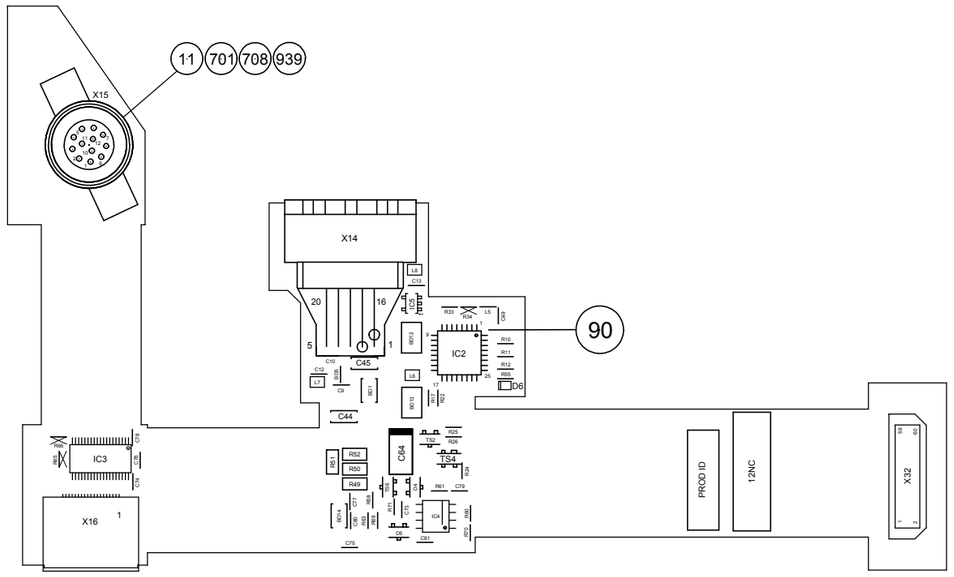
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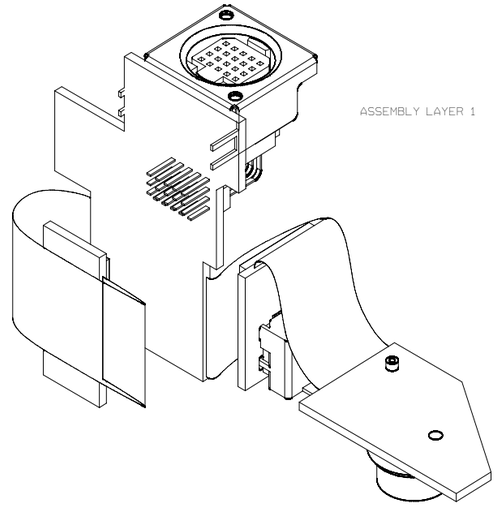
3922 406 53101;7 CONN.BRD RIGHT COVER

Ref	Description	Part 12nc	Spare part
	No spare parts available, only complete board		

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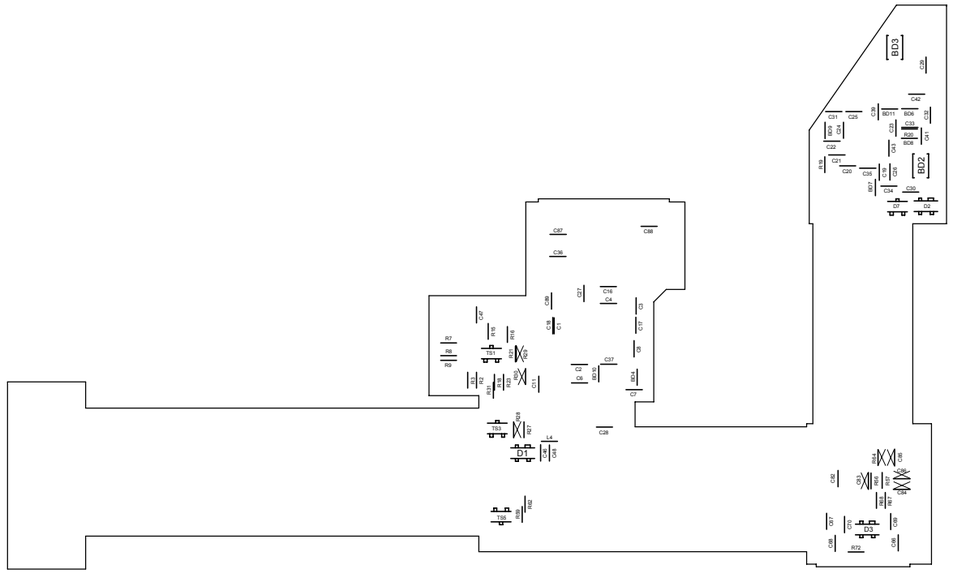


ASSEMBLY LAYER 1

COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED	
STATUS: 04	
ASS. 12NC: 3922 406 53100 ASS. NAME: CONN.BRD RIGHT COVER	
PCB. 12NC: 3922 411 53102	
ASSEMBLY TOP	CURR. DATE: 2008-11-12
SCALE 1 : 1	PREV. DATE: 2007-10-16
P. VISSERS	ORG. DATE: 2006-02-23
H VERMEULEN	SHEET : 110-1
GRASS VALLEY NEDERLAND B.V. - BREDA	

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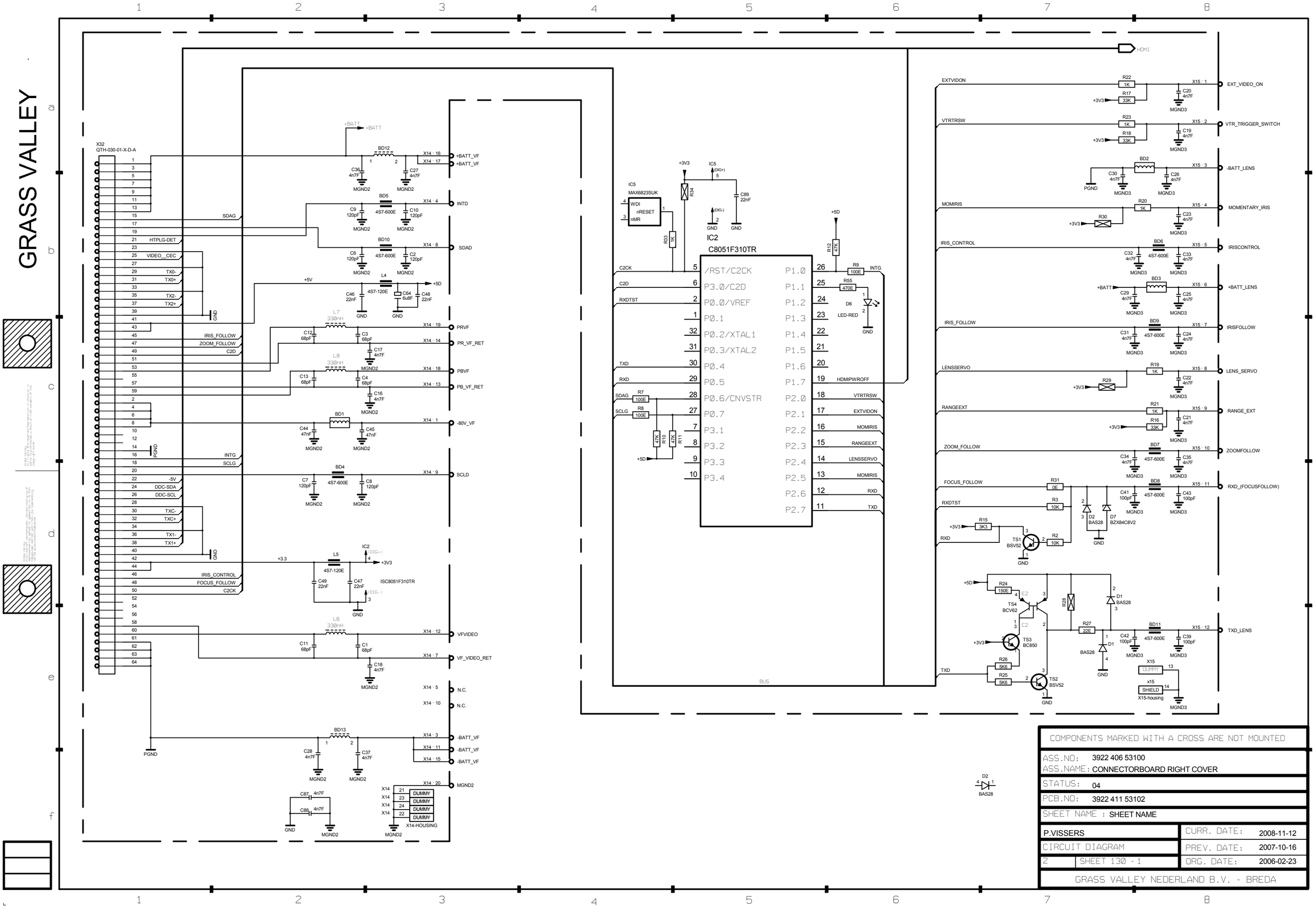
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ASSEMBLY LAYER 6

COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED	
STATUS: 04	
ASS. 12NC: 3922 406 53100 ASS. NAME: CONN.BRD RIGHT COVER	
PCB. 12NC: 3922 411 53102	
ASSEMBLY BOTTOM	CURR. DATE: 2008-11-12
SCALE 1 : 1	PREV. DATE: 2007-10-16
P. VISSERS	ORG. DATE: 2006-02-23
H VERMEULEN	SHEET : 110-2
GRASS VALLEY NEDERLAND B.V. - BREDA	

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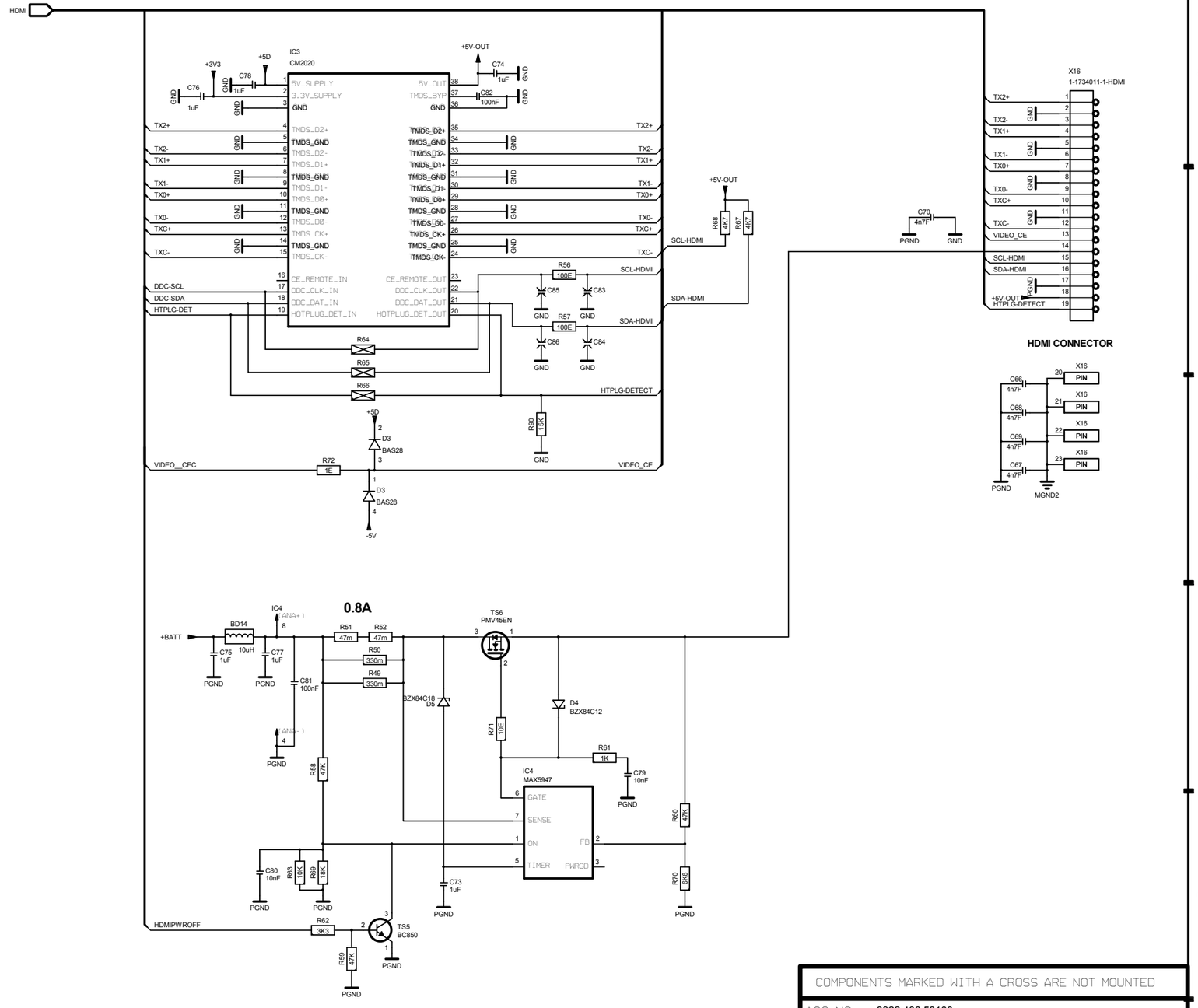


COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED

ASS.NO:	3922 406 53100
ASS.NAME:	CONNECTORBOARD RIGHT COVER
STATUS:	04
PCB.NO:	3922 411 53102
SHEET NAME :	SHEET NAME
P.VISSERS	CURR. DATE: 2008-11-12
CIRCUIT DIAGRAM	PREV. DATE: 2007-10-16
2 SHEET 130 - 1	ORG. DATE: 2006-02-23

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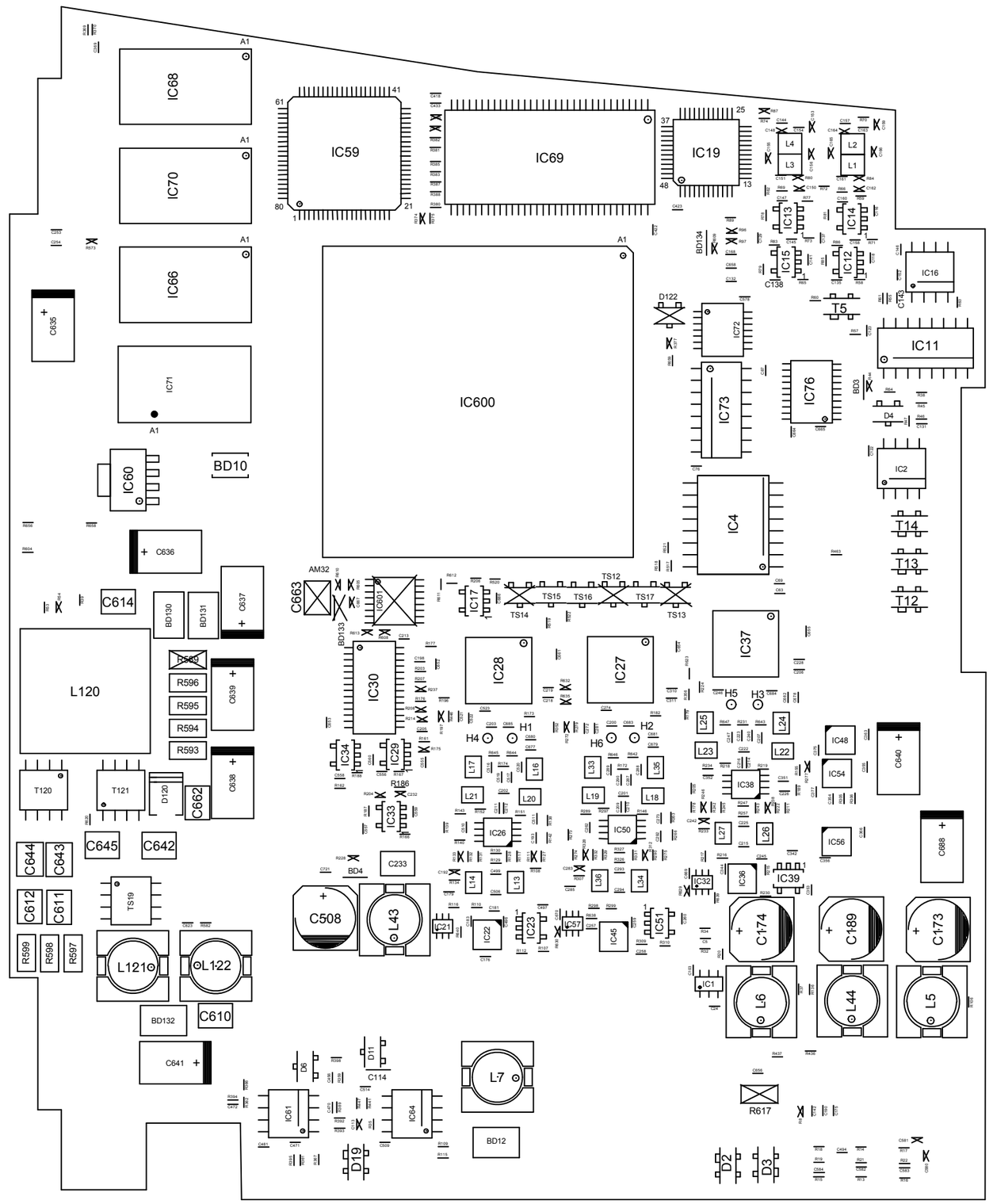
COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED

ASS.NO:	3922 406 53100
ASS.NAME:	CONNECTORBOARD RIGHT COVER
STATUS:	04
PCB.NO:	3922 411 53102
SHEET NAME :	SHEET NAME
P.VISSERS	CURR. DATE: 2008-11-12
CIRCUIT DIAGRAM	PREV. DATE: 2007-10-16
2 SHEET 130 - 2	ORG. DATE: 2006-02-23

GRASS VALLEY NEDERLAND B.V. - BREDA

3922 406 54701;1 DVP BOARD HDTV

Ref	Description	Part 12nc	Service part
90	FIRMWARE DVP BOARD HDTV	3922 407 54291	servicewebsite

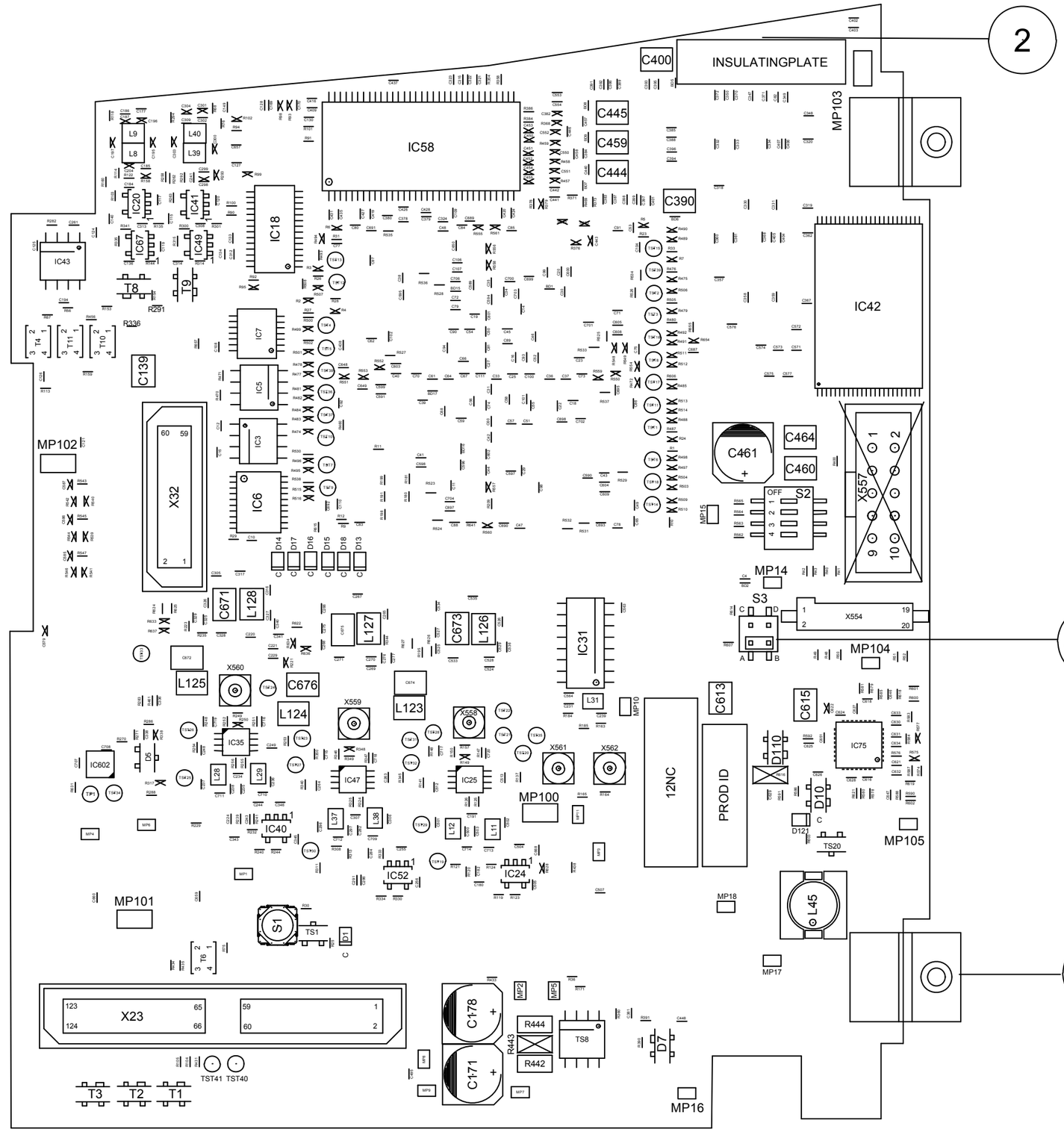


ASSEMBLY LAYER TOP

REMOVE ALL STICKERS AND (METAL) CLIPS FOR THE PICK AND PLACE MACHINE AFTER ASSEMBLY		
COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED		
STATUS: 01		
ASS. 12NC: 3922 406 54700 ASS. NAME: DVP BOARD HDTV		
PCB. 12NC: 3922 411 53033		
ASSEMBLY TOP	CURR. DATE: 2009-02-18	
SCALE 1 : 1	PREV. DATE: 2009-02-09	
D. CELMA	ORG. DATE: 2008-07-07	
J N STURKENBOOM	SHEET :	110-1
GRASS VALLEY NEDERLAND B.V. - BREDA		

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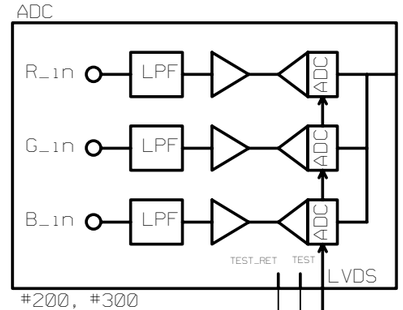
ASSEMBLY LAYER BOTTOM

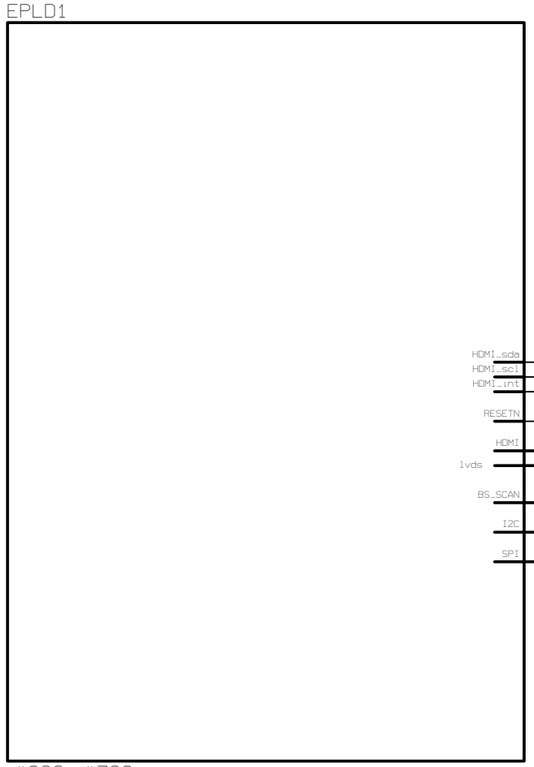
REMOVE ALL STICKERS AND (METAL) CLIPS FOR THE PICK AND PLACE MACHINE AFTER ASSEMBLY		
COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED		
STATUS: 01		
ASS. 12NC: 3922 406 54700 ASS. NAME: DVP BOARD HDTV		
PCB. 12NC: 3922 411 53033		
ASSEMBLY BOTTOM	CURR. DATE: 2009-02-18	
SCALE 1 : 1	PREV. DATE: 2009-02-09	
D. CELMA	ORG. DATE: 2008-07-07	
J N STURKENBOOM	SHEET :	110-2
GRASS VALLEY NEDERLAND B.V. - BREDA		

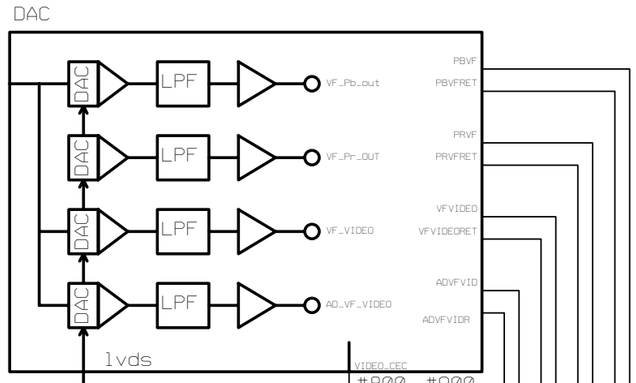
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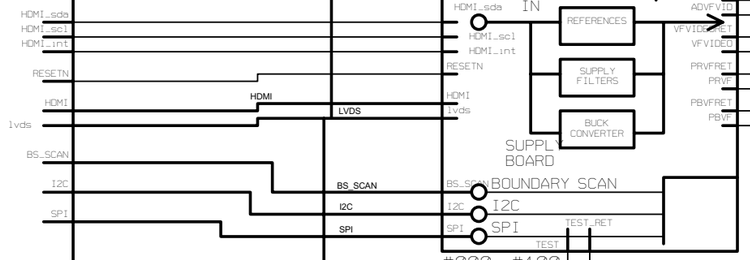
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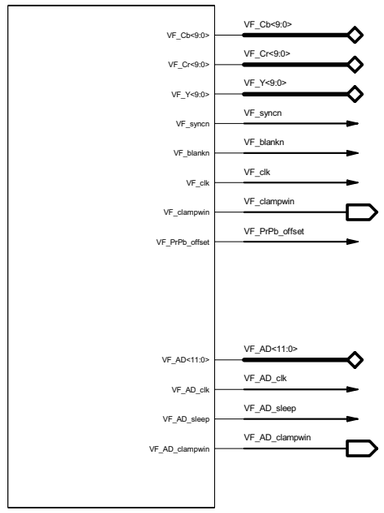


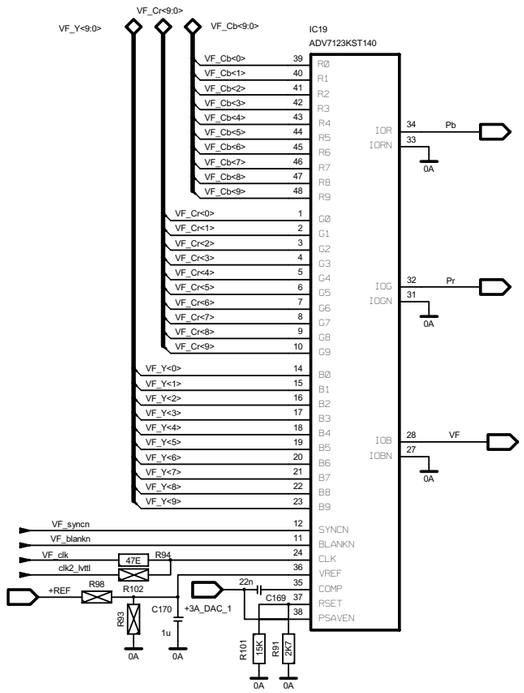
COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED	
ASS. NO. : 3922 406 54700 ASS. NAME : DVP BOARD HDTV	
STATUS : 01	
PCB NO. : 3922 411 53033	
SHEET NAME : BLOCK DIAGRAM	
D. CELMA	CURR. DATE : 2009-02-18
CIRCUIT DIAGRAM	PREV. DATE : 2009-02-09
28 SHEET 130 - 1	ORG. DATE : 2008-07-07
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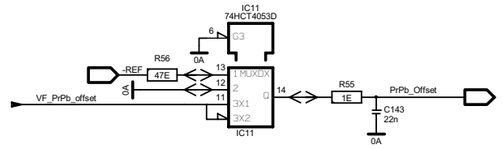
DAC'S

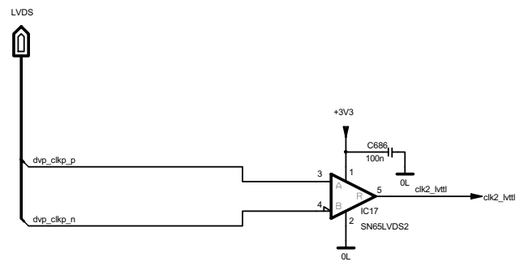
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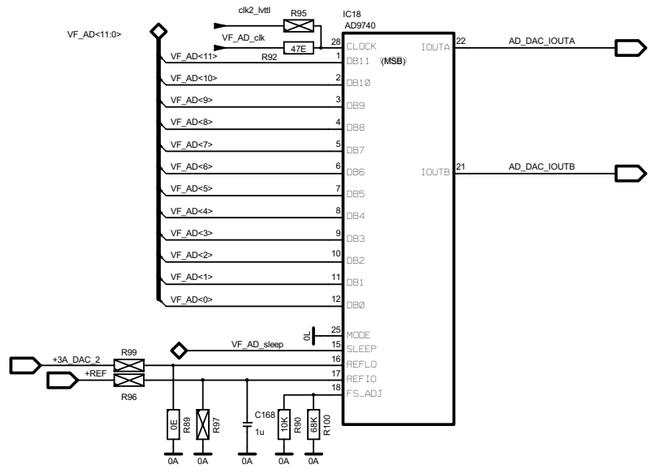
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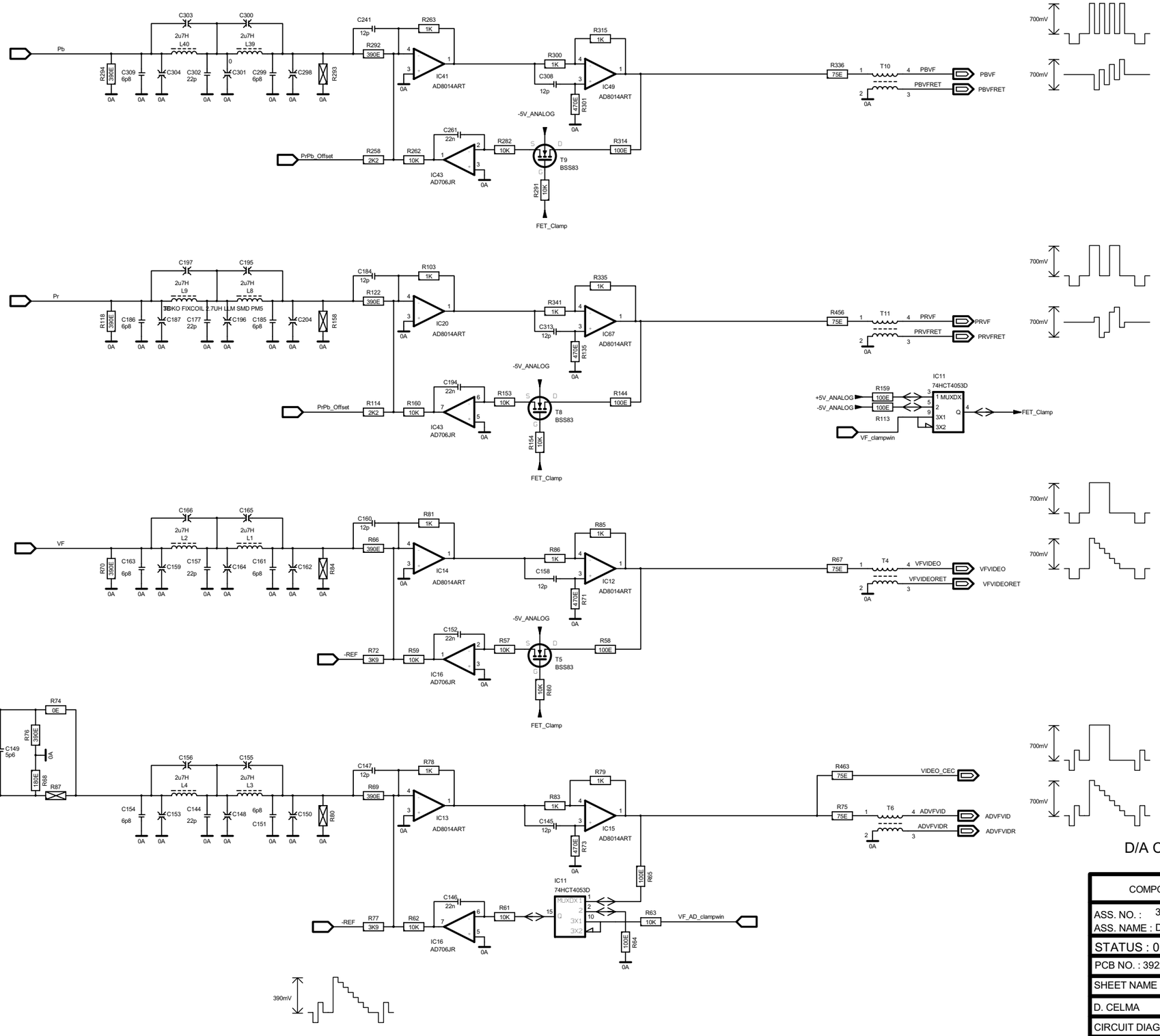




COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED	
ASS. NO. : 3922 406 54700 ASS. NAME : DVP BOARD HDTV	
STATUS : 01	
PCB NO. : 3922 411 53033	
SHEET NAME : DAC	
D. CELMA	CURR. DATE : 2009-02-18
CIRCUIT DIAGRAM	PREV. DATE : 2009-02-09
28 SHEET 130 - 2	ORG. DATE : 2008-07-07
GRASS VALLEY NEDERLAND B.V. - BREDA	

GRASS VALLEY

DAC'S



D/A CONVERSION #800 #900

COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED

ASS. NO. : 3922 406 54700 ASS. NAME : DVP BOARD HDTV	
STATUS : 01	
PCB NO. : 3922 411 53033	
SHEET NAME : DAC	
D. CELMA	CURR. DATE : 2009-02-18
CIRCUIT DIAGRAM	PREV. DATE : 2009-02-09
28 SHEET 130 - 3	ORG. DATE : 2008-07-07

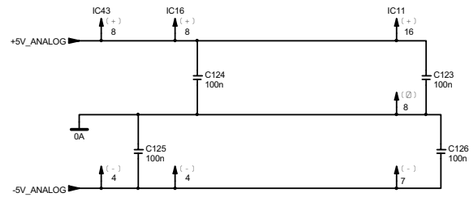
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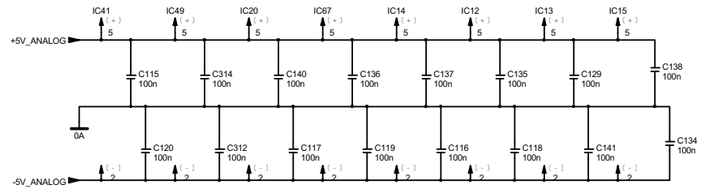
GRASS VALLEY

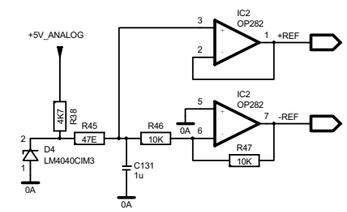
POWER SUPPLY DAC'S

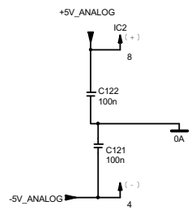
SUPPLY AD706 SUPPLY HC4053

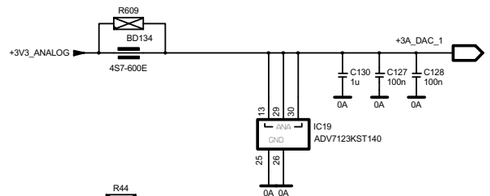


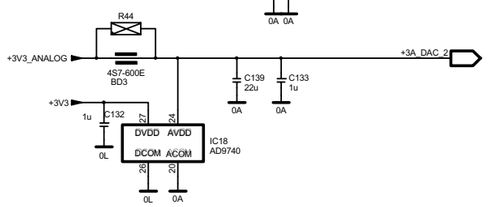
SUPPLY AD8014











DAC SUPPLY

COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED	
ASS. NO. : 3922 406 54700 ASS. NAME : DVP BOARD HDTV	
STATUS : 01	
PCB NO. : 3922 411 53033	
SHEET NAME : DAC	
D. CELMA	CURR. DATE : 2009-02-18
CIRCUIT DIAGRAM	PREV. DATE : 2009-02-09
28 SHEET 130 - 4	ORG. DATE : 2008-07-07
GRASS VALLEY NEDERLAND B.V. - BREDA	

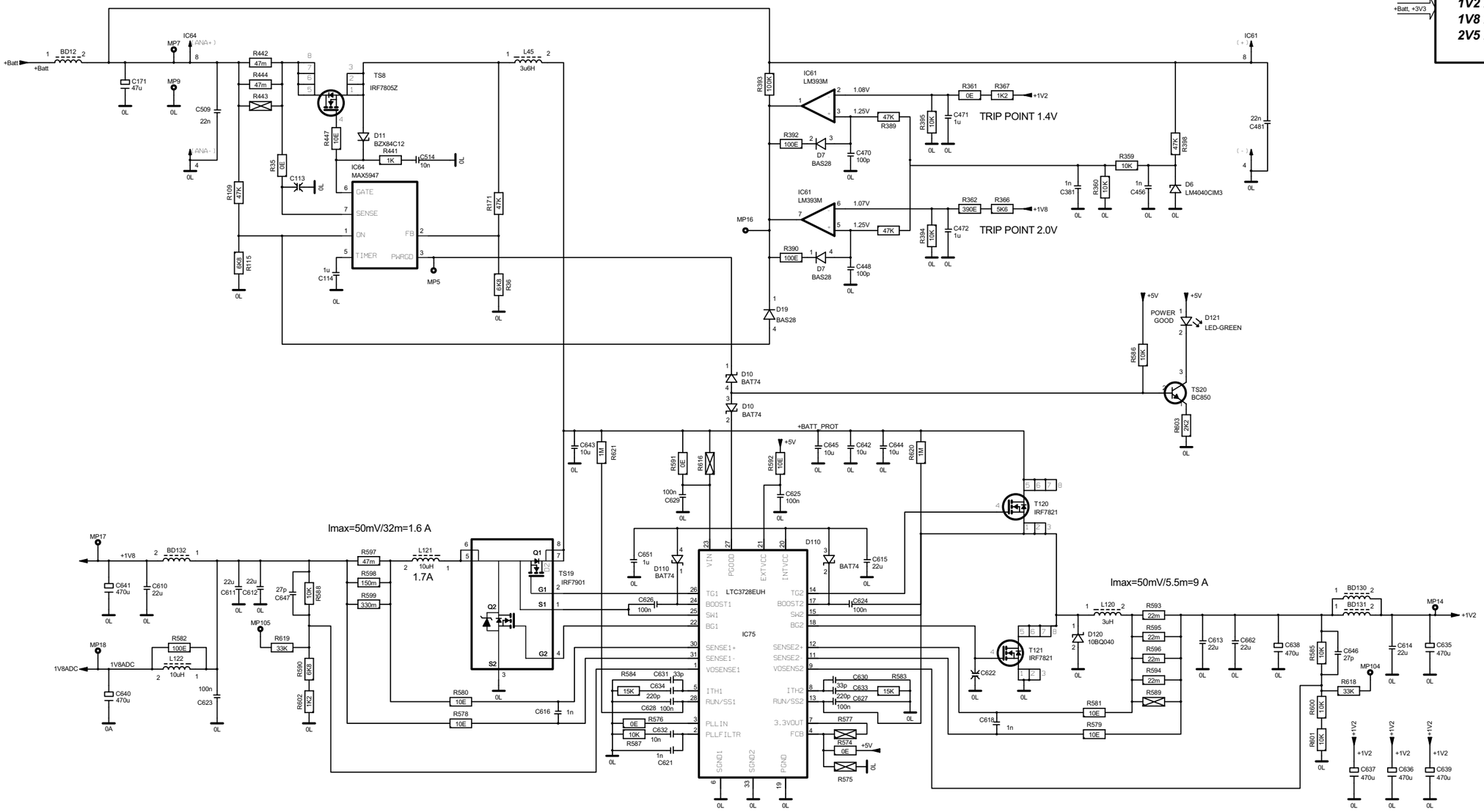
GRASS VALLEY

Local Powers

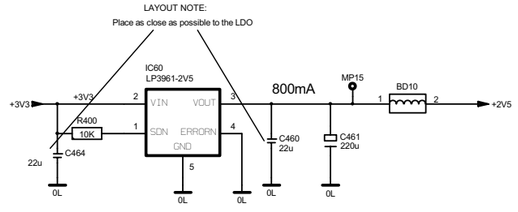
+Batt, +3V3

1V2 Power
1V8 Power
2V5 Power

+1V2
+1V8
+2V5
GND



+2V5 GENERATION VOLTAGE

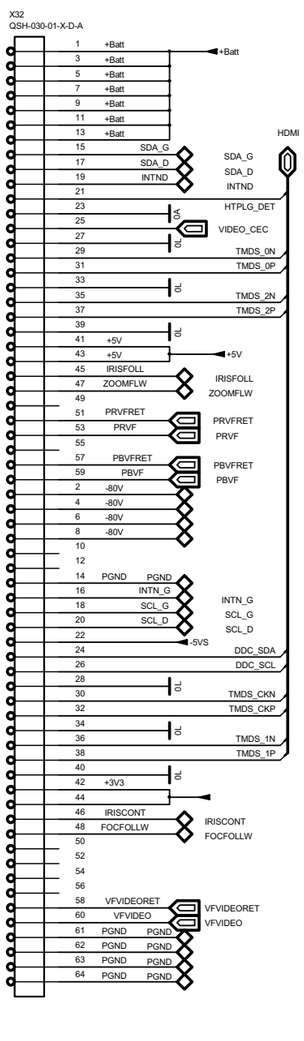


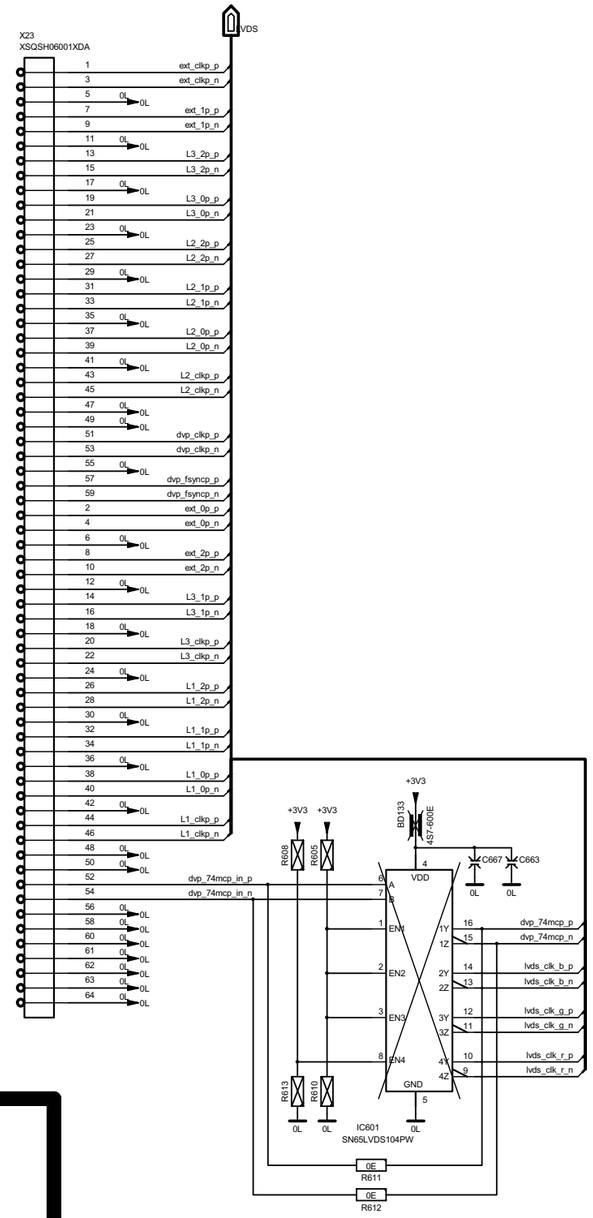
COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED		
ASS. NO. : 3922 406 54700 ASS. NAME : DVP BOARD HDTV		
STATUS : 01		
PCB NO. : 3922 411 53033		
SHEET NAME : POWER		
D. CELMA		CURR. DATE : 2009-02-18
CIRCUIT DIAGRAM		PREV. DATE : 2009-02-09
28	SHEET 130 - 6	ORG. DATE : 2008-07-07
GRASS VALLEY NEDERLAND B.V. - BREDA		

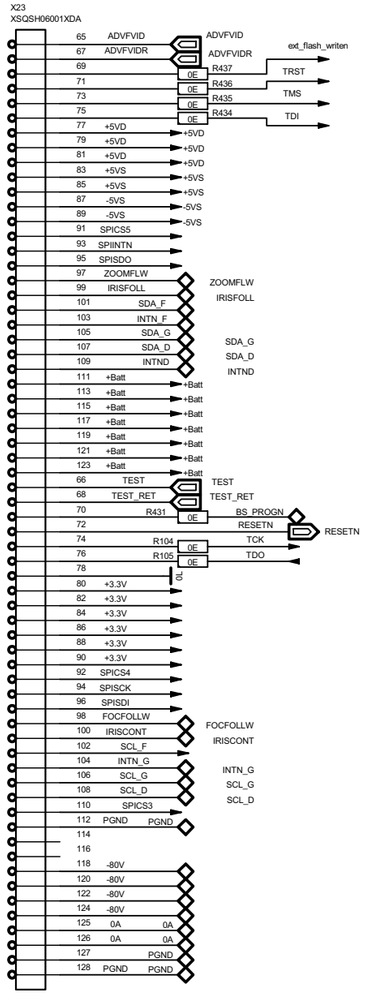
Grass Valley
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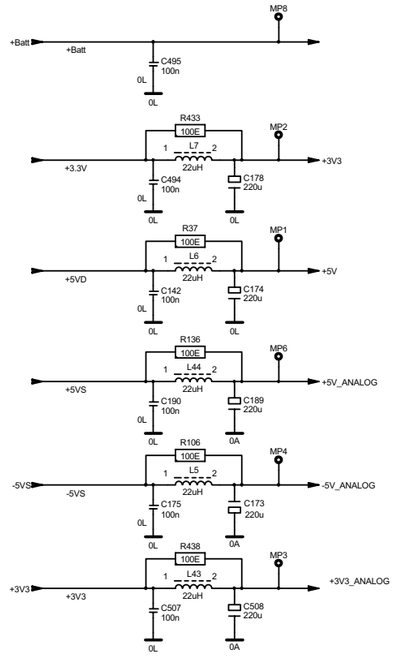
GRASS VALLEY

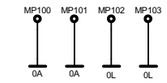
I/O PINS

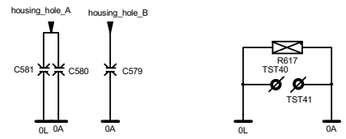




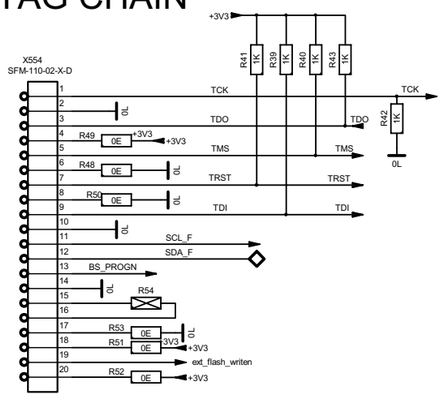


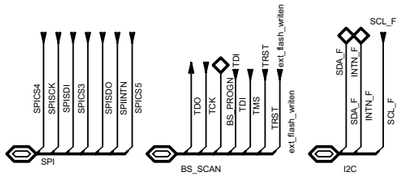


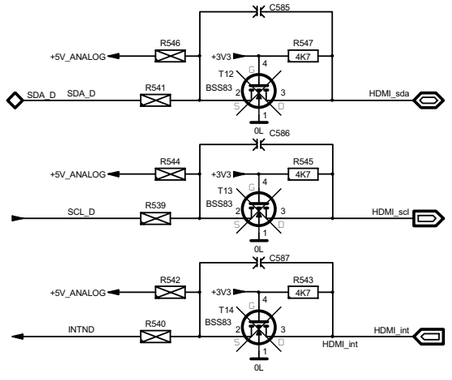




JTAG CHAIN







COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED		
ASS. NO. : 3922 406 54700 ASS. NAME : DVP BOARD HDTV		
STATUS : 01		
PCB NO. : 3922 411 53033		
SHEET NAME : I/O PINS		
D. CELMA		CURR. DATE : 2009-02-18
CIRCUIT DIAGRAM		PREV. DATE : 2009-02-09
28	SHEET 130 - 7	ORG. DATE : 2008-07-07
GRASS VALLEY NEDERLAND B.V. - BREDA		

ADC

GRASS VALLEY

~150mV

~220mV

~55mV

TEST R

TEST G

TEST B

LVDS

IC28 AD9254BCPZ150

IC27 AD9254BCPZ150

IC37 AD9254BCPZ150

SPEC5303_BANK3_ADC_1V8

SPEC5470_IC600

PIN 6	H	L
PIN 4 =>	PIN 1	PIN 3

167MHz

148.5MHz

60MHz 148.5MHz 167MHz

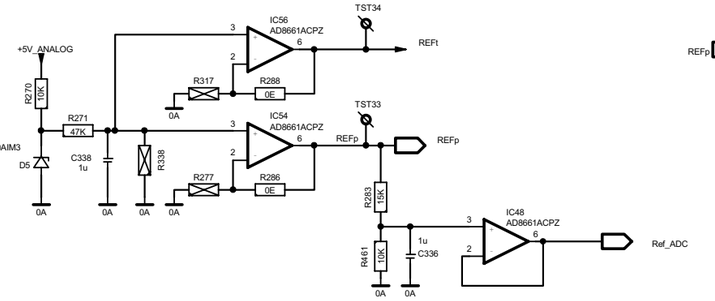
COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED

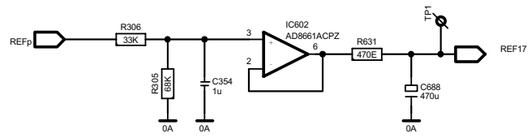
ASS. NO. : 3922 406 54700	
ASS. NAME : DVP BOARD HDTV	
STATUS : 01	
PCB NO. : 3922 411 53033	
SHEET NAME : ADC	
D. CELMA	CURR. DATE : 2009-02-18
CIRCUIT DIAGRAM	PREV. DATE : 2009-02-09
28 SHEET 130 - 8	ORG. DATE : 2008-07-07

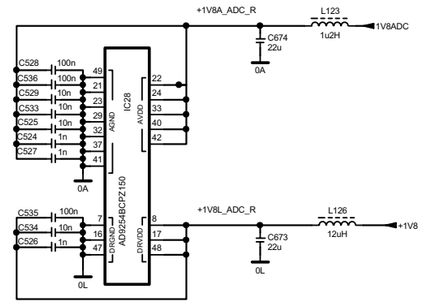
GRASS VALLEY NEDERLAND B.V. - BREDA

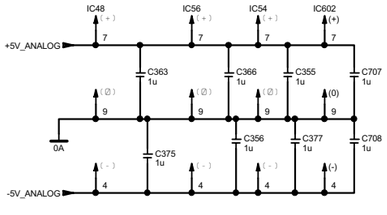
GRASS VALLEY

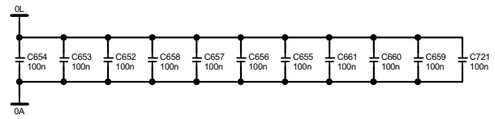
POWER SUPPLY ADC

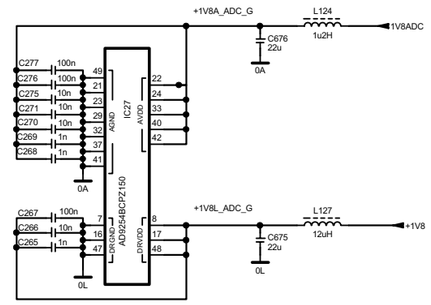


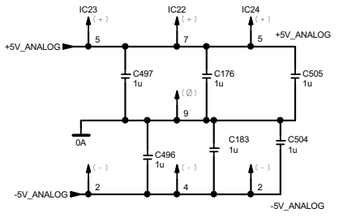


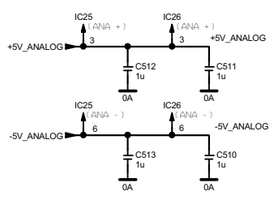


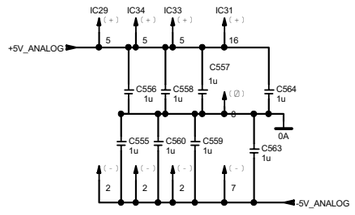


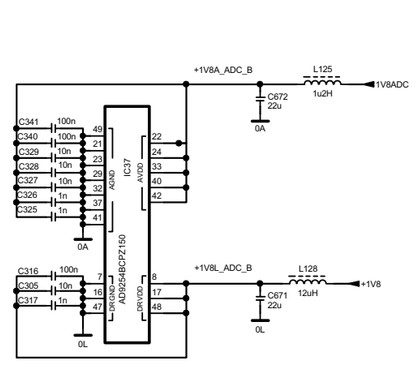


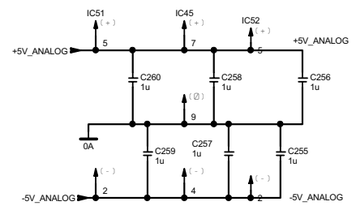


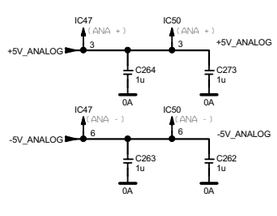


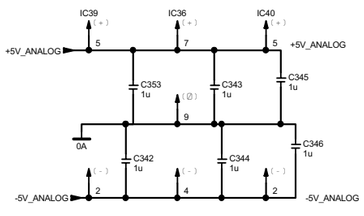


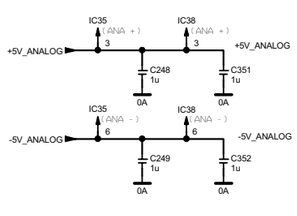












COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED

ASS. NO. : 3922 406 54700	
ASS. NAME : DVP BOARD HDTV	
STATUS : 01	
PCB NO. : 3922 411 53033	
SHEET NAME : ADC	
D. CELMA	CURR. DATE : 2009-02-18
CIRCUIT DIAGRAM	PREV. DATE : 2009-02-09
28 SHEET 130 - 9	ORG. DATE : 2008-07-07

GRASS VALLEY NEDERLAND B.V. - BREDA

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GRASS VALLEY

TEST SIGNAL ADC

SPEC5303_BANK6_ADC_3V3

test_dac<11:0>
test_clk
test_sleep
R_clamp
G_clamp
B_clamp
clampwin_adc
source
testoff

DAC SUPPLY

R228 BD4 4S7-600E
+3V3_ANALOG
+3A_DAC_II
C233 22u 0A
C198 1u 0A
+3V3
C213 1u 0L
IC30 AD9740
DVDD AVDD DCOM ACOM
27 24 26 20
0L 0A

test_dac<11:0>
test_clk
R177 47E
IC30 AD9740
CLOCK
DB11 DB9
DB10 DB8
DB9 DB7
DB8 DB6
DB7 DB5
DB6 DB4
DB5 DB3
DB4 DB2
DB3 DB1
DB2 DB0
DB1
DB0
AD9740
AD9742
IOUTA
IOUTB
R164 220E 0A
C231 22p 0A
L31 820nH
C239 10p 0A
MP10
R163 220E 0A
R207 220E 0A
R203 220E 0A
IC31 PC74HCT4053D
G3
1MUXDX
2
3X1
3X2
SOURCE
X561
TEST INPUT
R185 75E 0A
0E
MODE
SLEEP
REFLO
REFIO
FS_ADJ
test_sleep
+3A_DAC_II
+REF
R175
R214
R161 0E 0A
R208 0A
C205 1u 0A
R176 2K7 0A
R237 0A

IC29 AD8014ART
C232
R204
R187 1K
R165 75E
MP11
X562
TEST OUTPUT 0A
R186 470E
R164 75E
R166 75E
TEST
TEST_RET 0A
R167 1K
IC33 AD8014ART 0A
IC31 PC74HCT4053D
TESTOFF
IC34 AD8014ART
TESTp
TESTn
R188 1K
0E R162

COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED

ASS. NO. : 3922 406 54700	
ASS. NAME : DVP BOARD HDTV	
STATUS : 01	
PCB NO. : 3922 411 53033	
SHEET NAME : ADC	
D. CELMA	CURR. DATE : 2009-02-18
CIRCUIT DIAGRAM	PREV. DATE : 2009-02-09
28 SHEET 130 - 10	ORG. DATE : 2008-07-07

GRASS VALLEY NEDERLAND B.V. - BREDA

STRATIX CONFIG

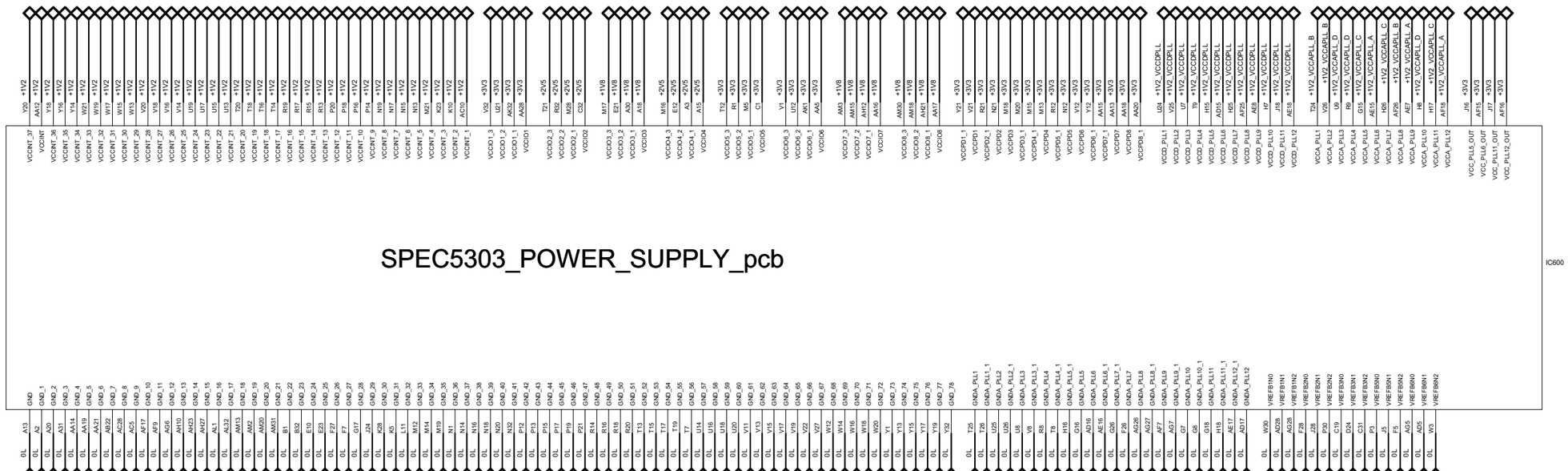
GRASS VALLEY

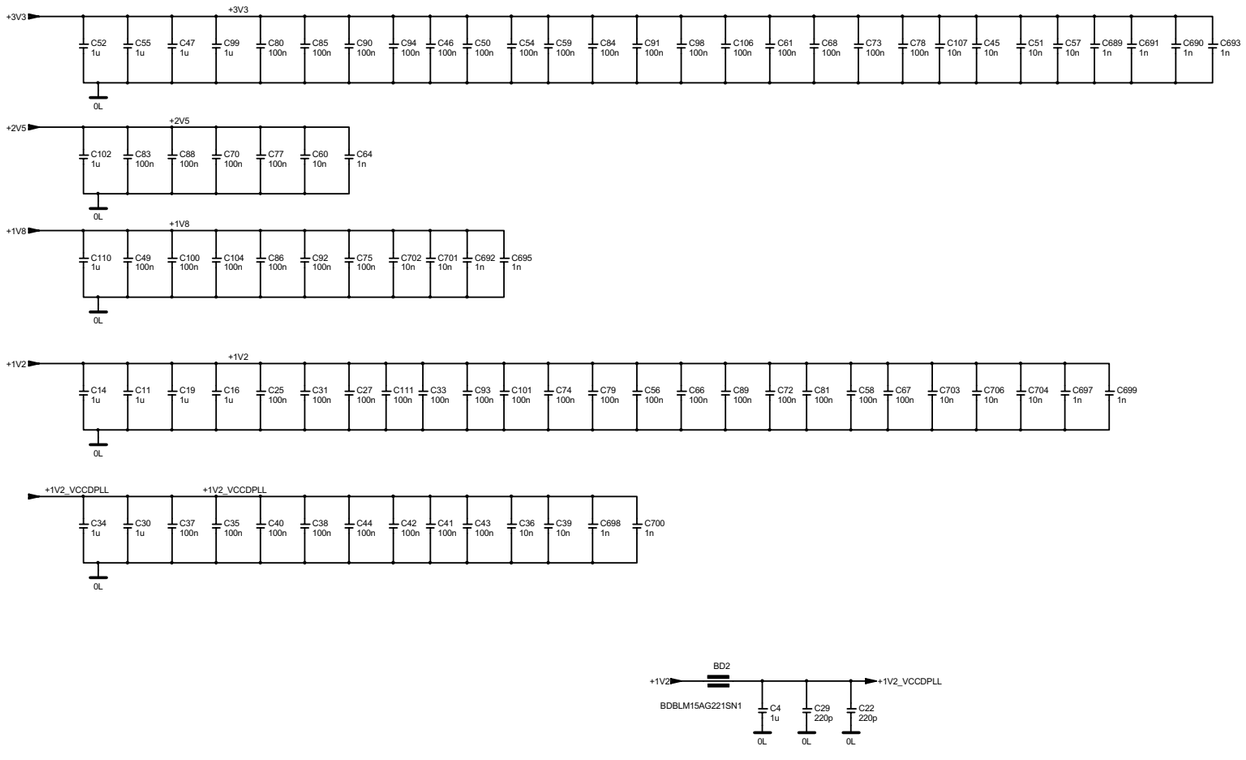
SPEC5303_CONFIG_pcb

COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED	
ASS. NO. : 3922 406 54700	
ASS. NAME : DVP BOARD HDTV	
STATUS : 01	
PCB NO. : 3922 411 53033	
SHEET NAME : CONFIGURATION	
D. CELMA	CURR. DATE : 2009-02-18
CIRCUIT DIAGRAM	PREV. DATE : 2009-02-09
28 SHEET 130 - 13	ORG. DATE : 2008-07-07
GRASS VALLEY NEDERLAND B.V. - BREDA	

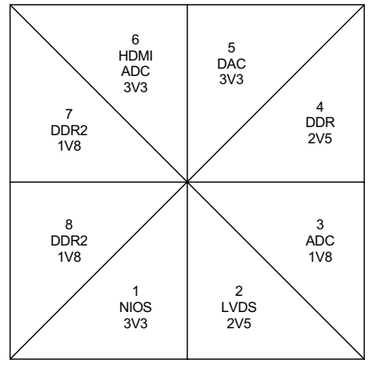
STRATIX SUPPLY

GRASS VALLEY





FPGA Bank layout



COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED

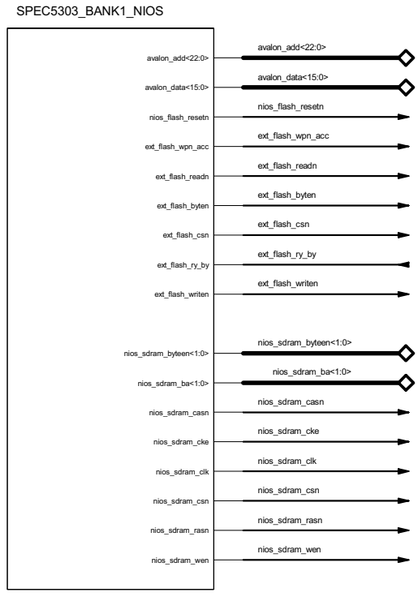
ASS. NO. : 3922 406 54700	
ASS. NAME : DVP BOARD HDTV	
STATUS : 01	
PCB NO. : 3922 411 53033	
SHEET NAME : FPGA SUPPLY	
D. CELMA	CURR. DATE : 2009-02-18
CIRCUIT DIAGRAM	PREV. DATE : 2009-02-09
28 SHEET 130 - 14	ORG. DATE : 2008-07-07

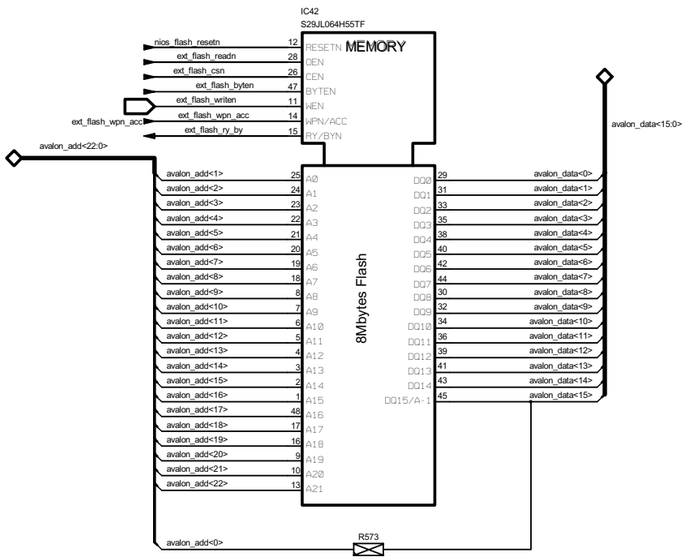
GRASS VALLEY NEDERLAND B.V. - BREDA

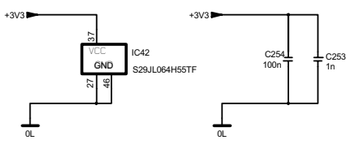
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van de eigenaar van het auteursrecht
Grass Valley

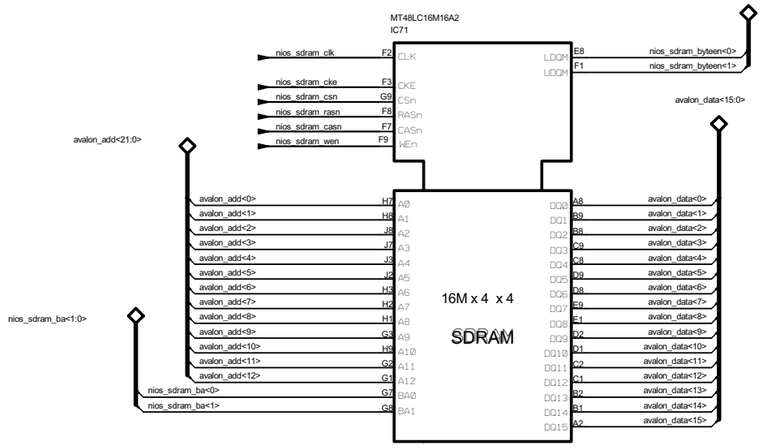
GRASS VALLEY

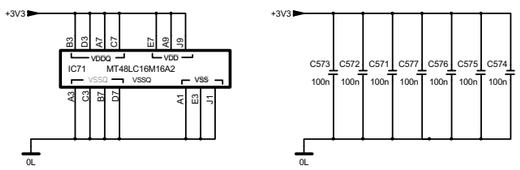
NIOS MEMORY









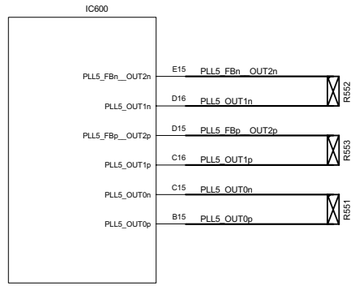


COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED	
ASS. NO. : 3922 406 54700 ASS. NAME : DVP BOARD HDTV	
STATUS : 01	
PCB NO. : 3922 411 53033	
SHEET NAME : NIOS	
D. CELMA	CURR. DATE : 2009-02-18
CIRCUIT DIAGRAM	PREV. DATE : 2009-02-09
28 SHEET 130 - 15	ORG. DATE : 2008-07-07
GRASS VALLEY NEDERLAND B.V. - BREDA	

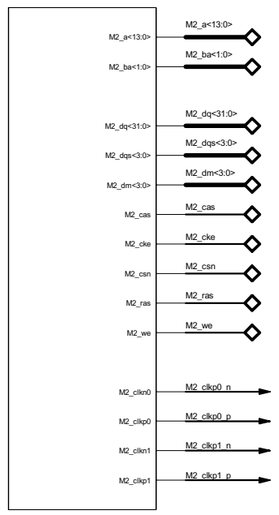
DDR MEMORY
2 x 32MB
a13 not used

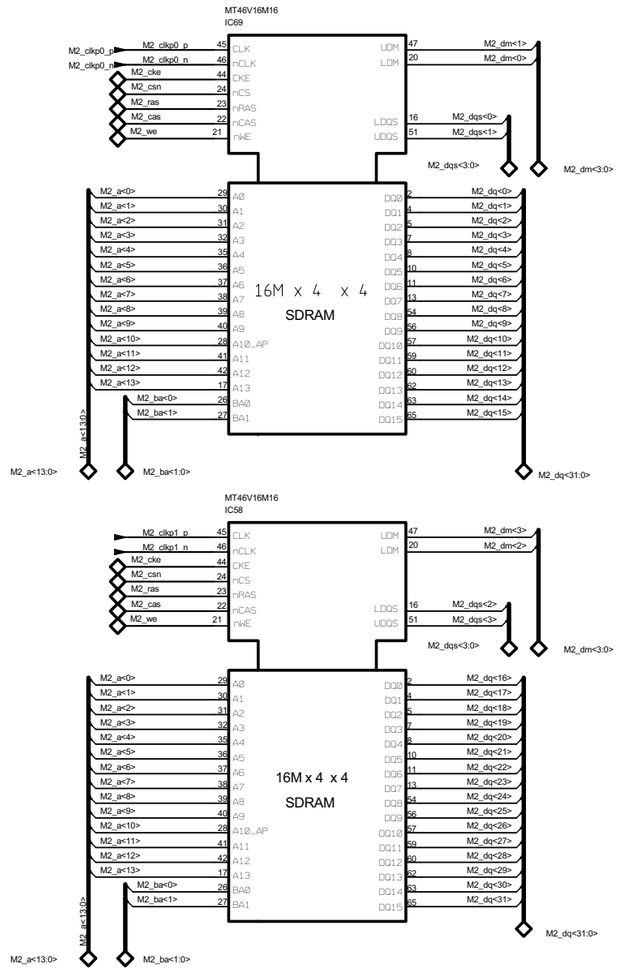
GRASS VALLEY

SPEC5303_BANK9_PLL5_DDR_pcb

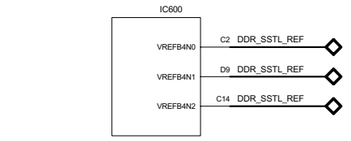


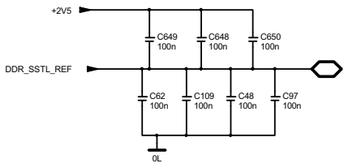
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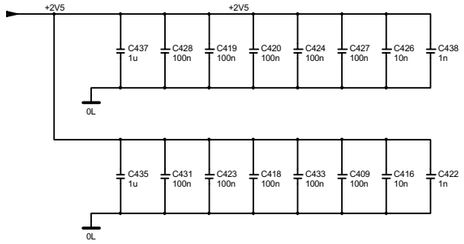


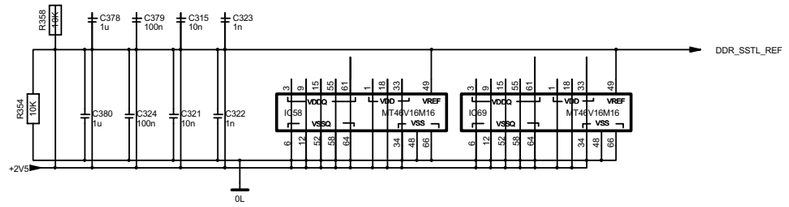


SPEC5303_BANK4_VREF_DDR_pcb







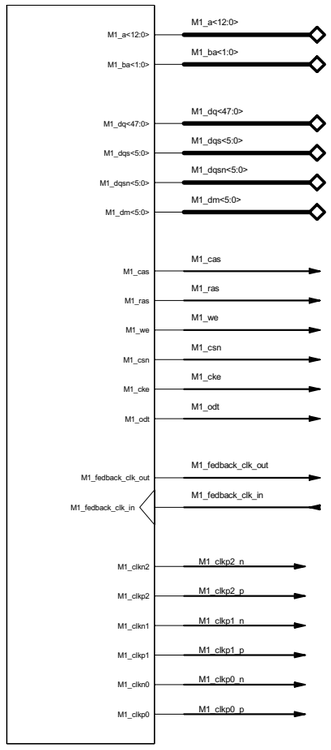


COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED	
ASS. NO. : 3922 406 54700 ASS. NAME : DVP BOARD HDTV	
STATUS : 01	
PCB NO. : 3922 411 53033	
SHEET NAME : DDR MEMORY	
D. CELMA	CURR. DATE : 2009-02-18
CIRCUIT DIAGRAM	PREV. DATE : 2009-02-09
28 SHEET 130 - 16	ORG. DATE : 2008-07-07
GRASS VALLEY NEDERLAND B.V. - BREDA	

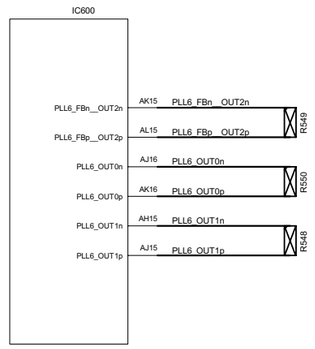
DDR2 MEMORY

GRASS VALLEY

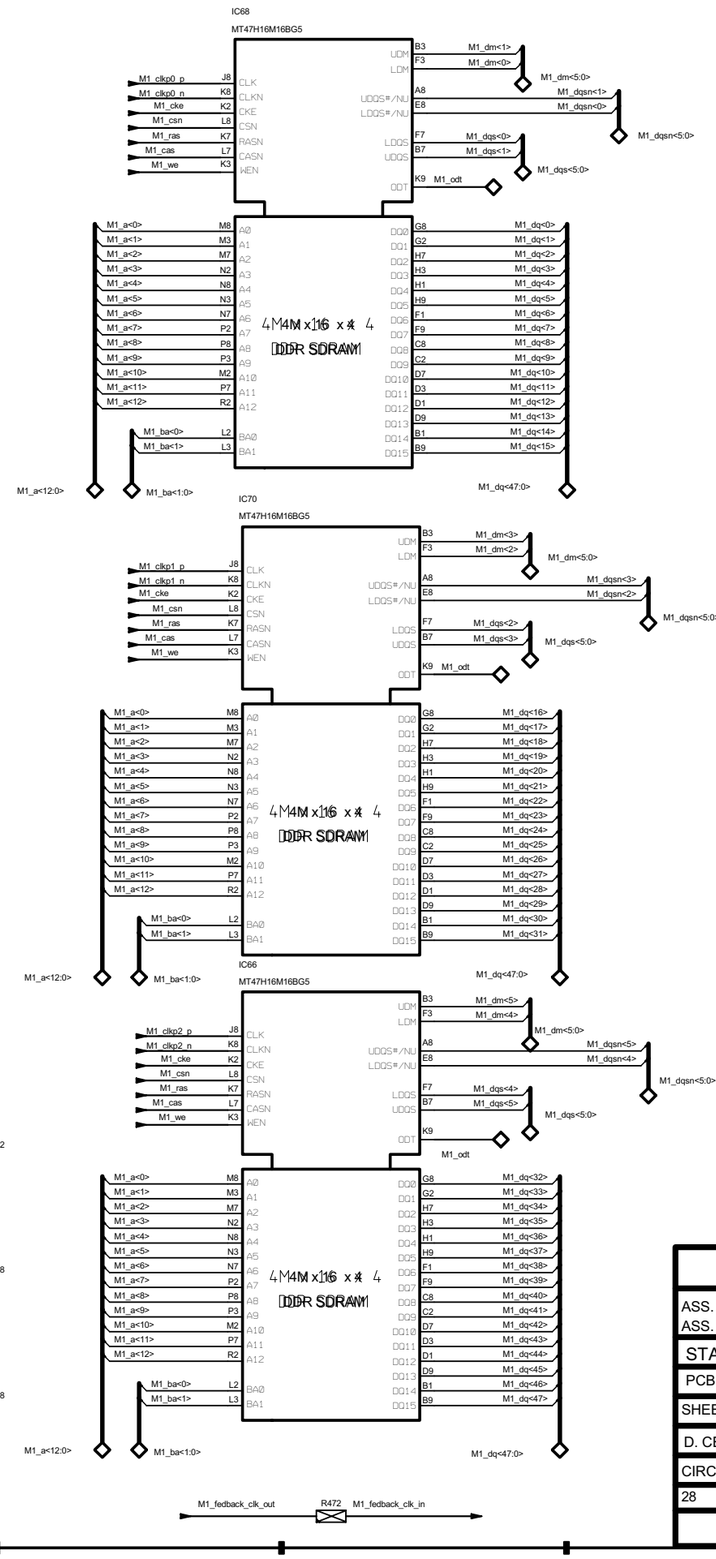
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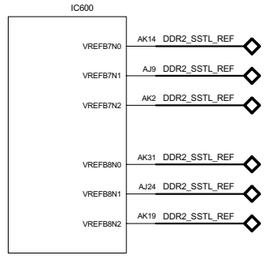
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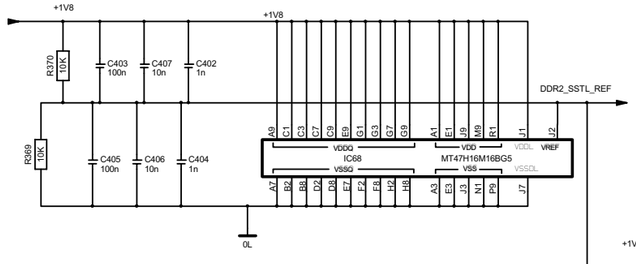


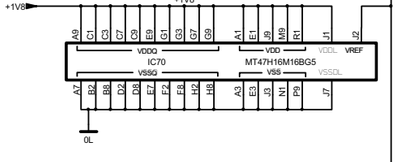
3 x 32 MB DDR2 SDRAM

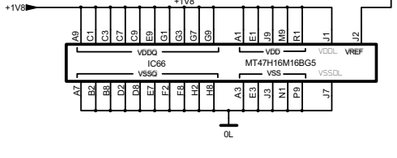


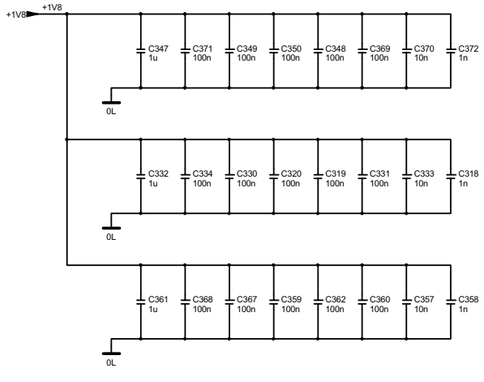
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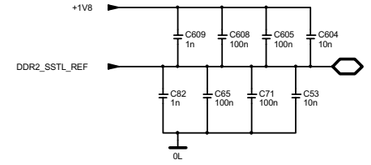












M1_fedback_clk_out R472 M1_fedback_clk_in

COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED		
ASS. NO. : 3922 406 54700 ASS. NAME : DVP BOARD HDTV		
STATUS : 01		
PCB NO. : 3922 411 53033		
SHEET NAME : DDR2 MEMORY		
D. CELMA		CURR. DATE : 2009-02-18
CIRCUIT DIAGRAM		PREV. DATE : 2009-02-09
28	SHEET 130 - 17	ORG. DATE : 2008-07-07
GRASS VALLEY NEDERLAND B.V. - BREDA		

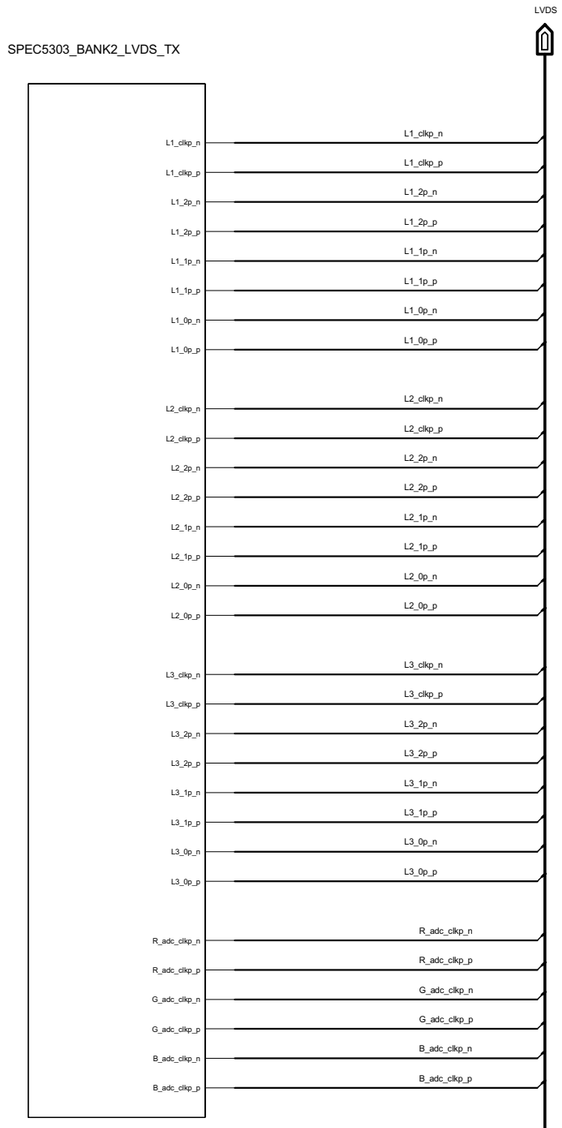
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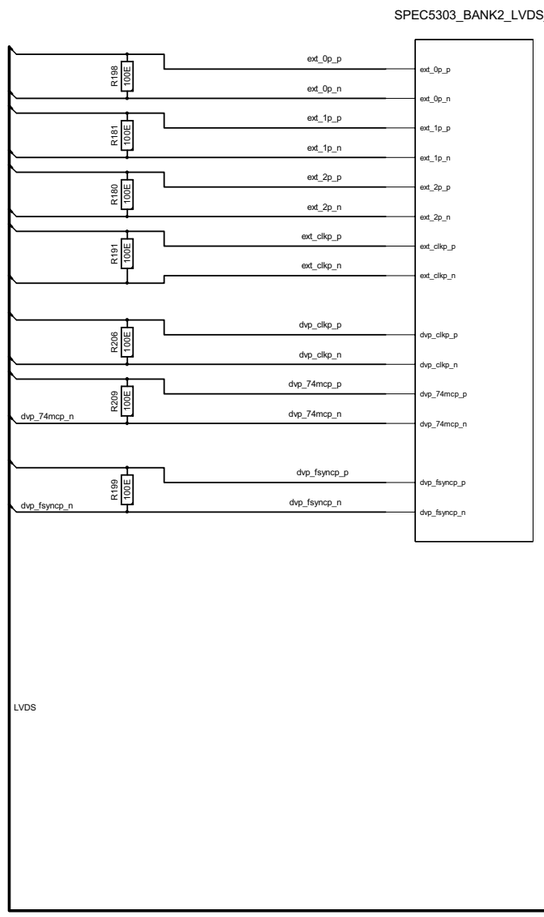
LVDS

GRASS VALLEY

SPEC5303_BANK2_LVDS_TX



SPEC5303_BANK2_LVDS_RX



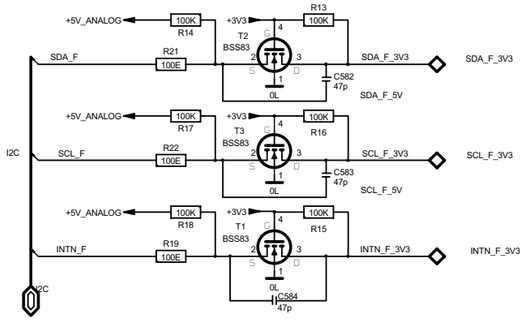
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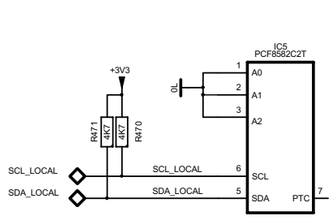
ASS. NO. :	3922 406 54700
ASS. NAME :	DVP BOARD HDTV
STATUS : 01	
PCB NO. : 3922 411 53033	
SHEET NAME :	LVDS
D. CELMA	CURR. DATE : 2009-02-18
CIRCUIT DIAGRAM	PREV. DATE : 2009-02-09
28 SHEET 130 - 18	ORG. DATE : 2008-07-07

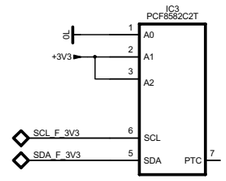
GRASS VALLEY NEDERLAND B.V. - BREDA

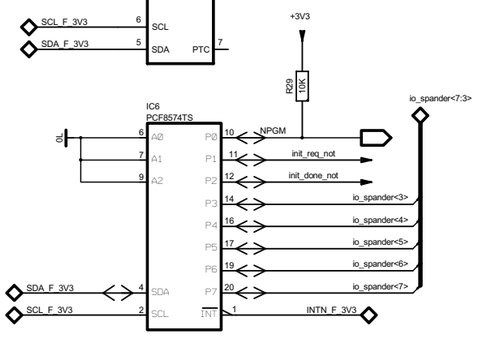
COMMUNICATION
I2C & SPI

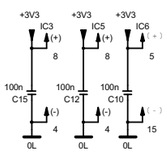
GRASS VALLEY



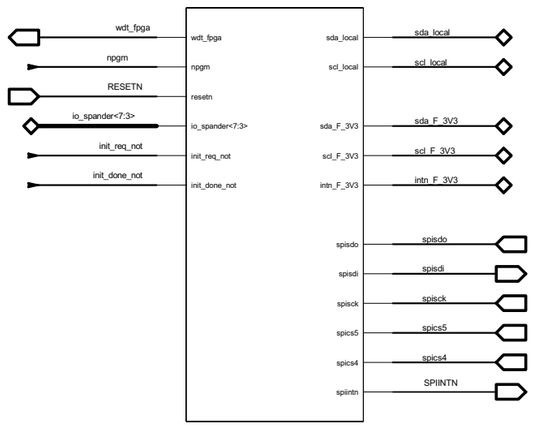








SPEC5303_BANK1_I2C



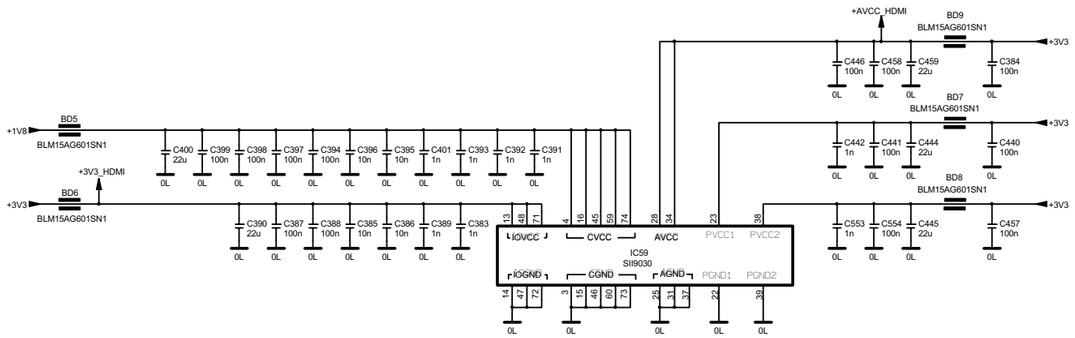
COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED

ASS. NO. : 3922 406 54700	
ASS. NAME : DVP BOARD HDTV	
STATUS : 01	
PCB NO. : 3922 411 53033	
SHEET NAME : I2C & SPI	
D. CELMA	CURR. DATE : 2009-02-18
CIRCUIT DIAGRAM	PREV. DATE : 2009-02-09
28 SHEET 130 - 19	ORG. DATE : 2008-07-07

GRASS VALLEY NEDERLAND B.V. - BREDA

HDMI

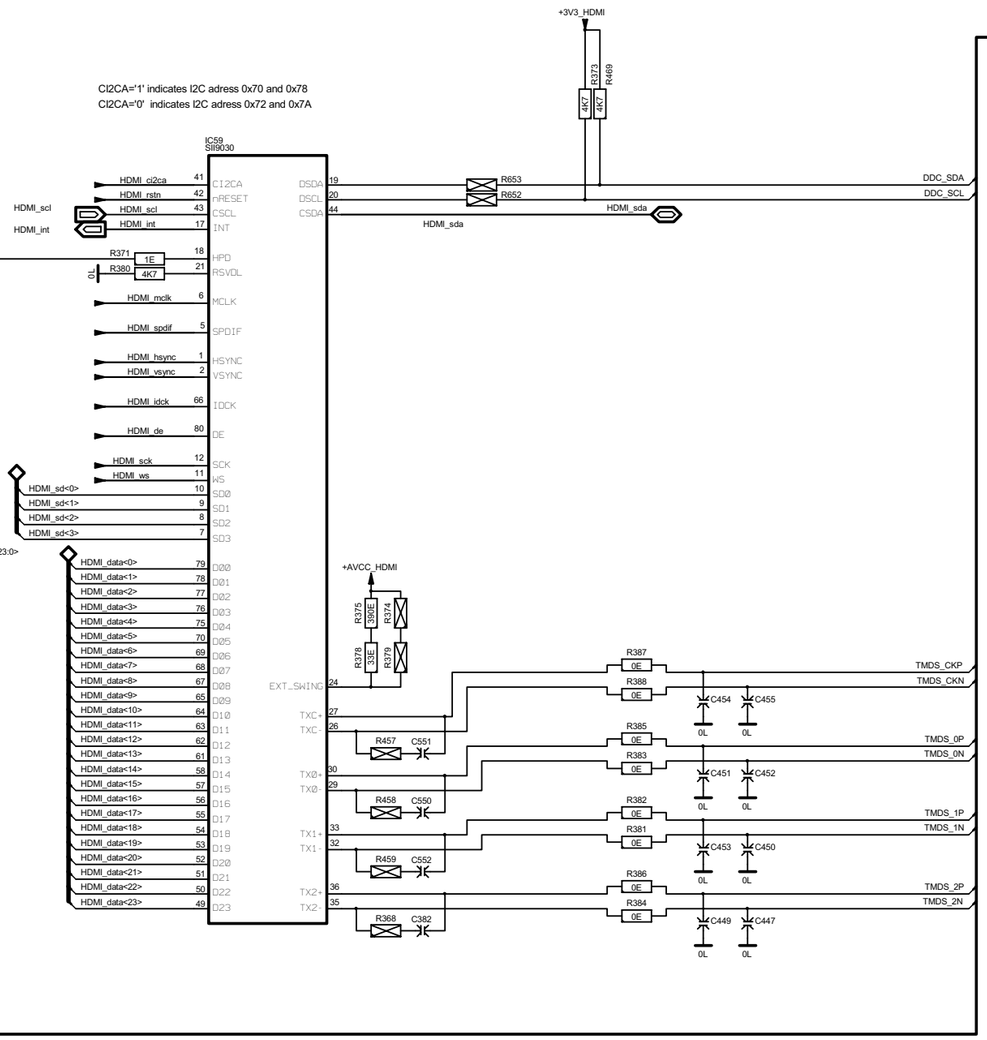
GRASS VALLEY

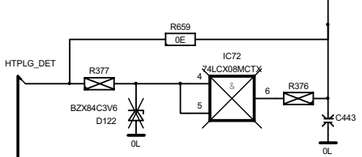


SPEC5303_BANK6_HDMI_3V3

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HDMI_hsync
HDMI_idck
HDMI_de
HDMI_ci2ca
HDMI_rstn
HDMI_scl
HDMI_sda
HDMI_int
HDMI_hpd
HDMI_sd<3:0>
HDMI_ws
HDMI_sck
HDMI_mclk
HDMI_spdif
ddc_sda
ddc_scl

CI2CA='1' indicates I2C adress 0x70 and 0x78
CI2CA='0' indicates I2C adress 0x72 and 0x7A





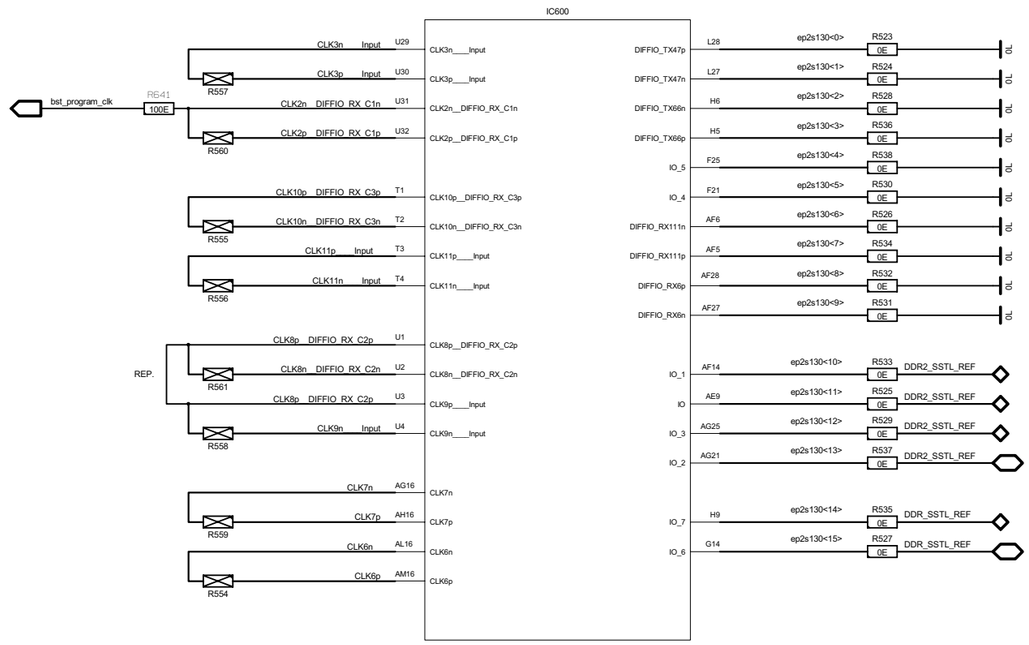
COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED	
ASS. NO. : 3922 406 54700 ASS. NAME : DVP BOARD HDTV	
STATUS : 01	
PCB NO. : 3922 411 53033	
SHEET NAME : HDMI	
D. CELMA	CURR. DATE : 2009-02-18
CIRCUIT DIAGRAM	PREV. DATE : 2009-02-09
28 SHEET 130 - 20	ORG. DATE : 2008-07-07
GRASS VALLEY NEDERLAND B.V. - BREDA	

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GRASS VALLEY

EP2S90 TO EP2S130 MIGRATION

SPEC5303_EP2S130_MIGRATION_pcb



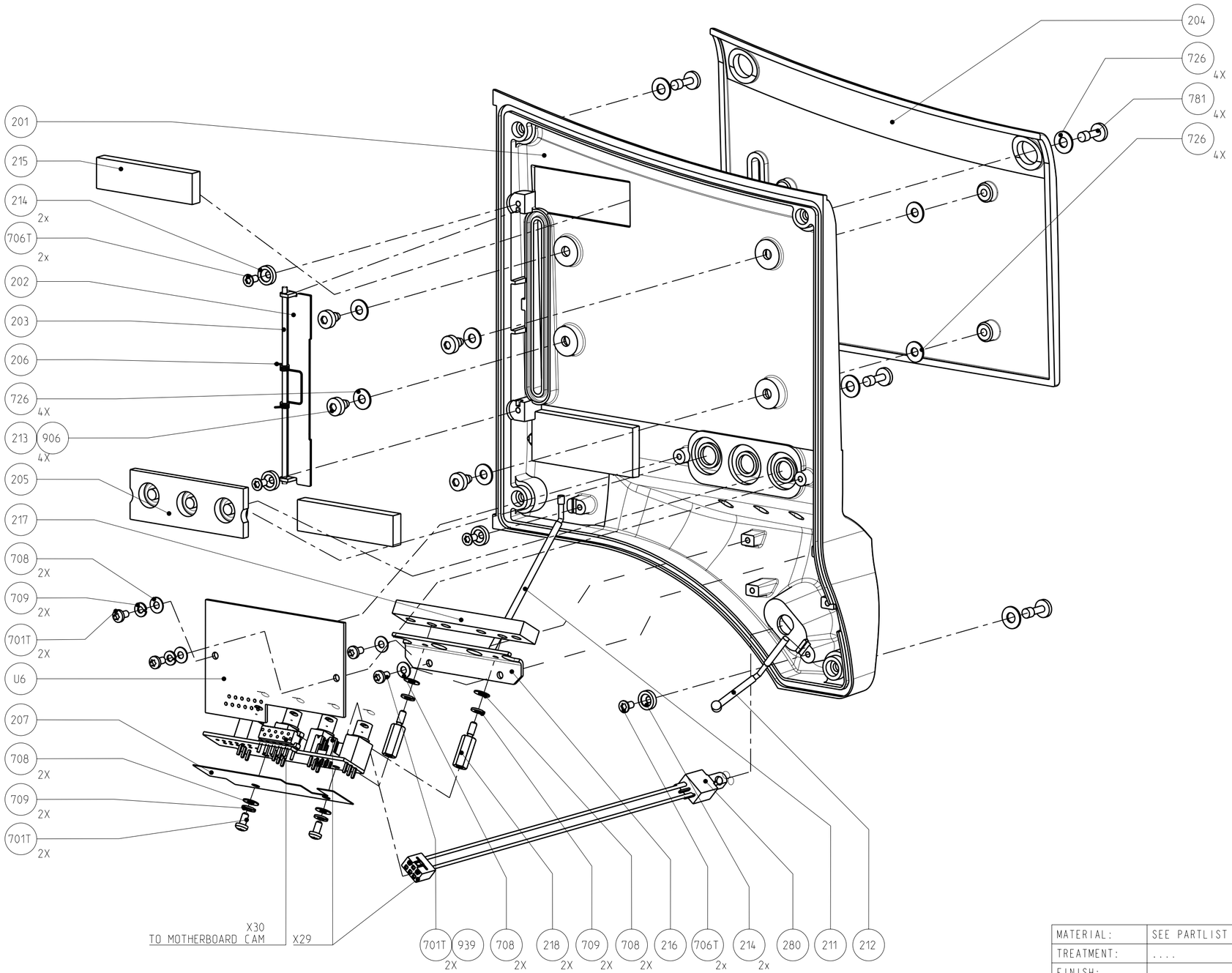
COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED

ASS. NO. : 3922 406 54700	
ASS. NAME : DVP BOARD HDTV	
STATUS : 01	
PCB NO. : 3922 411 53033	
SHEET NAME : EP2S90 TO EP2S130 MIGRATION	
D. CELMA	CURR. DATE : 2009-02-18
CIRCUIT DIAGRAM	PREV. DATE : 2009-02-09
28 SHEET 130 - 21	ORG. DATE : 2008-07-07

GRASS VALLEY NEDERLAND B.V. - BREDA

3922 407 49361;3 HEAD COVER LEFT ASSY

Ref	Description	Part 12nc	Spare part
201	HEAD COVER LEFT PAINTED	3922 407 49351	Yes
202	COVER SMART CARD	3922 404 22572	No
203	HINGE	3922 404 22602	No
204	HEAD PADDING PAINTED	3922 407 49401	Yes
205	SWITCH PAD	3922 400 08491	No
206	TORSION SPRING	3922 404 23843	No
207	INSULATION FOIL	3922 401 49741	No
211	COVER HINGE LONG	3922 400 09132	No
212	COVER HINGE SHORT	3922 400 09142	No
213	PAN TAP SCR F ST T8 2,9X4,5	2522 202 07004	No
214	CSK WASHER STL ST M2	2522 700 06045	No
215	CELRUBBER ZK/CR FEST 10X2MM	1222 103 98065	No
216	BRACKET TOGGLE SWITCHES	3922 404 39911	No
217	SEAL 4 TOGGLE SWITCHES	3922 405 04673	No
218	DIST PIECE BR NI M2X9.1	3922 407 51301	No
280	POWER SWITCH ASSY	3922 407 26063	No
701T	PAN SCR STL ST M2x4	2522 201 08002	No
706T	CSK SCR STL ST M2x4	2522 203 04002	No
708	WASH STL ST 2,2X5	2522 600 27151	No
709	SPR WASH STL ST 2,1X4.4	2522 613 12001	No
726	WASH STL ST 2,7X6,5	2522 600 27137	No
746	WASH STL ST 3,2X7	2522 600 27017	No
781	PAN CAP SCR STL.ST M3x10	2522 200 03024	No
906	RUBBER GLUE SYNTHETIC NBR 042	1322 503 36701	No
939	SCREW LOCK 222	1311 502 06002	No
U6	LEFT SWITCH PANEL	3922 406 53671	Yes



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Rev	Name	Date
.	....	..-..-..
.	....	..-..-..
.	....	..-..-..
.	....	..-..-..
1	....	..-..-..

MATERIAL:	SEE PARTLIST				SCALE
TREATMENT:	....				1:1
FINISH:	....				
DRAWN BY: J. DAM	DATE: 2006/11/01	GENERAL ROUGHNESS: Ra 3.2 n um	TOLERANCES UNLESS OTHERWISE STATED: DIMENSION:±0,2	ANGLE: ±1°	UNIT mm
TITLE:	HEAD COVER LEFT ASSY				

DOCUMENT NUMBER	FORMAT	SHEET
3922 407 4936	A2	1/1
RELEASE LEVEL:	110-01	.

3922 406 53671;2 LEFT SWITCH PANEL

Ref	Description	Part 12nc	Spare part
	No spare parts available, only complete board		

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ASSEMBLY LAYER TOP

SOLDER PASTE 1

ATTENTION: THE PASTE MASK ARTWORK HAS THE SAME SIZE AS THE CORRESPONDING SMD PADS

REMOVE ALL STICKERS AND METAL CLIPS FOR THE PICK AND PLACE MACHINE AFTER ASSEMBLY

COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED

STATUS: 01

ASS. 12NC: 3922 406 53670

ASS. NAME: LEFT SWITCH PANEL

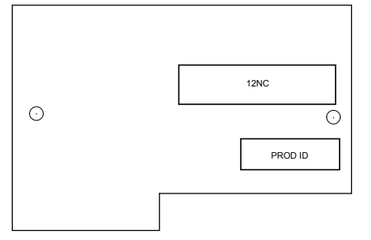
PCB. 12NC: 3922 411 53671

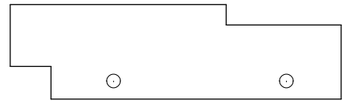
ASSEMBLY TOP	CURR. DATE: 07-09-26
SCALE 1 : 1	PREV. DATE: 06-08-22
P VISSERS	ORG. DATE: 06-08-22
H VERMEULEN	SHEET : 110-1

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ASSEMBLY LAYER BOTTOM

REMOVE ALL STICKERS AND METAL CLIPS FOR THE PICK AND PLACE MACHINE AFTER ASSEMBLY	
COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED	
STATUS: 01	
ASS. 12NC: 3922 406 53670 ASS. NAME: LEFT SWITCH PANEL	
PCB. 12NC: 3922 411 53671	
ASSEMBLY BOTTOM	CURR. DATE: 07-09-26
SCALE 1 : 1	PREV. DATE: 06-08-22
P VISSERS	ORG. DATE: 06-08-22
H VERMEULEN	SHEET : 110-2
GRASS VALLEY NEDERLAND B.V. - BREDA	

GRASS VALLEY

+5VD
GND
GND
X30-6
X30-3
X30-7
R7 100E
BD1
HF70-60E-ACC322513
C1 100nF
C2 100nF
FS1 5A
FS1 10A

BARS
S1
GND
FS1 7A

WHITE BALANCE
S2
GND
FS1 8A
FS1 9A

BLACK STRETCH
S3
GND
FS1 6A

SDA-G
SCL-G
INTN-G
X30-10
X30-9
X30-8
FS1 1A
FS1 2A
FS1 3A
FS1 4A

GAIN
S4
GND
FS1 11A
FS1 12A

NC
POWER SWITCH
PGND
X30-1
X30-4
X30-5
TS3 BC850
R8
X29 1A
X29 1B
X29 3A
X29 3B
X29 2A
X29 2B
POWER SWITCH
PGND
NC

FS1-5B
FS1-10B
FS1-7B
FS1-8B
FS1-9B
FS1-6B
FS1-1B
FS1-2B
FS1-3B
FS1-4B
FS1-11B
FS1-12B
+5
DGND

IC1 IC2 IC3 (+) 5 5 8
IC4 (ANA+) 9
(-) 15 15 4
(ANA-) 2
C7 22nF
C4 22nF
C3 22nF
C6

IC4 MAX6650
SCL
SDA
GPIO0
GPIO1
TACHO
FB
OUT
ADD
R16
R15
R14
R23
R13
C9
C5
C10 22uF
C8
TS2 IRLML2803
X33 1
X33 3
X33 2
FAN+
TACHO
FAN-

IC1 PCF8574TS
A0 A1 A2
P0 P1 P2 P3 P4 P5 P6 P7
SDA SCL INT
R4 R5 R6 100K
R1 R2 R3 100E
R17 100K
STANDARD
S5
TS1 BC860B
R21
R22 4.7K

IC2 PCF8574TS
SW1 (VTR SAVE)
S6
SW2 (EXTENDED IRIS)
S7

IC3 PCF8582C2T
A0 A1 A2
SCL SDA PTC

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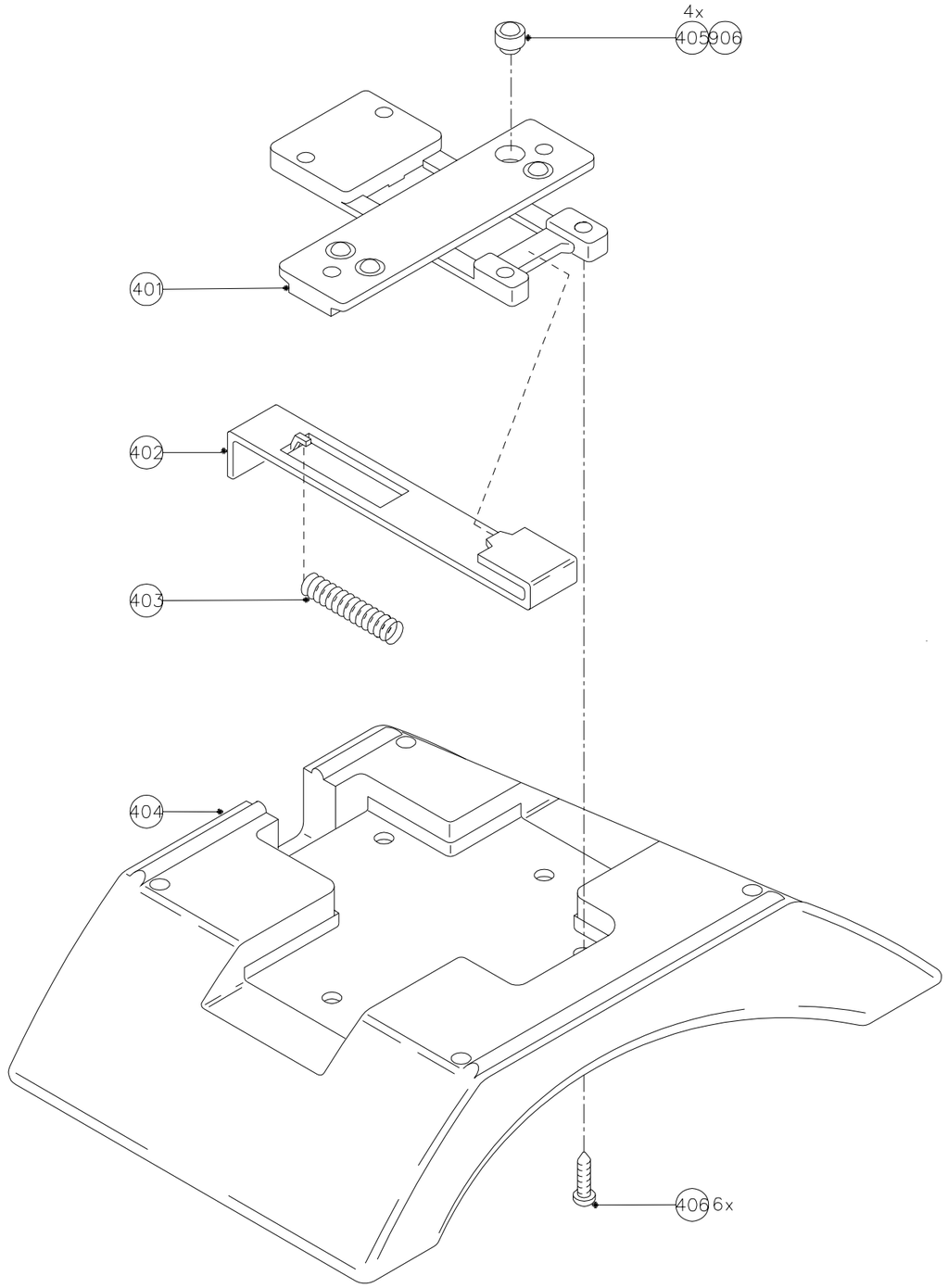
COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTE

ASS. NO. : 3922 406 53670 ASS. NAME :LEFT SWITCH PANEL	
STATUS : 01	
PCB NO. : 3922 411 53671	
SHEET NAME : SHEET NAME	
P VISSERS	CURR. DATE :2007-09-26
CIRCUIT DIAGRAM	PREV. DATE: 2006-08-22
1 SHEET 1 OF 1	ORG. DATE : 2006-08-22

GRASS VALLEY NEDERLAND B.V. - BREDA

3922 407 22224;1 SHOULDERPAD ASSY

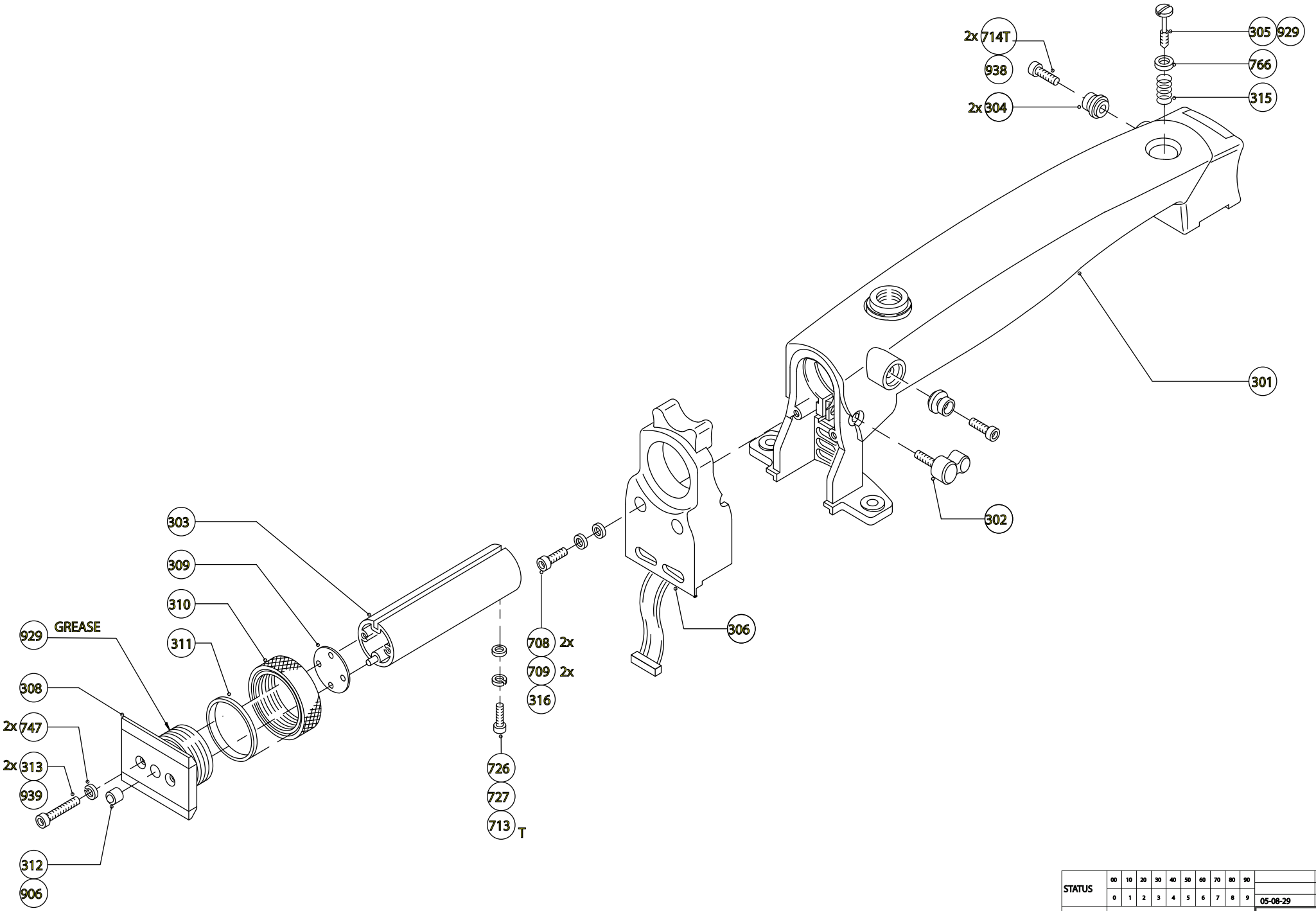
Ref	Description	Part 12nc	Service part
	No spare parts available		



STATUS	00	10	20	30	40	50	60	70	80	90	98-01-21	
	0	1	2	3	4	5	6	7	8	9	01-11-23	
	SHOULDERPAD ASSY										3922 407 22220	
MICROFILM ☐												
NAME: P de Greeuw	SUPERS:								1 SH	SH 110- 1	DATE: 96-11-13	A3
EH	PROPERTY OF: THOMSON MULTIMEDIA Broadcast Solutions BREDA – THE NETHERLANDS											

3922 407 40211;4 DIG.ZOOM HANDGRIP ASSY

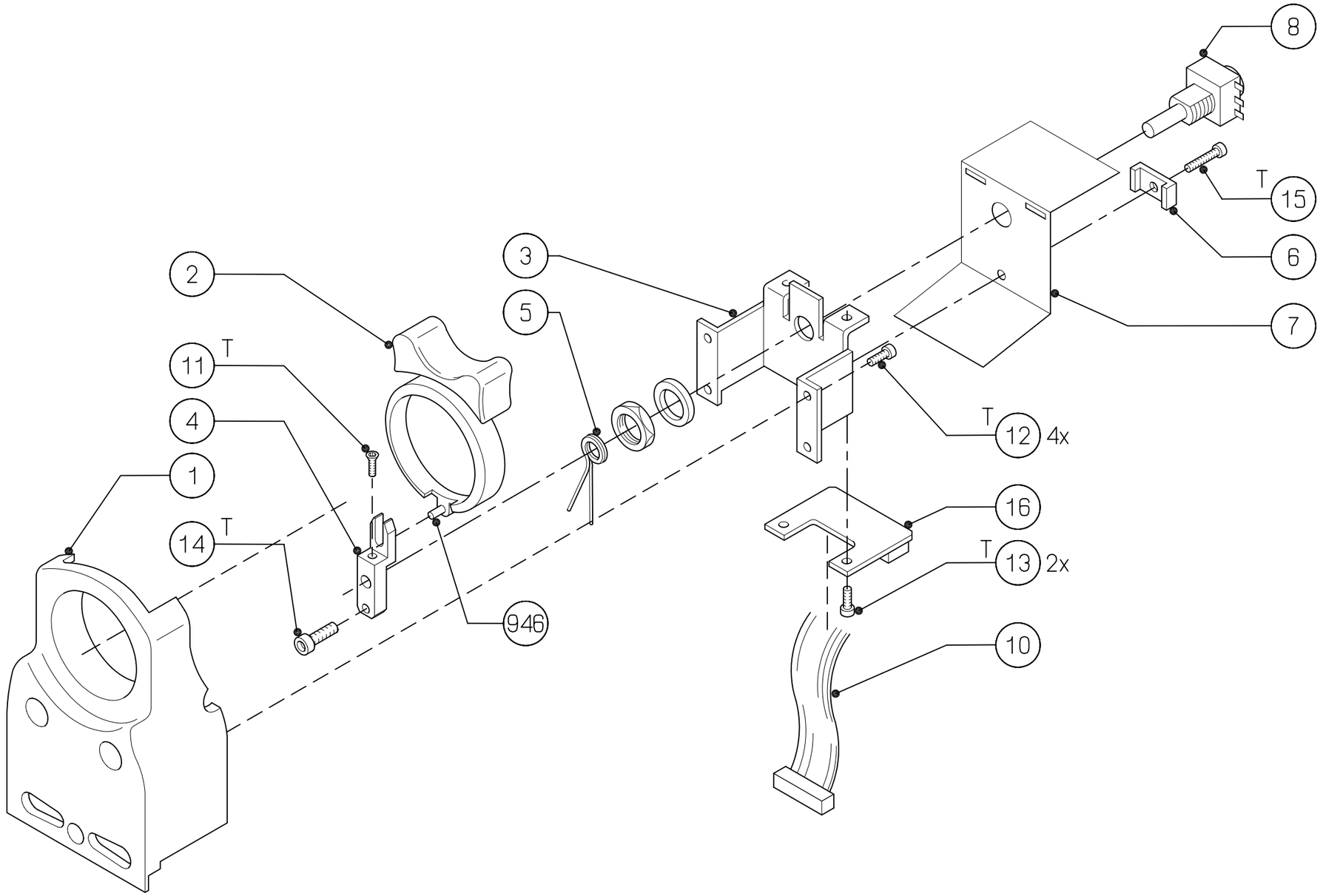
Ref	Description	Part 12nc	Spare part
301	HANDGRIP ASSY	3922 407 25345	Yes
302	CLAMPBOLT	3922 407 25553	No
303	VF PIPE LDK100	3922 407 32581	Yes
304	BUSH	3922 404 20073	No
305	PANHEAD CAPTIVE SCREW M4X30	3922 080 02961	Yes
306	ZOOMCONTROL ASSY	3922 407 39501	Yes
308	VF-SCREW-LONG-ASSY	3922 407 24011	Yes
309	DISC	3922 404 21211	No
310	VF-NUT-LONG	3922 404 22991	No
311	VF-RING	3922 401 47881	No
312	SPRING LOADED BALL BUSH	2622 890 12077	No
313	TORX SCREW M3X25	3922 407 29221	No
315	COMPRESSION SPRING	2622 115 02227	No
316	TORX SCREW M2X16	3922 407 29211	Yes
708	WASH STL ST 2,2X5	2522 600 27151	Yes
709	SPR WASH STL ST 2,1X4.4	2522 613 12001	Yes
713T	PAN SCR STL ST M2,5x6	2522 201 08017	Yes
714T	PAN SCR STL ST M2,5X8	2522 201 08018	Yes
726	WASH STL ST 2,7X6,5	2522 600 27137	Yes
727	SPR WASH STL ST 2,6X5,1	2522 613 12063	Yes
747	SPR WASH STL ST 3,1X5,7	2522 613 12005	Yes
766	WASH STL ST 4,3X9	2522 600 27026	Yes



STATUS	00	10	20	30	40	50	60	70	80	90		
	0	1	2	3	4	5	6	7	8	9	05-08-29	
	ZOOM HAND GRIP ASSY										3922 407 40210	
MICROFILM ☐												
NAME: J de ROOIJ	SUPERS:								1 SH	SH 110 - 1	DATE: 04-01-20	A3
EH PROPERTY OF: THOMSON Multimedia Broadcast Solutions - BREDA - THE NETHERLANDS												

3922 407 39501;3 ZOOMCONTROL ASSY

Ref	Description	Part 12nc	Service part
1	ZOOMCOVER	3922 400 08691	Yes
2	ZOOMKNOB		No
3	ZOOMBRACKET ASSY		No
4	LEVER		No
5	TORSION SPRING		No
6	CLAMP		No
7	SCREEN		No
8	POTENTIOMETER 10K 20%	3922 208 00002	Yes
10	RIBBON CABLE ASSY		No
11	CSK SCR STL ST M2x6		No
12	PAN TAP SCR F ST T6 2,2X4,5		No
13	PAN SCR STL ST M2x4		No
14	PAN SCR STL ST M2X8		No
15	PAN SCR STL ST M2X12		No
16	ZOOM GRIP SWITCH BRD		No
946	INSTRUMENT GREASE 006		No



STATUS	00	10	20	30	40	50	60	70	80	90		
	0	1	2	3	4	5	6	7	8	9		
	ZOOM CONTROL										3922 407 39500	
MICROFILM ☐												
NAME: J de ROOIJ	SUPERS:							1 SH	SH 110 - 1		DATE: 04-01-20	A3
EH	PROPERTY OF: THOMSON Multimedia Broadcast Solutions - BREDA - THE NETHERLANDS											

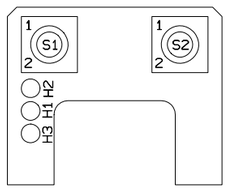
3922 406 50301;2 ZOOM GRIP SWITCH BRD

Ref	Description	Part 12nc	Spare part
	No spare parts available, only complete board		

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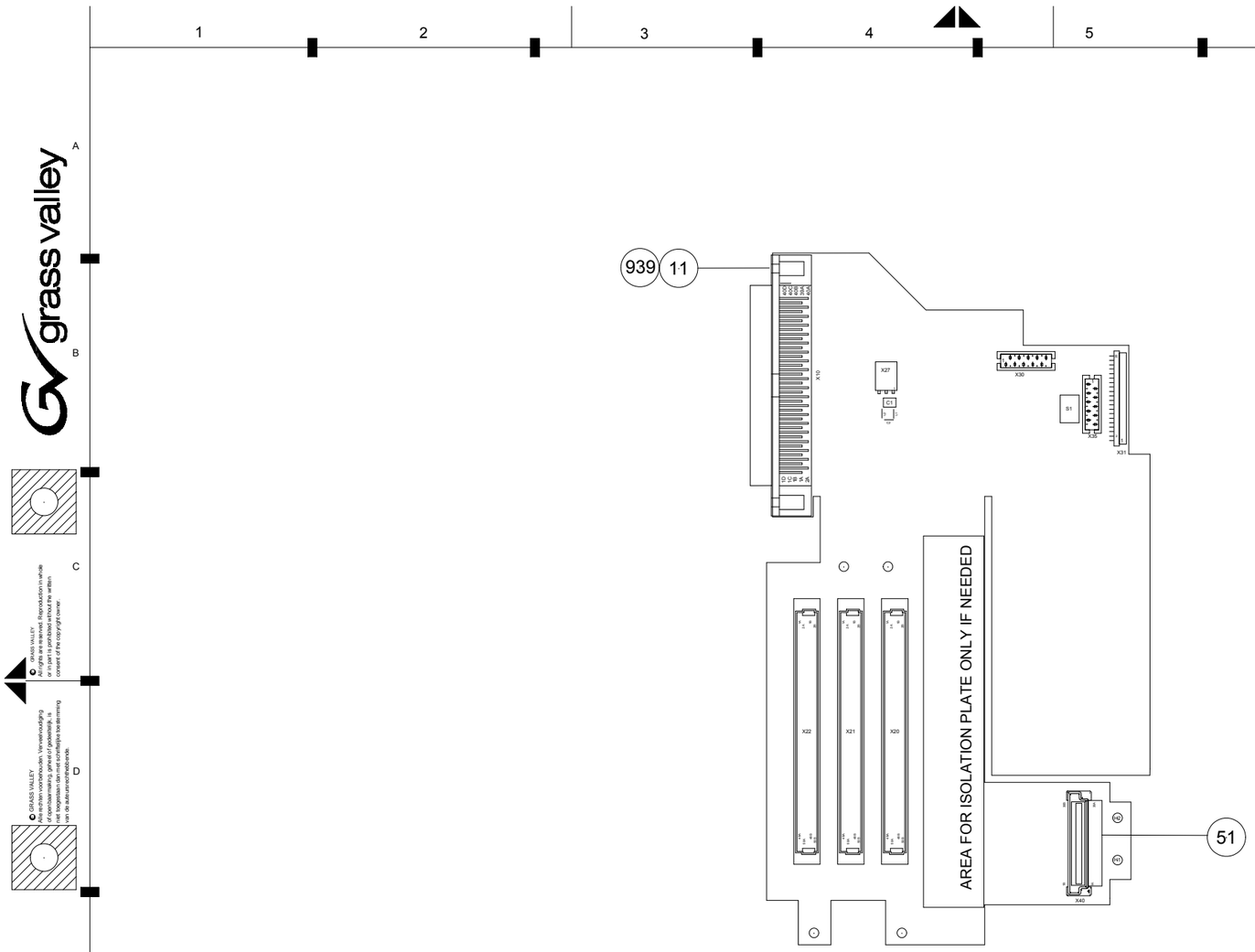
ASSEMBLY LAYER TOP

STATUS : 00	
ASS. 12NC: 3922 406 50301 ASS. NAME: ZOOM GRIP SWITCH	
PCB 12NC.: 3922 411 50301	
ASSEMBLY TOP SCALE 1.5:1	CURR. DATE : 02-10-28 PREV. DATE : 02-10-28
NAME	ORG. DATE : 02-10-28
PROPERTY OF :	SHEET: 110-1

THOMSON MULTIMEDIA BROADCAST SOLUTIONS
– BREDA – THE NETHERLANDS

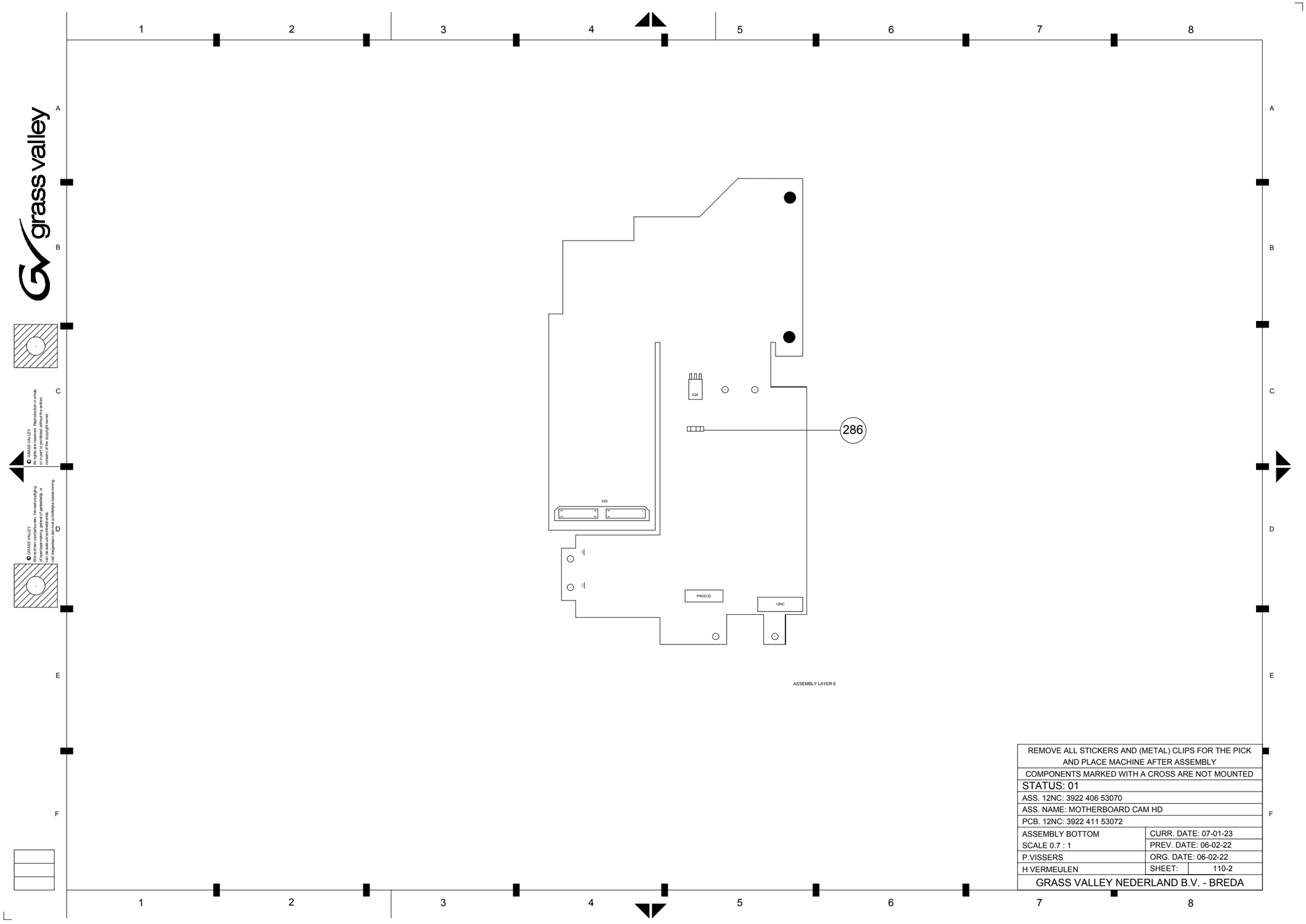
3922 406 53071;4 MOTHERBOARD CAM HD

Ref	Description	Part 12nc	Service part
	No spare parts available, only complete board		



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REMOVE ALL STICKERS AND (METAL) CLIPS FOR THE PICK AND PLACE MACHINE AFTER ASSEMBLY	
COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED	
STATUS: 01	
ASS. 12NC: 3922 406 53070	
ASS. NAME: MOTHERBOARD CAM HD	
PCB. 12NC: 3922 411 53072	
ASSEMBLY TOP	CURR. DATE: 07-01-23
SCALE 0.7 : 1	PREV. DATE: 06-02-22
P.VISSERS	ORG. DATE: 06-02-22
H VERMEULEN	SHEET : 110-1
GRASS VALLEY NEDERLAND B.V. - BREDA	



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REMOVE ALL STICKERS AND (METAL) CLIPS FOR THE PICK AND PLACE MACHINE AFTER ASSEMBLY	
COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED	
STATUS: 01	
ASS. 12NC: 3922 406 53070	
ASS. NAME: MOTHERBOARD CAM HD	
PCB. 12NC: 3922 411 53072	
ASSEMBLY BOTTOM	CURR. DATE: 07-01-23
SCALE 0.7 : 1	PREV. DATE: 06-02-22
P.VISSERS	ORG. DATE: 06-02-22
H VERMEULEN	SHEET: 110-2
GRASS VALLEY NEDERLAND B.V. - BREDA	

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X10 DOCKING CONN.

X10-1A	LONDATA	X10-1B	LONDATAN	X10-1C	AGND	X10-1D	+BATT
X10-2A	SDA-C	X10-2B	SCL-C	X10-2C	AGND	X10-2D	+BATT
X10-3A	INTN-C	X10-3B	AUDIND	X10-3C	AGND	X10-3D	+BATT
X10-4A	ABSENSE	X10-4B	BATTSENS	X10-4C	AGND	X10-4D	+BATT
X10-5A	ADPTID0	X10-5B	ADPTID1	X10-5C	AGND	X10-5D	+BATT
X10-6A	ADPTID2	X10-6B	ADPTID3	X10-6C	AGND	X10-6D	+BATT
X10-7A	AGND	X10-7B		X10-7C	AGND	X10-7D	+BATT
X10-8A	RSD	X10-8B	PIP	X10-8C	AGND	X10-8D	+BATT
X10-9A	SYNC	X10-9B	BLANK	X10-9C	AGND	X10-9D	+BATT
X10-10A	WP1	X10-10B	WP2	X10-10C	AGND	X10-10D	+BATT
X10-11A		X10-11B	FRARESET	X10-11C		X10-11D	
X10-12A	BS-TDA	X10-12B	HLOCK	X10-12C		X10-12D	
X10-13A	EXTHD	X10-13B	EXTHD-RET	X10-13C		X10-13D	
X10-14A	BS-TDV	X10-14B	BS-TMS	X10-14C	BS-AWRITE	X10-14D	
X10-15A	ADVFVID	X10-15B	ADVFVIDR	X10-15C	BS-AGND	X10-15D	
X10-16A	BS-TCK	X10-16B	BSTRSTN	X10-16C	BS-PRGN	X10-16D	
X10-17A	EXTVD	X10-17B	EXTVDRT	X10-17C	AGND	X10-17D	AGND
X10-18A	-5VS	X10-18B	-5VS	X10-18C	-5VS	X10-18D	-5VS
X10-19A	+5VS	X10-19B	+5VS	X10-19C	+3V3	X10-19D	+5VS
X10-20A	+3V3	X10-20B	+3V3	X10-20C	+5VD	X10-20D	+3V3
X10-21A	+5VD	X10-21B	+5VD	X10-21C		X10-21D	+5VD
X10-22A	MICY	X10-22B		X10-22C		X10-22D	
X10-23A	MICX	X10-23B		X10-23C	AGND	X10-23D	AGND
X10-24A	SHIELD	X10-24B		X10-24C		X10-24D	
X10-25A	AUDLV	X10-25B	AUDLV_REF	X10-25C		X10-25D	EXTIN_2N
X10-26A	PWRSW	X10-26B	TXD	X10-26C		X10-26D	EXTIN_2P
X10-27A	+5VS	X10-27B	-5VS	X10-27C		X10-27D	EXTIN_1N
X10-28A	L3_1N	X10-28B	L3_2N	X10-28C		X10-28D	EXTIN_1P
X10-29A	L3_1P	X10-29B	L3_2P	X10-29C		X10-29D	EXTIN_0N
X10-30A	SCLK	X10-30B	SCLKN	X10-30C		X10-30D	EXTIN_0P
X10-31A	L3_CLKN	X10-31B	L3_0N	X10-31C		X10-31D	EXTIN_CLKN
X10-32A	L3_CLKP	X10-32B	L3_0P	X10-32C		X10-32D	EXTIN_CLKP
X10-33A	L1_2N	X10-33B	L2_2N	X10-33C		X10-33D	
X10-34A	L1_2P	X10-34B	L2_2P	X10-34C	AGND	X10-34D	HOUSING
X10-35A	L1_1N	X10-35B	L2_1N	X10-35C	AGND	X10-35D	HOUSING
X10-36A	L1_1P	X10-36B	L2_1P	X10-36C	AGND	X10-36D	HOUSING
X10-37A	L1_0N	X10-37B	L2_0N	X10-37C		X10-37D	
X10-38A	L1_0P	X10-38B	L2_0P	X10-38C		X10-38D	
X10-39A	L1_CLKN	X10-39B	L2_CLKN	X10-39C	-80V	X10-39D	
X10-40A	L1_CLKP	X10-40B	L2_CLKP	X10-40C	-80V	X10-40D	

X40 FRONT

X40-1A	AGND	X40-1B	VBLSHR
X40-2A	AGND	X40-2B	VBLSHG
X40-3A	AGND	X40-3B	VBLSSHB
X40-4A	TEST-RET	X40-4B	TEST
X40-5A	-5VS	X40-5B	-5VS
X40-6A	AGND	X40-6B	AGND
X40-7A	+5VS	X40-7B	+5VS
X40-8A	AGND	X40-8B	AGND
X40-9A	+12V	X40-9B	+12V
X40-10A	+18V	X40-10B	+18V
X40-11A	+28V	X40-11B	+28V
X40-12A	AGND	X40-12B	AGND
X40-13A	+5VD	X40-13B	+5VD
X40-14A	SDA-E	X40-14B	SCL-E
X40-15A	AGND	X40-15B	INTN-E
X40-16A	SHREF1	X40-16B	SHREF2
X40-17A	SHUTSENSE2	X40-17B	SHSENSE
X40-18A	AGND	X40-18B	AGND
X40-19A	+BATT	X40-19B	AGND
X40-20A	AGND	X40-20B	AGND
X40-21A	FSYNCFR-	X40-21B	FSYNCFR+
X40-22A	AGND	X40-22B	AGND
X40-23A	74MHZFR-	X40-23B	74MHZFR+
X40-24A	AGND	X40-24B	AGND
X40-25A	+3V3	X40-25B	+3V3
X40-26A	AGND	X40-26B	AGND
X40-27A	PELTIER+	X40-27B	PELTIER-
X40-28A	AGND	X40-28B	AGND
X40-29A	MOT-0	X40-29B	MOT-1
X40-30A	MOT-2	X40-30B	MOT-3

MGND H2 — C3 22n — AGND

MGND H1 — C4 22n — AGND

X26

X26-1	MICX
X26-2	MICY
X26-3	SHIELD

X27 FAN

X27-1 — L1 4S7-120E — FAN+

C1 22u

C2 22n

X27-2 — L2 4S7-120E — FAN-

X27-3

X23 DVP

X23 QTH-060-01-X-D-A

1	EXT_CLKP	65	ADVFVID
3	EXT_CLKN	67	ADVFVIDR
5		69	BS-AWRITE
7	EXT_1P	71	BSTRSTN
9	EXT_1N	73	BS-TMS
11		75	BST-TDD
13	L3_2P	77	+5VD
15	L3_2N	79	+5VD
17		81	+5VD
19	L3_0P	83	+5VS
21	L3_0N	85	+5VS
23		87	-5VS
25	L2_2P	89	-5VS
27	L2_2N	91	SPICS5
29		93	SPIINTN
31	L2_1P	95	SPISDO
33	L2_1N	97	ZOOMFLW
35		99	IRISFOLL
37	L2_0P	101	SDA-F
39	L2_0N	103	INTN-F
41		105	SDA-G
43	L2_CLKP	107	SDA-D
45	L2_CLKN	109	INTN-D
47		111	+BATT
49		113	+BATT
51	CLKDVPOUT+	115	+BATT
53	CLKDVPOUT-	117	+BATT
55		119	+BATT
57	FSYNCDVP+	121	+BATT
59	FSYNCDVP-	123	+BATT
2	EXT_0P	66	TEST
4	EXT_0N	68	TEST-RET
6		70	BS-PRGN
8	EXT_2P	72	RESETN
10	EXT_2N	74	BS-TCK
12		76	BS-TDV
14	L3_1P	78	BS-AGND
16	L3_1N	80	+3V3
18		82	+3V3
20	L3_CLKP	84	+3V3
22	L3_CLKN	86	+3V3
24		88	+3V3
26	L1_2P	90	+3V3
28	L1_2N	92	SPICS4
30		94	SPISCK
32	L1_1P	96	SPISDI
34	L1_1N	98	FOCFOLLOW
36		100	IRISCONT
38	L1_0P	102	SCL-F
40	L1_0N	104	INTN-G
42		106	SCL-G
44	L1_CLKP	108	SCL-D
46	L1_CLKN	110	SPICS3
48		112	AGND
50		114	
52	74MHZDVP+	116	
54	74MHZDVP-	118	-80V
56		120	-80V
58	SPARE1	122	-80V
60	SPARE2	124	-80V
61	AGND	125	AGND
62	AGND	126	AGND
63	AGND	127	AGND
64	AGND	128	AGND

X20 SYNC MON

X20-1A	SCLKN	X20-1B	SCLK
X20-2A	AGND	X20-2B	AGND
X20-3A	FSYNCDVP-	X20-3B	FSYNCDVP+
X20-4A	AGND	X20-4B	AGND
X20-5A	74MHZDVP-	X20-5B	74MHZDVP+
X20-6A	AGND	X20-6B	AGND
X20-7A	74MHZFR-	X20-7B	74MHZFR+
X20-8A		X20-8B	INTN-F
X20-9A	SCL-F	X20-9B	SDA-F
X20-10A	FSYNCFR-	X20-10B	FSYNCFR+
X20-11A	AGND	X20-11B	AGND
X20-12A	CLKDVPOUT-	X20-12B	CLKDVPOUT+
X20-13A	PIP	X20-13B	SPARE1
X20-14A	WP2	X20-14B	WP1
X20-15A	BLANK	X20-15B	SYNC
X20-16A	H	X20-16B	V
X20-17A	FRARESET	X20-17B	HLOCK
X20-18A	AGND	X20-18B	SPARE2
X20-19A	FAN+	X20-19B	BS-AWRITE
X20-20A	FAN-	X20-20B	BSTRSTN
X20-21A	BS-TCK	X20-21B	BS-TMS
X20-22A	BS-TDB	X20-22B	BST-TDD
X20-23A	BS-PRGN	X20-23B	BS-AGND
X20-24A	-5VS	X20-24B	-5VS
X20-25A	AGND	X20-25B	AGND
X20-26A	AGND	X20-26B	AGND
X20-27A	+5VS	X20-27B	+5VS
X20-28A	+3V3	X20-28B	+3V3
X20-29A	AGND	X20-29B	AGND
X20-30A	AGND	X20-30B	AGND
X20-31A	+5VD	X20-31B	+5VD
X20-32A	STRAL	X20-32B	
X20-33A	EXTIN_2N	X20-33B	EXTIN_2P
X20-34A	EXTIN_1N	X20-34B	EXTIN_1P
X20-35A	EXTIN_0N	X20-35B	EXTIN_0P
X20-36A	EXTIN_CLKN	X20-36B	EXTIN_CLKP
X20-37A	EXT_2N	X20-37B	EXT_2P
X20-38A	EXT_1N	X20-38B	EXT_1P
X20-39A	EXT_0N	X20-39B	EXT_0P
X20-40A	EXT_CLKN	X20-40B	EXT_CLKP
X20-41A		X20-41B	
X20-42A		X20-42B	
X20-43A	EXTVDRT	X20-43B	EXTVD
X20-44A	AGND	X20-44B	AGND
X20-45A	EXTHD-RET	X20-45B	EXTHD
X20-46A	AGND	X20-46B	AGND
X20-47A	AGND	X20-47B	AGND
X20-48A		X20-48B	
X20-49A		X20-49B	
X20-50A		X20-50B	

X21 DATABRD

X21-1A	LONDATAN	X21-1B	LONDATA
X21-2A		X21-2B	SPICS3
X21-3A	SPICS5	X21-3B	SPICS4
X21-4A	SPIINTN	X21-4B	SPISCK
X21-5A	SPISDO	X21-5B	SPISDI
X21-6A		X21-6B	
X21-7A	SCL-G	X21-7B	SDA-G
X21-8A	INTN-G	X21-8B	INTN-F
X21-9A	SCL-F	X21-9B	SDA-F
X21-10A	SCL-E	X21-10B	SDA-E
X21-11A	INTN-E	X21-11B	INTN-D
X21-12A	SCL-D	X21-12B	SDA-D
X21-13A	SCL-C	X21-13B	SDA-C
X21-14A	INTN-C	X21-14B	INTN-B
X21-15A	SCL-B	X21-15B	SDA-B
X21-16A	V	X21-16B	H
X21-17A		X21-17B	BSTRSTN
X21-18A	BS-TCK	X21-18B	BS-TMS
X21-19A	BS-TDA	X21-19B	BS-TDB
X21-20A		X21-20B	
X21-21A		X21-21B	
X21-22A		X21-22B	
X21-23A	BS-PRGN	X21-23B	BS-AWRITE
X21-24A	-5VS	X21-24B	-5VS
X21-25A	AGND	X21-25B	AGND
X21-26A	AGND	X21-26B	AGND
X21-27A	+5VS	X21-27B	+5VS
X21-28A	+3V3	X21-28B	+3V3
X21-29A	AGND	X21-29B	AGND
X21-30A	AGND	X21-30B	AGND
X21-31A	+5VD	X21-31B	+5VD
X21-32A	RESETN	X21-32B	STRAL
X21-33A	ADPTID3	X21-33B	ADPTID2
X21-34A	ADPTID1	X21-34B	ADPTID0
X21-35A	DIGIPOT-	X21-35B	DIGIPOT+
X21-36A	AGND	X21-36B	AGND
X21-37A	IRRXRET	X21-37B	IRRX
X21-38A	AGND	X21-38B	DSR
X21-39A	DTR	X21-39B	SPARE
X21-40A	RTS	X21-40B	CTS
X21-41A	RSD	X21-41B	TXD
X21-42A		X21-42B	
X21-43A	AGND	X21-43B	IRISCONT
X21-44A	AUDIND	X21-44B	IRISFOLL
X21-45A	ABSENSE	X21-45B	FOCFOLLOW
X21-46A	BATTSENS	X21-46B	ZOOMFLW
X21-47A	AGND	X21-47B	VBLSSHB
X21-48A	VBLSHG	X21-48B	VBLSHR
X21-49A		X21-49B	
X21-50A	+BATT	X21-50B	+BATT

X22 FRONT DRIVER

X22-1A		X22-1B	
X22-2A		X22-2B	
X22-3A		X22-3B	
X22-4A		X22-4B	
X22-5A		X22-5B	
X22-6A		X22-6B	
X22-7A		X22-7B	
X22-8A	INTN-F	X22-8B	
X22-9A	SDA-F	X22-9B	SCL-F
X22-10A		X22-10B	
X22-11A		X22-11B	
X22-12A		X22-12B	
X22-13A		X22-13B	
X22-14A	INTN-B	X22-14B	
X22-15A	SDA-B	X22-15B	SCL-B
X22-16A		X22-16B	
X22-17A		X22-17B	
X22-18A		X22-18B	
X22-19A		X22-19B	
X22-20A		X22-20B	
X22-21A		X22-21B	
X22-22A		X22-22B	
X22-23A		X22-23B	
X22-24A	-5VS	X22-24B	-5VS
X22-25A	AGND	X22-25B	AGND
X22-26A	AGND	X22-26B	AGND
X22-27A	+5VS	X22-27B	+5VS
X22-28A	+3V3	X22-28B	+3V3
X22-29A	AGND	X22-29B	AGND
X22-30A	AGND	X22-30B	AGND
X22-31A	+5VD	X22-31B	+5VD
X22-32A		X22-32B	
X22-33A		X22-33B	
X22-34A	+28V	X22-34B	+28V
X22-35A	+18V	X22-35B	+18V
X22-36A	+12V	X22-36B	+12V
X22-37A		X22-37B	
X22-38A	SHSENSE	X22-38B	SHUTSENSE2
X22-39A	SHREF1	X22-39B	SHREF2
X22-40A		X22-40B	
X22-41A	MOT-0	X22-41B	MOT-1
X22-42A	MOT-2	X22-42B	MOT-3
X22-43A		X22-43B	
X22-44A	PELTIER-	X22-44B	
X22-45A		X22-45B	
X22-46A	PELTIER+	X22-46B	
X22-47A		X22-47B	
X22-48A		X22-48B	
X22-49A	AGND	X22-49B	AGND
X22-50A	+BATT	X22-50B	+BATT

X30 LEFT SW. P

X30-1	
X30-2	
X30-3	AGND
X30-4	PWRSW
X30-5	AGND
X30-6	+5VD
X30-7	AGND
X30-8	INTN-G
X30-9	SCL-G
X30-10	SDA-G

X31 FRONT SWP

X31-1	
X31-2	
X31-3	
X31-4	DIGIPOT-
X31-5	DIGIPOT+
X31-6	AGND
X31-7	IRRX
X31-8	IRRXRET
X31-9	AGND
X31-10	AUDLV_REF
X31-11	AUDLV
X31-12	+5VS
X31-13	AGND
X31-14	SDA-G
X31-15	SCL-G
X31-16	INTN-G
X31-17	AGND
X31-18	+3V3
X31-19	AGND
X31-20	+5VD

X35 RS232

X35-1	AGND	X35-6	TXD
X35-2	SPARE	X35-7	CTS
X35-3	DSR	X35-8	DTR
X35-4	RSD	X35-9	S1 +BATT
X35-5	RTS		SMD050
		X35-10	AGND

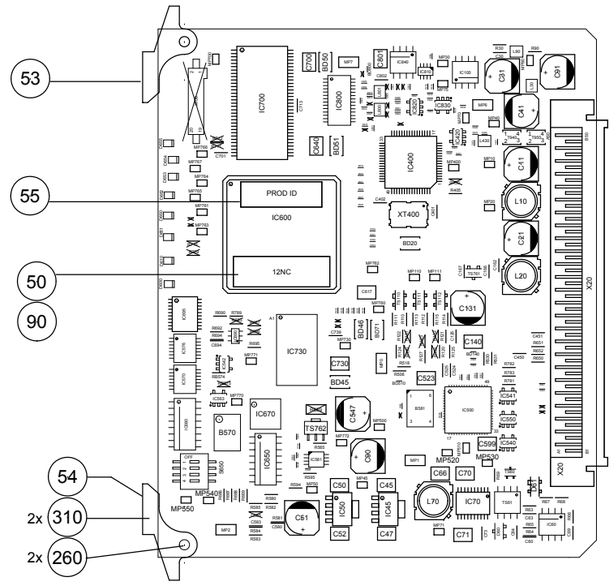
COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED

ASS.NO:	3922 406 53070	
ASS.NAME:	MOTHERBOARD CAM HD	
STATUS:	01	
PCB.NO:	3922 411 53072	
SHEET NAME :	SHEET NAME	
P.Vissers	CURR. DATE:	2007-01-23
CIRCUIT DIAGRAM	PREV. DATE:	2006-02-22
1 SHEET 130 -1	ORG. DATE:	2006-02-22

GRASS VALLEY NEDERLAND B.V. - BREDA

3922 406 54371;1 SYNC. MON. DIG. BRD

Ref	Description	Part 12nc	Service part
	No spare components available		



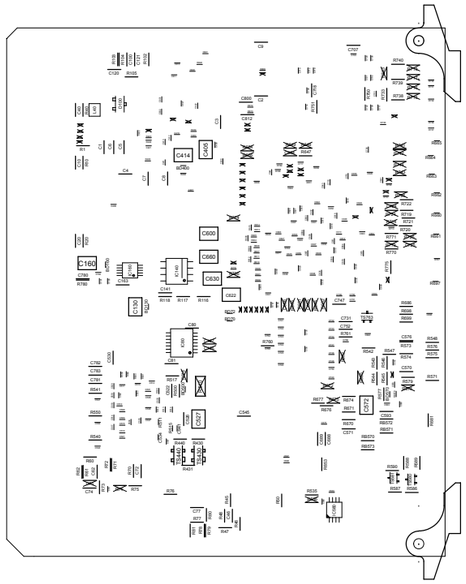
ASSEMBLY LAYER TOP

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COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED		
STATUS: 07		
ASS. 12NC: 3922 406 53040 ASS. NAME: SYNC. MON. DIG. BRD		
PCB. 12NC: 3922 411 53042		
ASSEMBLY TOP	CURR. DATE: 07-07-25	
SCALE 1 : 1	PREV. DATE: 07-02-01	
R. TEIXEIRA	ORG. DATE: 06-04-12	
H VERMEULEN	SHEET :	110-1
GRASS VALLEY NEDERLAND B.V. - BREDA		

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van de auteursrechthebbende.



ASSEMBLY LAYER BOTTOM

COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED		
STATUS: 07		
ASS. 12NC: 3922 406 53040 ASS. NAME: SYNC. MON. DIG. BRD		
PCB. 12NC: 3922 411 53042		
ASSEMBLY BOTTOM	CURR. DATE: 07-07-25	
SCALE 1 : 1	PREV. DATE: 07-02-01	
R. TEIXEIRA	ORG. DATE: 06-04-12	
H VERMEULEN	SHEET :	110-2
GRASS VALLEY NEDERLAND B.V. - BREDA		

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FPGA

DAC

EXT-VID-DIG

EXT-HD-DIG

COL BAR TEST

SELECTOR

DAC_CTRL

DAC_Y

DAC

LPF

EXTHD

CLOCK

#800, #900

CLOCK

EXT_SD_IN

EXT_VIDEO

VID DECODER

VID_CTRL

VID_VPO

CONTROL

#400

#600, #700

SYNC

POWER

SUPPLY IN

REFERENCES

SUPPLY BOARD

SUPPLY FILTERS

BUCK CONVERTER

BOUNDARY SCAN

I2C

#000, #100

FRAME_RESET

VCO

FRAME_SYNC_VP

FRAME_SYNC_FRONT

CLOCK_FRONT

CLOCK_DVP_ADC

CLOCK_DVP_FPGA

CLOCK_DAC_ENC

HLOCK

TCXO 27MHz

27.000MHz

#500

Blockdiagram
Total 13 pages

COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED

ASS. NO. : 3922 406 53040 ASS. NAME:SYNC MONITORING DIGITAL	
STATUS : 07	
PCB NO. : 3922 411 53042	
SHEET NAME : SHEET NAME	
R.Teixeira	CURR. DATE : 2007-07-25
CIRCUIT DIAGRAM	PREV. DATE : 2007-02-01
13 SHEET 130 -1	ORG. DATE : 2006-04-12

GRASS VALLEY NEDERLAND B.V. - BREDA

GRASS VALLEY

STABILIZER 3.3V OSC

Loop Filter 4kHZ

Layout note:
Loop filter close to IC500 pin 6 and B510 pin 1

Layout note:
50 Ohm Single-Ended

Layout note:
Place LVDSrx close to the FPGA

1 cap/power pin

CLOCK & SYNC #500

COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED

ASS. NO. : 3922 406 53040
ASS. NAME:SYNC MONITORING DIGITAL

STATUS : 07

PCB NO. : 3922 411 53042

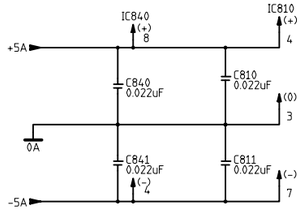
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R.Teixeira	CURR. DATE : 2007-07-25
CIRCUIT DIAGRAM	PREV. DATE : 2007-02-01
13 SHEET 130 -2	ORG. DATE : 2006-04-12

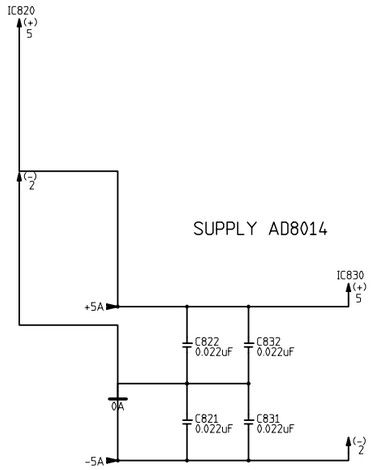
GRASS VALLEY NEDERLAND B.V. - BREDA

GRASS VALLEY

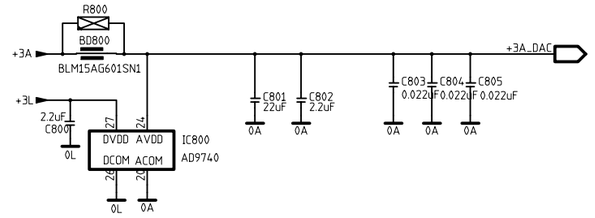
SUPPLY AD706

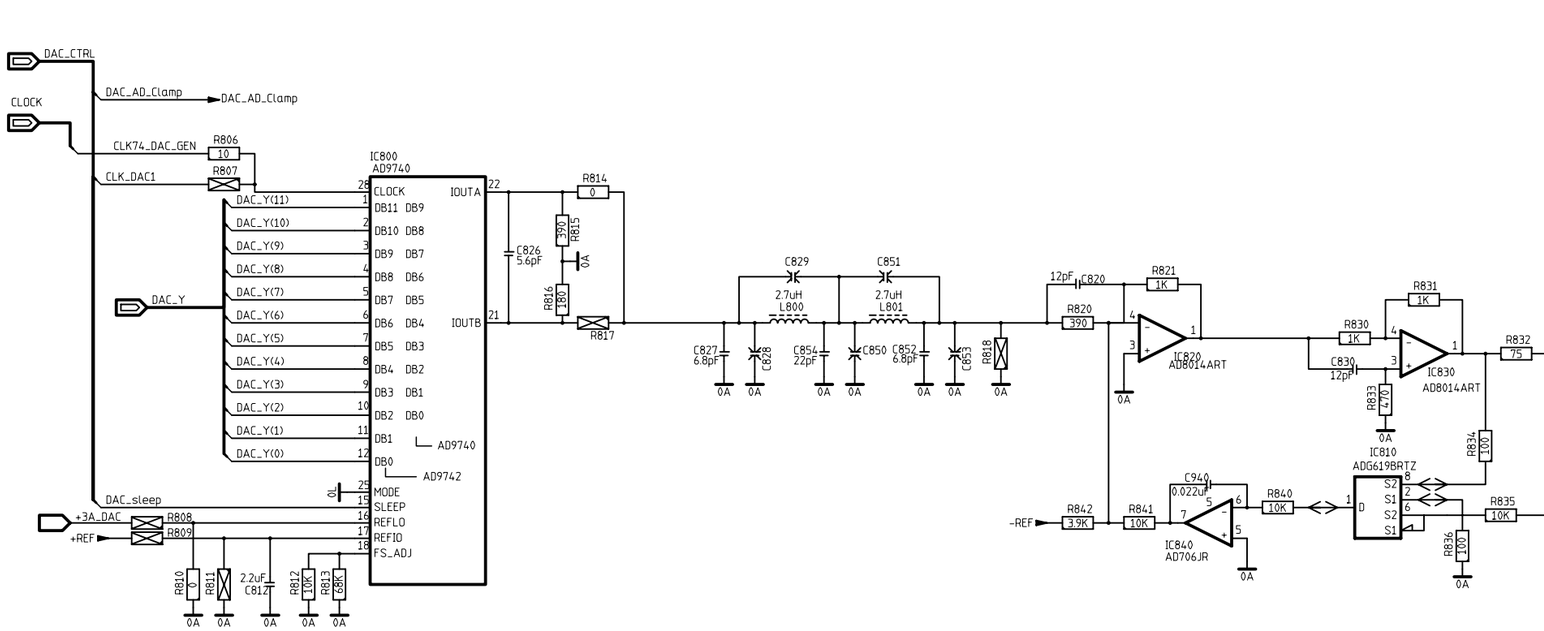


SUPPLY AD8014



DAC SUPPLY





D/A CONVERSION #800 #900

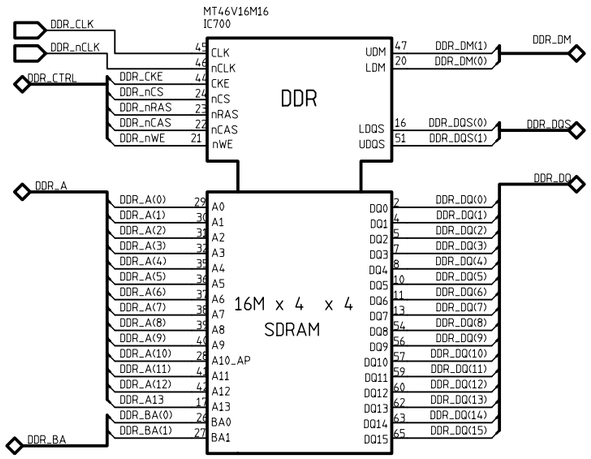
COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED

ASS. NO. : 3922 406 53040 ASS. NAMESYNC MONITORING DIGITAL	
STATUS : 07	
PCB NO. : 3922 411 53042	
SHEET NAME : SHEET NAME	
R.Teixeira	CURR. DATE : 2007-07-25
CIRCUIT DIAGRAM	PREV. DATE : 2007-02-01
13 | SHEET 130 -3	ORG. DATE : 2006-04-12

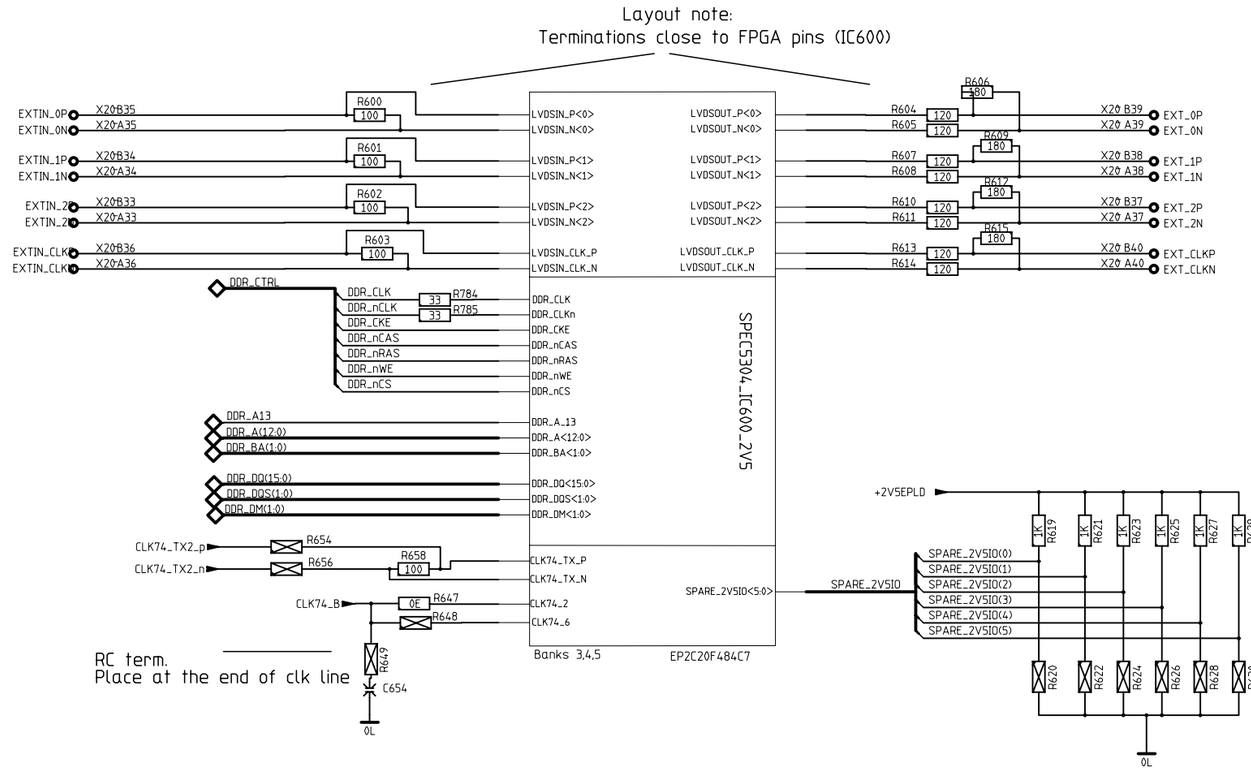
GRASS VALLEY NEDERLAND B.V. - BREDA

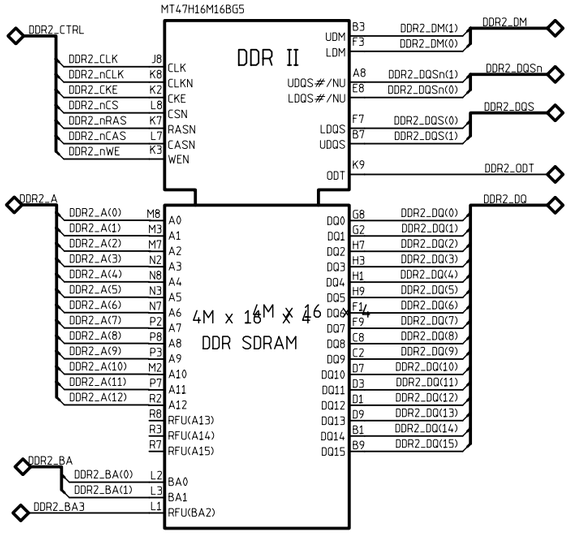
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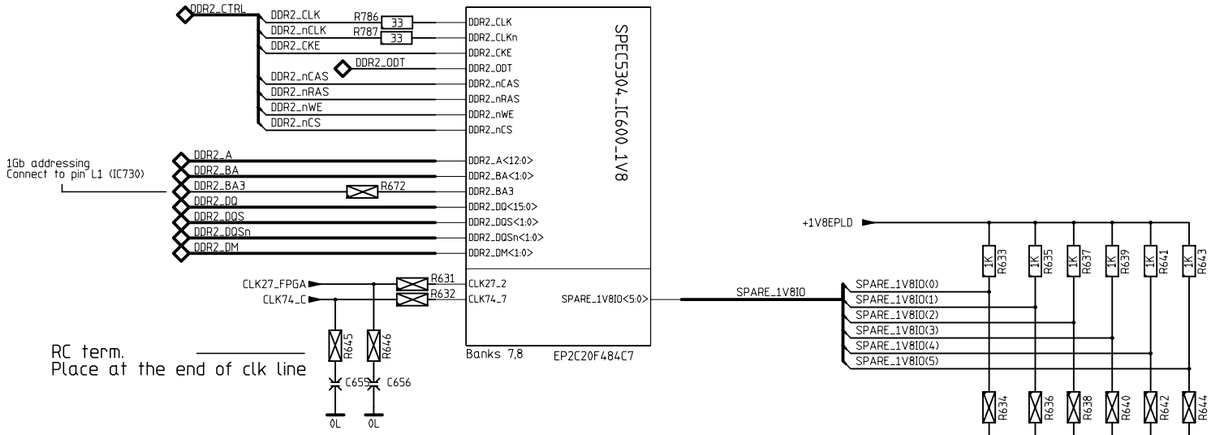
GRASS VALLEY

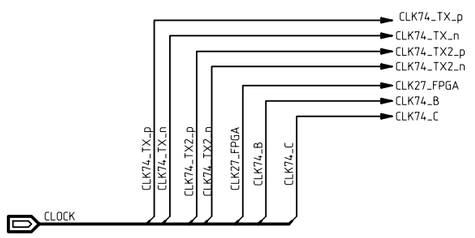


Layout note:
Terminations close to FPGA pins (IC600)









FPGA #600, #700

COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED

ASS. NO. : 3922 406 53040	
ASS. NAME : SYNC MONITORING DIGITAL	
STATUS : 07	
PCB NO. : 3922 411 53042	
SHEET NAME : SHEET NAME	
R.Teixeira	CURR. DATE : 2007-07-25
CIRCUIT DIAGRAM	PREV. DATE : 2007-02-01
13 SHEET 130 -4	ORG. DATE : 2006-04-12

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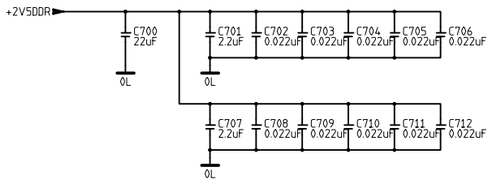
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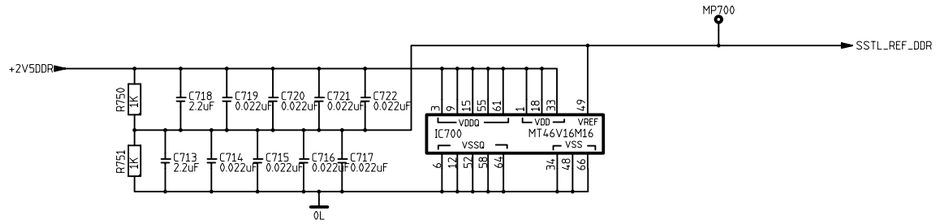
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GRASS VALLEY

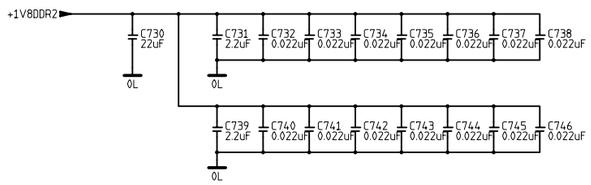
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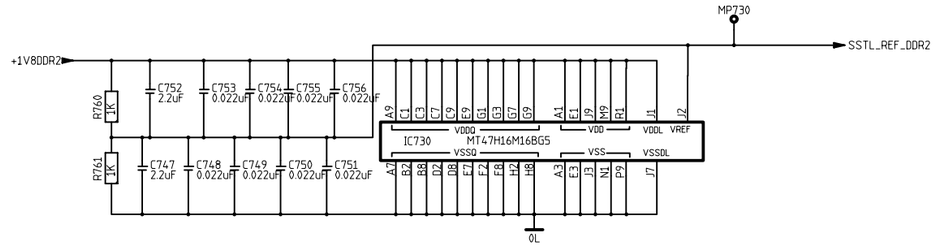
DDR SDRAM POWER



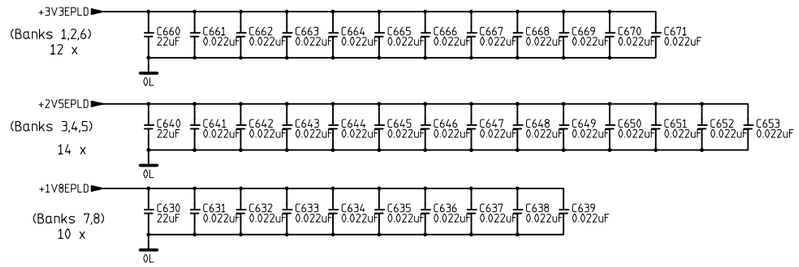


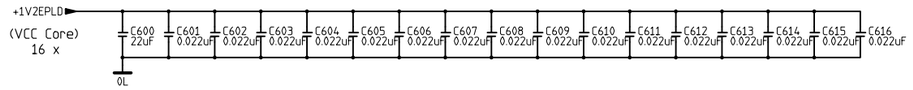
DDR2 SDRAM POWER

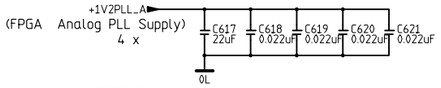


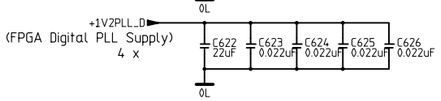


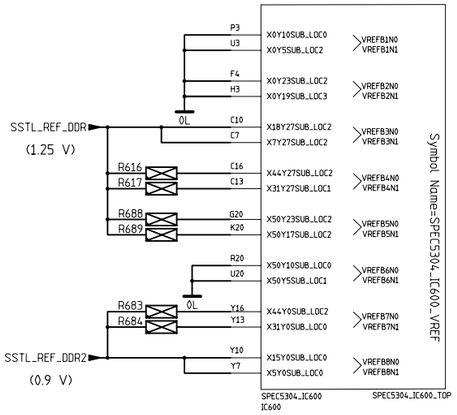
FPGA POWER

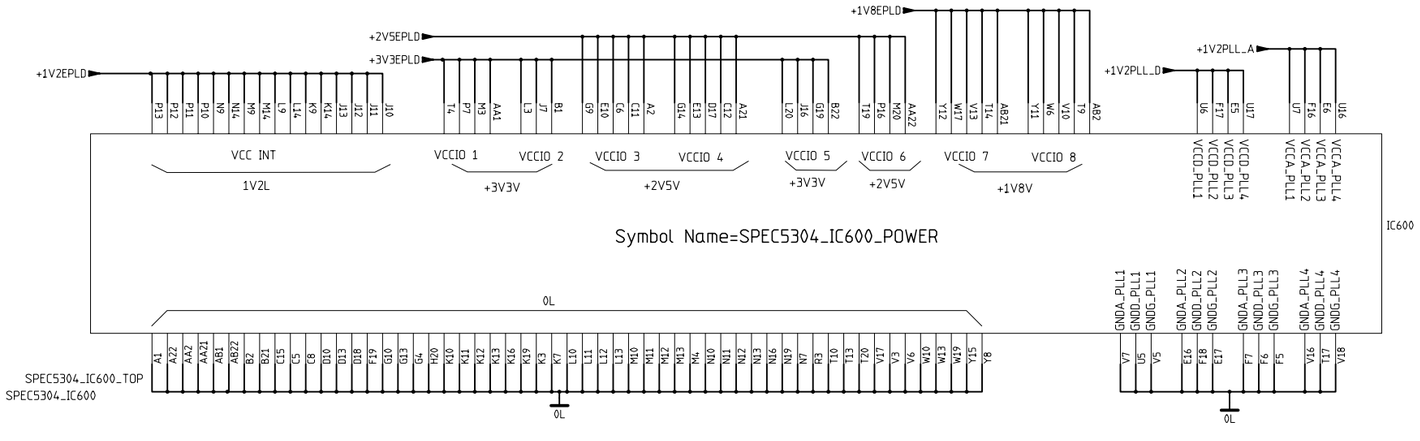










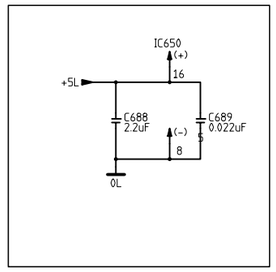


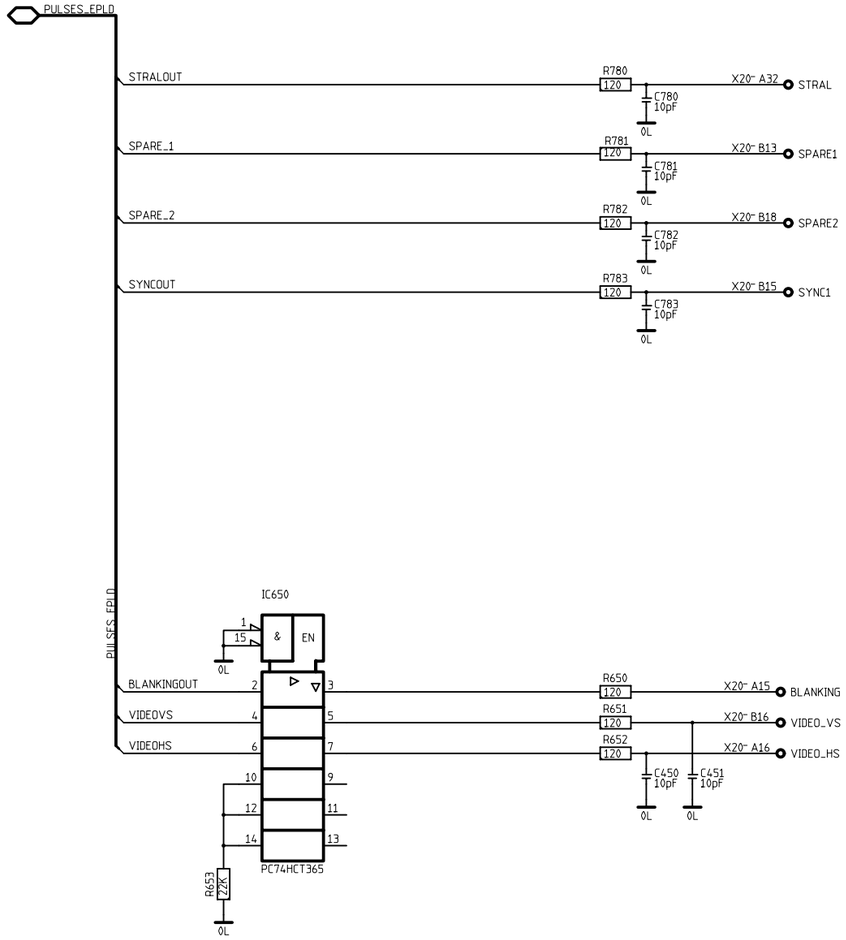
EPLD #600, #700

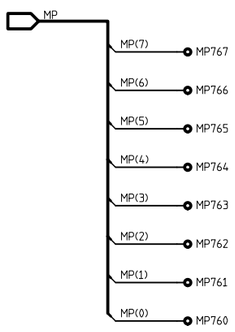
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ASS. NO. : 3922 406 53040 ASS. NAME SYNC MONITORING DIGITAL	
STATUS : 07	
PCB NO. : 3922 411 53042	
SHEET NAME : SHEET NAME	
R.Teixeira	CURR. DATE : 2007-07-25
CIRCUIT DIAGRAM	PREV. DATE : 2007-02-01
13 SHEET 130 -5	ORG. DATE : 2006-04-12
GRASS VALLEY NEDERLAND B.V. - BREDA	

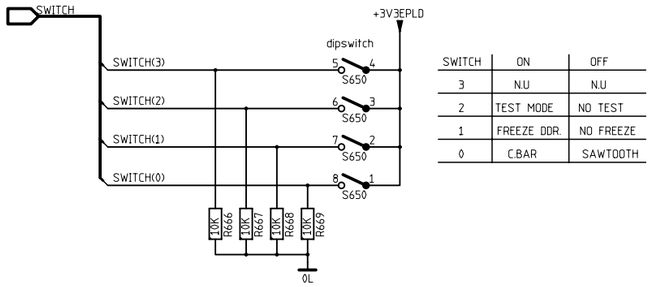
GRASS VALLEY

MISCELLANEOUS

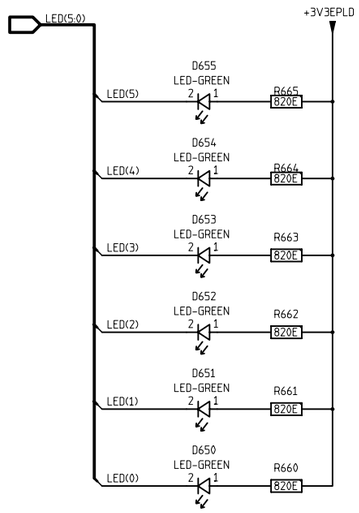








SWITCH	ON	OFF
3	N.U	N.U
2	TEST MODE	NO TEST
1	FREEZE DDR	NO FREEZE
0	C.BAR	SAWTOOTH



D655: GREEN WHEN IC PLL LOCKED

EPLD #600, #700

COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED

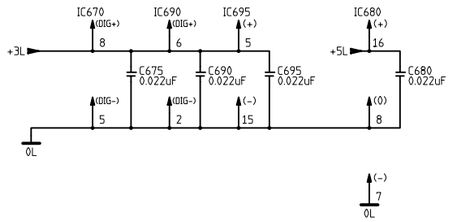
ASS. NO. : 3922 406 53040 ASS. NAME SYNC MONITORING DIGITAL	
STATUS : 07	
PCB NO. : 3922 411 53042	
SHEET NAME : SHEET NAME	
R.Teixeira	CURR. DATE : 2007-07-25
CIRCUIT DIAGRAM	PREV. DATE : 2007-02-01
13 SHEET 130 -6	ORG. DATE : 2006-04-12

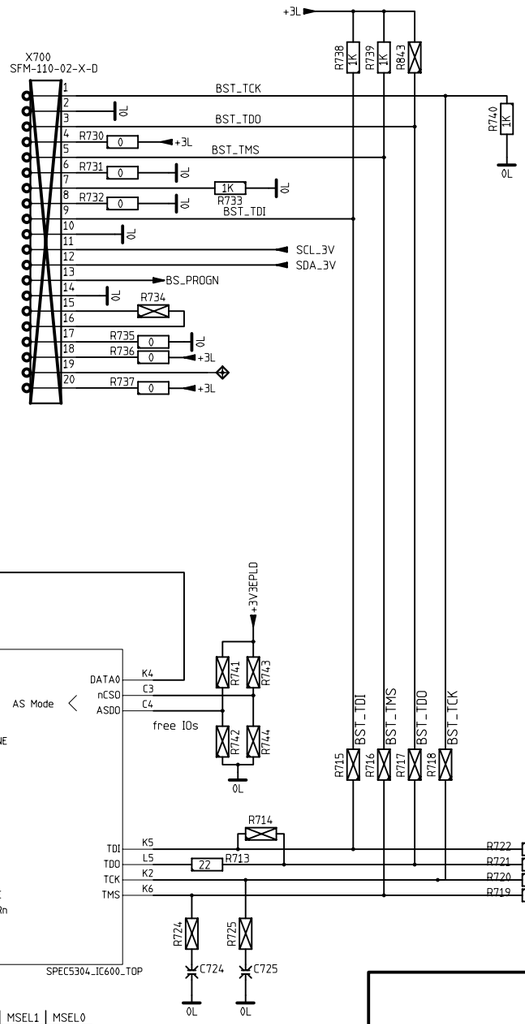
GRASS VALLEY NEDERLAND B.V. - BREDA

Grass Valley
group activities
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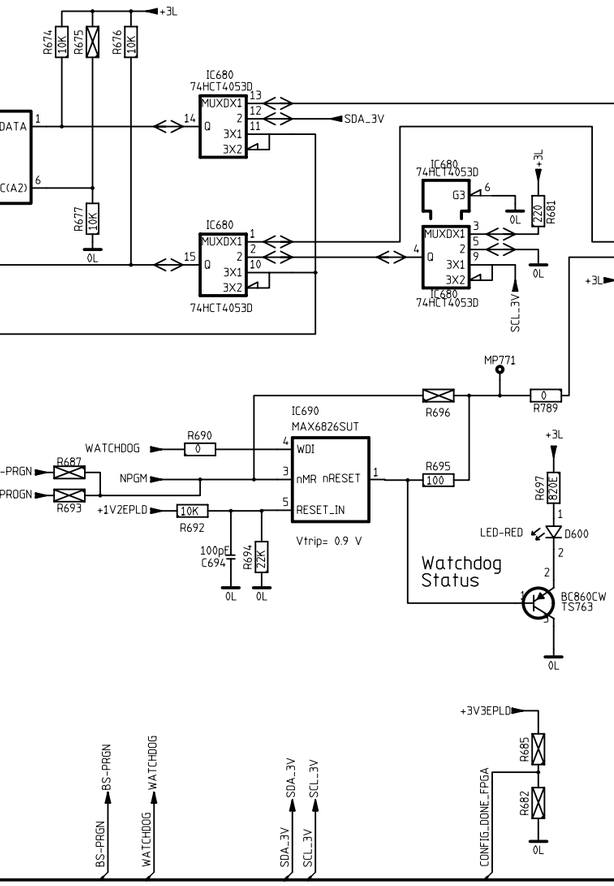
GRASS VALLEY

CONFIGURATION





MODE	MSEL1	MSEL0
PS	GND	VCC
AS	GND	GND
FAS	VCC	GND



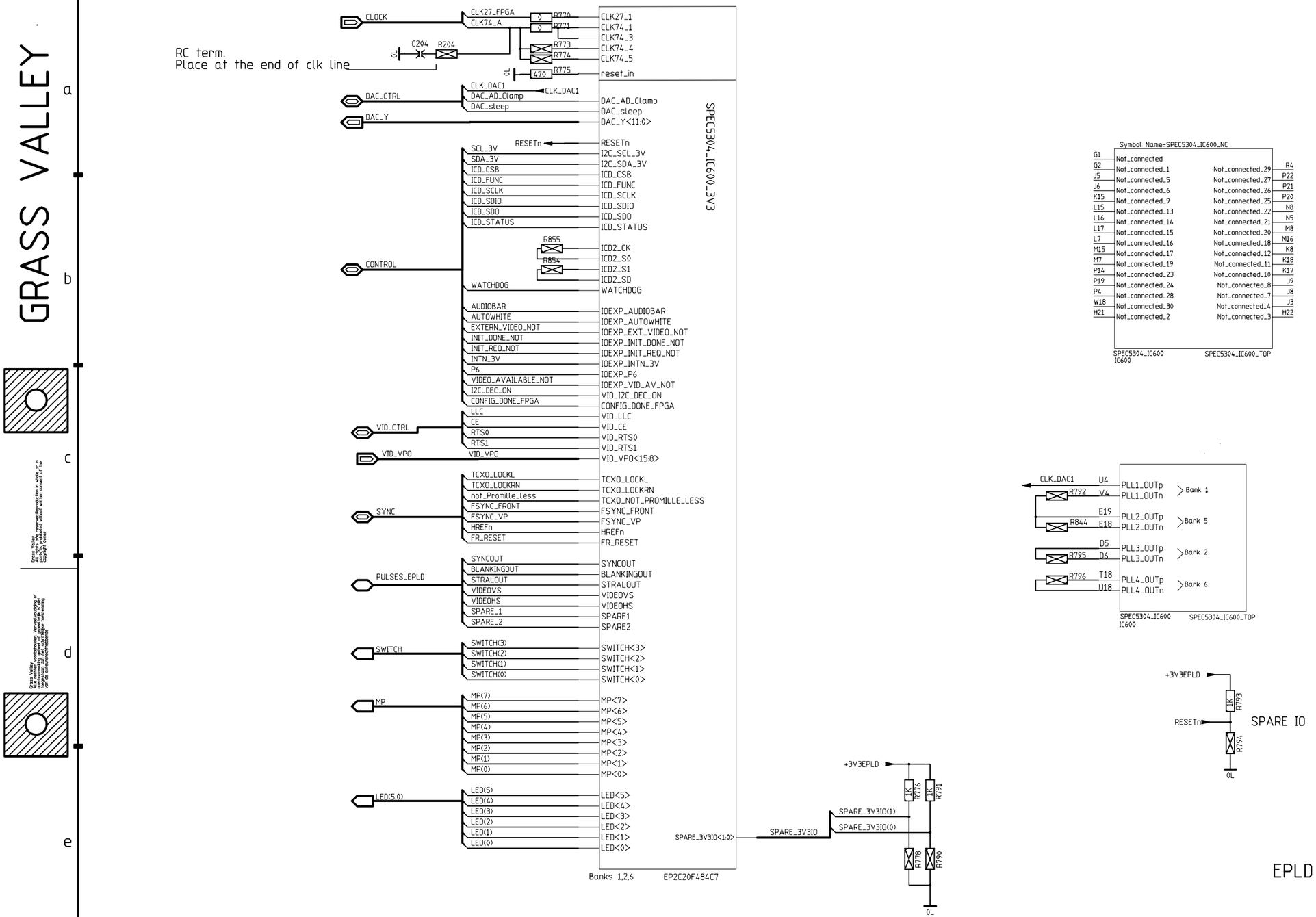
EPLD #600, #700

COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED

ASS. NO. : 3922 406 53040 ASS. NAME SYNC MONITORING DIGITAL	
STATUS : 07	
PCB NO. : 3922 411 53042	
SHEET NAME : SHEET NAME	
R.Teixeira	CURR. DATE : 2007-07-25
CIRCUIT DIAGRAM	PREV. DATE : 2007-02-01
13 SHEET 130 -7	ORG. DATE : 2006-04-12

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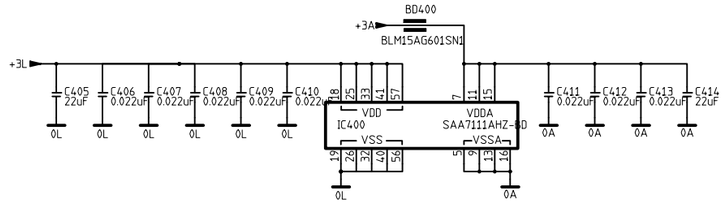
COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED

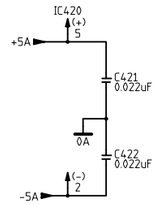
ASS. NO. : 3922 406 53040	
ASS. NAME SYNC MONITORING DIGITAL	
STATUS : 07	
PCB NO. : 3922 411 53042	
SHEET NAME : SHEET NAME	
R.Teixeira	CURR. DATE : 2007-07-25
CIRCUIT DIAGRAM	PREV. DATE : 2007-02-01
13 SHEET 130 -8	ORG. DATE : 2006-04-12

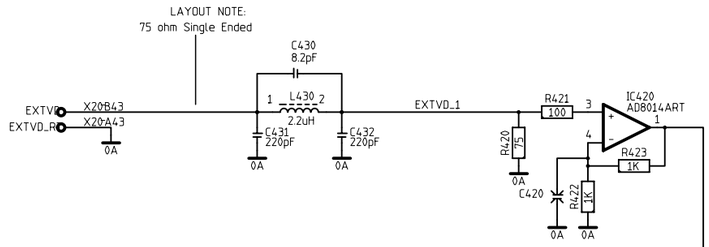
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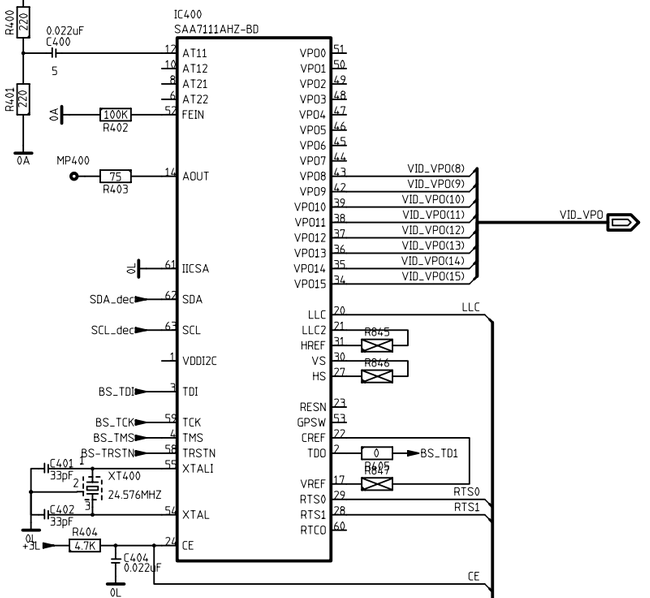
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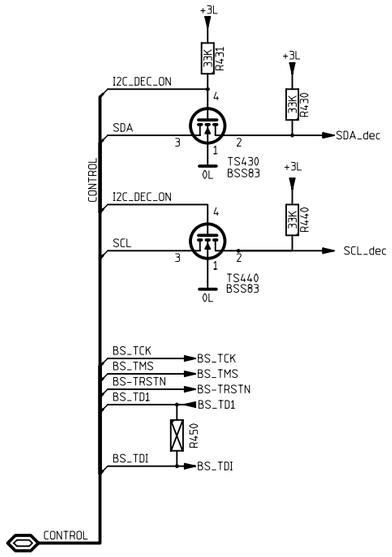






VID. DECODER





EXTERNAL SDTV INPUT #400

COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED

ASS. NO. : 3922 406 53040	
ASS. NAME : SYNC MONITORING DIGITAL	
STATUS : 07	
PCB NO. : 3922 411 53042	
SHEET NAME : SHEET NAME	
R.Teixeira	CURR. DATE : 2007-07-25
CIRCUIT DIAGRAM	PREV. DATE : 2007-02-01
13 SHEET 130 -12	ORG. DATE : 2006-04-12

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OVERVOLTAGE PROTECTION (+1V2L > 1.38V)

IIC Levelshift

FAN CONTROLLER

#000 POWER
#100 CONTROL

Vout = 0.8 (1+ R2/R1)

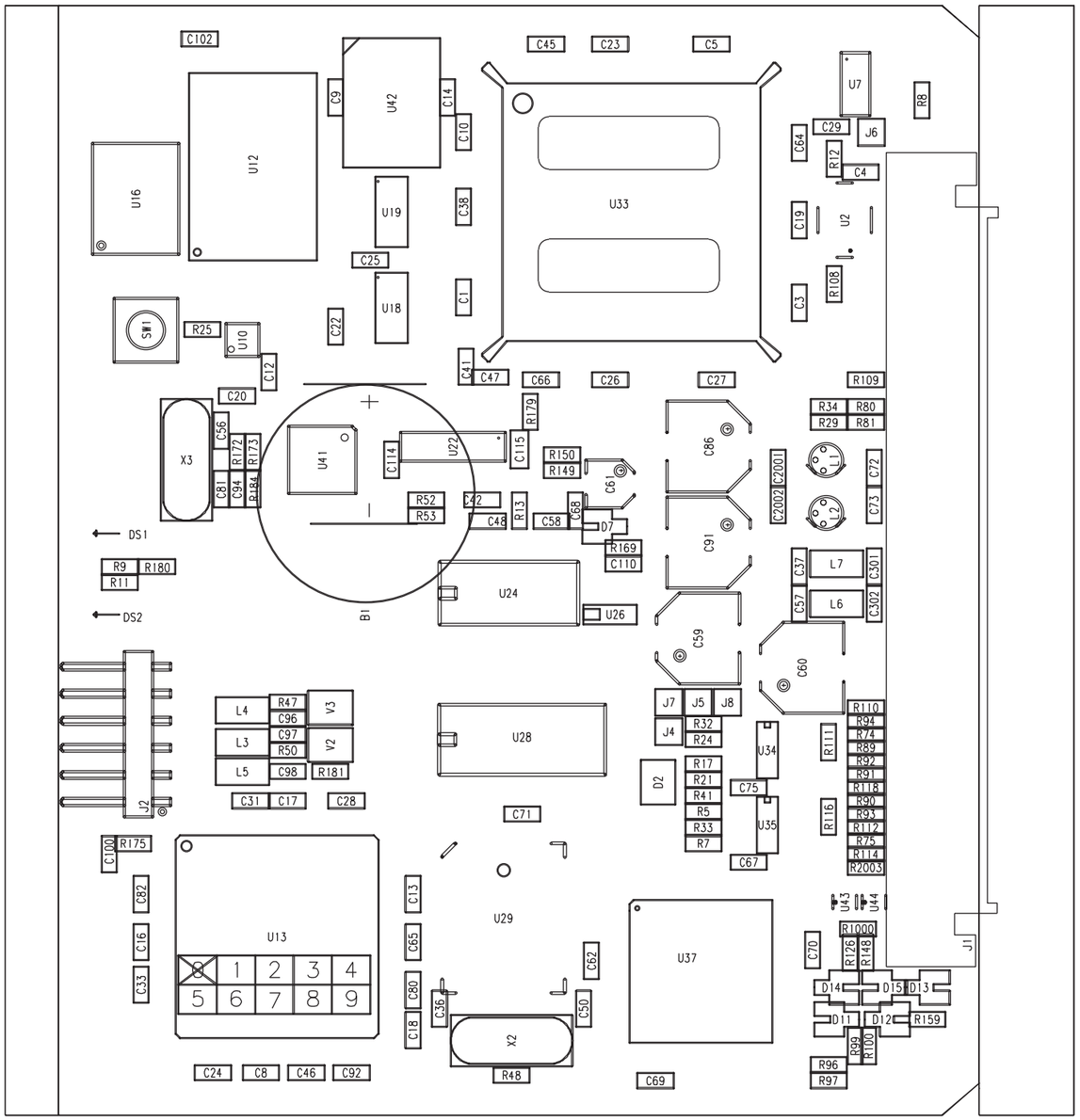
Place IC80 close to connector X20

COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED	
ASS. NO. : 3922 406 53040 ASS. NAME: SYNC MONITORING DIGITAL	
STATUS : 07	
PCB NO. : 3922 411 53042	
SHEET NAME : SHEET NAME	
R.Teixeira	CURR. DATE : 2007-07-25
CIRCUIT DIAGRAM	PREV. DATE : 2007-02-01
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3922 406 52971 DATA BOARD

Ref	Description	Part 12nc	Spare part
	No spare parts available, only complete board		

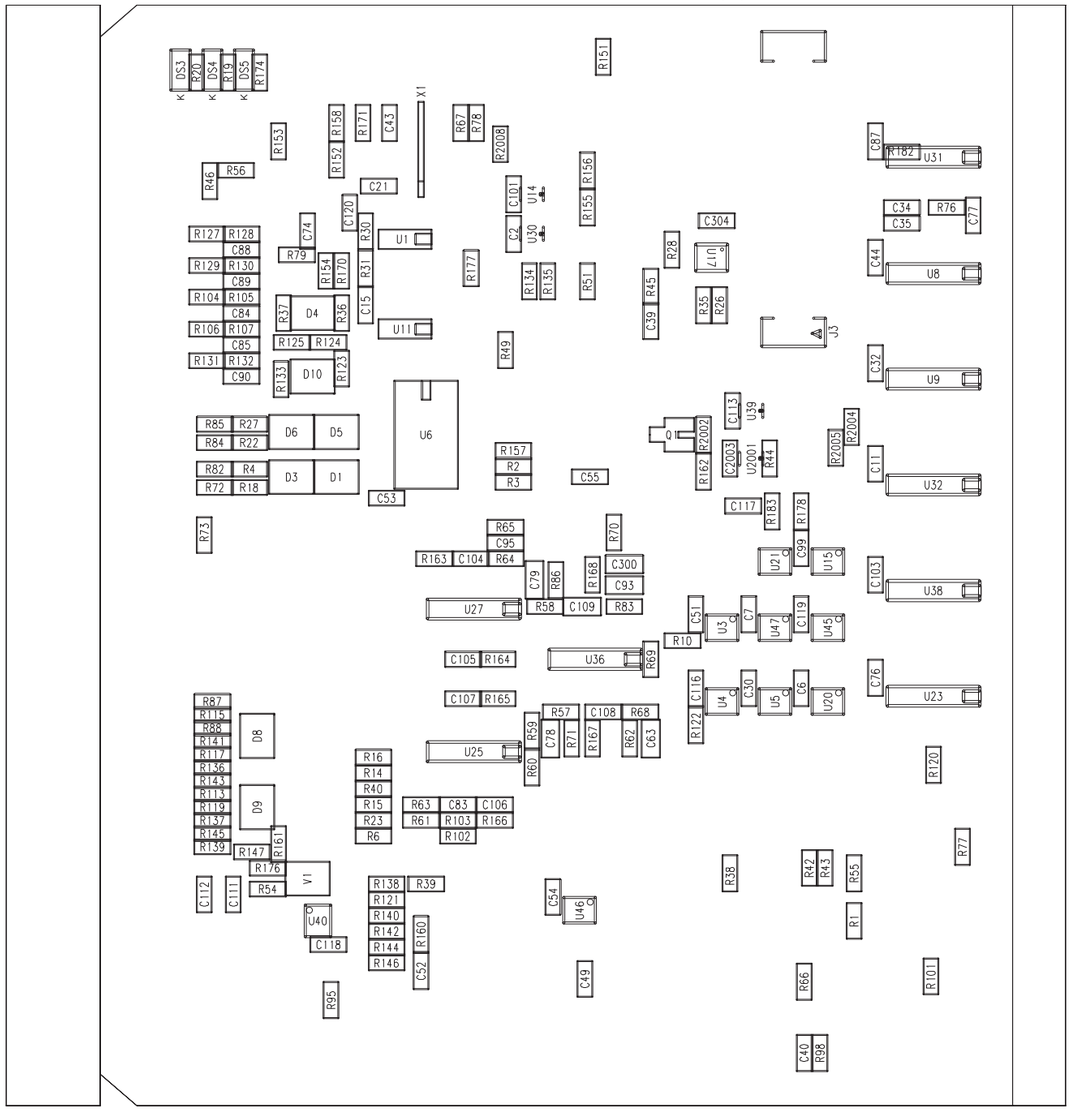
X110 DATACAM v2.3 (c) 2006 Chess eT:



Project : X110 DATACAM	3922 406 52971	.200	08-12-2005
Design : X110 DATACAM		.210	28-02-2006
Drawing : Top components (References)		.220	25-08-2006
		.230	03-11-2006
	PCA Layout		
Engineer: LST | Date: 03-11-2006	Sheet: 2 of 6 | Doc: 110		A4
Chess embedded Technology © www.chess.nl			

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X110 DATACAM v2.3 (c) 2006 Chess et:



Project : X110 DATACAM	5518.1000	.200	08-12-2005
Design : X110 DATACAM		.210	28-02-2006
Drawing : Bottom components (References)		.220	25-08-2006
		.230	03-11-2006
	PCA Layout		
Engineer: LST | Date: 03-11-2006	Sheet: 4 of 6 | Doc: 110		A4
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Backplane connector

J1

1A		TXD1_LON_DATA_N	>	{10}
1B		RXD1_LON_DATA	>	{10}
2A	NC			
2B	R142 1% W1 100E	SPI_CS3_N	>	{5}
3A	R144 1% W1 100E	SPI_CS5_N	>	{5}
3B	100E	SPI_CS4_N	>	{5}
4A	R140 1% W1 100E	SPI_INT_N	>	{5}
4B	SPI_SCK R121 1% W1 100E	SPI_SCK_3V	>	{5}
5A	SPI_SDO R138 1% W1 100E	SPI_MOSI_3V	<	{5}
5B	SPI_SDI	SPI_MISO_3V	<	{5}
6A	TXD1		<	{2}
6B	RXD1		>	{2}
7A	SCL_G		<>	{7}
7B	SDA_G		<>	{7}
8A	INTN_G		<	{7}
8B	INTN_F		<	{7}
9A	SCL_F		<	{7}
9B	SDA_F		<>	{7}
10A	SCL_E		<	{7}
10B	SDA_E		<>	{7}
11A	INTN_E		<	{7}
11B	INTN_D		<	{7}
12A	SCL_D		<	{7}
12B	SDA_D		<>	{7}
13A	SCL_C		<	{7}
13B	SDA_C		<>	{7}
14A	INTN_C		<	{7}
14B	INTN_B		<	{7}
15A	SCL_B		<	{7}
15B	SDA_B		<>	{7}
16A	V		>	{5}
16B	H		>	{5}
17A	WR_N		>	{2}
17B		BS_TRSTN	>	{2}
18A		BS_TCK	>	{2}
18B		BS_TMS	>	{2}
19A		BS_TDA	>	{2}
19B		BS_TDO	>	{2}
20A		FLASH_WP_N	>	{4}
20B	PBS_TRSTN			
21A	PBS_TCK	TCK	>	{2,5}
21B	PBS_TMS	TMS	>	{2,5}
22A	PBS_TDI	TDI_CPU	>	{2}
22B	PBS_TDO	TDO_FPGA	<	{5}
23A	NC			
23B	NC			
24A				
24B				
25A				
25B				
26A				
26B				
27A				
27B				
28A	+3V3D			
28B				
29A				
29B				
30A				
30B				
31A				
31B	+5VD			
32A	(RESET)			
32B	STRAL		<	{2}
33A	ADPT_ID_3		<	{7}
33B	ADPT_ID_2		<	{7}
34A	ADPT_ID_1		<	{7}
34B	ADPT_ID_0		<	{7}
35A	DIGIPOT-	DIGIPOT_M	>	{5}
35B	DIGIPOT+	DIGIPOT_P	>	{5}
36A	JTAG_WP		<	{4}
36B	GND			
37A	R37 1% W1 100E IR_RX_RET			
37B		IR_RX	>	{5}
38A	GND			
38B	SIO_DSR		<	{10}
39A	SIO_DTR		>	{10}
39B	NC			
40A	SIO_RTS		>	{10}
40B	SIO_CTS		<	{10}
41A	SIO_RXD		<	{10}
41B	SIO_TXD		>	{10}
42A	NC			
42B	NC			
43A				
43B	IRIS_CONTROL		<	{8}
44A	AUDIO_INDICATION		<	{8}
44B	IRIS_FOLLOW		<	{8}
45A	AB_BATT_SENSE		<	{8}
45B	FOCUS_FOLLOW		<	{8}
46A	NC			
46B	ZOOM_FOLLOW		<	{8}
47A				
47B	V_BL_SHADING_B		<	{9}
48A	V_BL_SHADING_G		<	{9}
48B	V_BL_SHADING_R		<	{9}
49A	NC			
49B	NC			
50A				
50B	BATT+ R79 1% W1 100E	+BATT	>	{8}

R39 1% W1 10K0 +3V3

R24 1% W1 10K0, R32 1% W1 10K0 +5V0

R179 1% W1 10E0 (V, H, WR_N)

TRST_N: R100 1% W1 22K0, R108 1% W1 22K0, R135 1% W1 22K0, R134 1% W1 22K0, R175 1% W1 100E, C109 100N 16V 5%

L6 600E@100MHZ 0.2A — J8 1 *N — ANA-5V0
C302 100N 10% 16V, C57 100N 10% 16V, C60 220U 20% 6.3V

L7 600E@100MHZ 0.2A — ANA+5V0 — AGND
C301 100N 10% 16V, C37 100N 10% 16V, C59 220U 20% 6.3V

J7 1 *N, J6 1 *N — R73 0E

+3V3D — 0.7A — 22UH L2 — +3V3
C73 100N 10% 16V, C2002 100N 10% 16V, C91 220U 20% 6.3V

J5 1 *N

+5VD — L1 22UH 0.7A — +5VD
C72 100N 10% 16V, C2001 100N 10% 16V, C86 220U 20% 6.3V

J4 1 *N

+5V0 — R24 1% W1 10K0, R32 1% W1 10K0

+3V3 — R34 1% W1 10K0, R29 1% W1 10K0

R81 1% W1 100E — DIGIPOT_M
R80 1% W1 100E — DIGIPOT_P

D4 BAV23, R36 1% W1 10K0, D4 BAV23 — +5V0

GND / AGND

Parallel Debug Connector

(prototype only; not RoHS Compliant)

J3

Reset	1A	1B	W_R_N	{2}
A22	2A	2B	PROG_FLASH_N	{2}
A21	3A	3B	CS_DUART_N	{2}
A20	4A	4B	GND	
A19	5A	5B	D15	
A18	6A	6B	D14	
GND	7A	7B	D13	
A17	8A	8B	D12	
A16	9A	9B	D11	
A15	10A	10B	D10	
A14	11A	11B	D9	
A13	12A	12B	D8	
A12	13A	13B	GND	
A11	14A	14B	D7	
A10	15A	15B	D6	
GND	16A	16B	D5	
A9	17A	17B	D4	
A8	18A	18B	D3	
A7	19A	19B	D2	
A6	20A	20B	D1	
A5	21A	21B	D0	
A4	22A	22B	CS_RAM_N	{2}
A3	23A	23B	DACK0_N	{2}
A2	24A	24B	BS_EN	{2}
GND	25A	25B	CS_RAM8_N	{2}
A1	26A	26B	CS_FPGA_N	{2}
{2} BHE_N	27A	27B	CS_NEURON_N	{2}
{2,3,4,5,6,10} BLE_N	28A	28B	CS_ROM_N	{2}
{2} RD_N	29A	29B	CLK_32MHZ	{3}
WR_N	30A	30B	GND	

RESET {2,3,10}

A[22:1]

D[15:0]

GND

Serial Debug connector

{2} RXD0, {2} TXD0

R181 1% W1 10K0 — +3V3

V3 BAV23, V2 BAV23 — C108 100P 50V 5% — GND

L5 600E@100MHZ 0.2A

R50 1% W1 100E — L3 600E@100MHZ 0.2A

R47 1% W1 100E — L4 600E@100MHZ 0.2A

V3 BAV23, V2 BAV23 — C97 100P 5% 50V, C96 100P 5% 50V — GND

J2: 1, NC, 2, 3, 4, 5, 6

+3V3 — R56 1% W1 10K0

R46 1% W1 100E

U23 CD74HCT03M (&) — RESET_N {3}

Not mounted components are marked with *N.

SHEET TITLE	X110 DATACAM CONNECTORS	DOCUMENT NUMBER	5592.1100.2
DESIGNER	BRO	CHECKED BY	RDJ
DATE		SHEET 1 OF 11	A1
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10	2006-01-23
20	2006-08-24
30	2006-10-20
40	2007-05-24
50	

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U33
KU80386EX25TB

TDI_CPU {1} → TDI
TMS {1,5} → TMS
TCK {1,5} → TCK
RESET_N {3} → TRST_N
RESET {3} → RESET
CLK_32MHZ {3} → CLK2
LBA_N, M, IO_N, D, C_N, BS8_N: NC
W_R_N {1,3} → W
R_N
RD_N {1,3,4,5,10} → RD_N
WR_N {1,3,4,5,10} → WR_N
ADS_N {1,3,5} → ADS_N
PROG_FLASH_N {1,3,5,6} → NA_N
READY_N
BLE_N {1,3,4,5,6,10} → BLE_N
BHE_N {1,4} → BHE_N

R49 1% W1 22K0 (+3V3)
R177 1% W1 10K0 (+3V3)
R51 1% W1 1K00 → GND

A[22:1] → A1 … A25
D[15:0] → D0 … D15

TDO → TDO_CPU {5}
CLKOUT: NC
CS_N/REFRESH_N → CS_RAM_N {1,3,4}
UCS_N → CS_ROM_N {1,3,4}
NMI ← R152 1K00 W1 1% (+3V3)
SMI_N ← SMIACT_N: NC
R67 1% W1 10K0 (+3V3)
R78 1% W1 10K0 (+3V3)
DACK1_N
TXD1 → TXD1 {1}
DRQ0 → DRQ0 {5}
DCD1_N
DRQ1/RXD1 → RXD1 {1}
DACK0_N/CS5_N → DACK0_N {1,5}
EOP_N/CTS1_N → EOP_N {5}
DTR1_N → FPGA_RESET_N {5}
SRXCLK
RTI_N → R170 <=1A 0E → UART1_INT {10}
SSIORX
RTS1_N → BS_TRSTN {1}
SSIOTX
DSR1_N → R171 <=1A 0E → UART2_INT {10}
STXCLK → DSR1_N {3}
PEREQ/TMRCLK2
ERROR_N
TMROUT2
BUSY_N
TMRGATE2
INT4/TMRCLK0 → SPI_CLK {5}
INT5/TMRGATE0 → SPI_CON_INT {5}
INT6/TMRCLK1 → I2C_BUS_INT {5}
INT7/TMRGATE1 → I2C_CON_INT {5}
WDTOUT → WDTOUT {3}
R153 W1 1% 1K00 → GND
R158 1% W1 10K0 (+3V3)
R154 1% W1 10K0 (+3V3)
R122 1% W1 10K0 (+3V3)
U4 74LVC2G00DP (&): R147 1% W1 100E → SPI_INT_N {1}
+3V3 → DS5 QTLP630C-4 GREEN → R174 330E 5% → P1_0

P1_0 → DCD0_N
P1_1 → WE_WP {4}
RTS0_N
P1_2 → LON_UART_SWITCH {10}
DTR0_N
P1_3 → BS_TMS {1}
DSR0_N
P1_4 → BS_TCK {1}
RI0_N
P1_5 → CONFIG_N {5}
LOCK_N
P1_6/HOLD → CONF_DONE {5}
P1_7/HLDA → STATUS_N {5}

P2_0 → CS0_N: CS_DUART_N {10}
P2_1 → CS1_N: CS_NEURON_N {1,5,6}
P2_2 → CS2_N: CS_FPGA_N {1,5}
P2_3 → CS3_N: CS_RAM8_N {1,3,4}
P2_4 → CS4_N: BS_EN {1}
P2_5/RXD0 → RXD0 {1}
P2_6/TXD0 → TXD0 {1}
P2_7 → CTS0_N

P3_0/TMROUT0/INT9 → NEURON_IACK {6}
P3_1/TMROUT1/INT8 → I2C_CLK {5}
P3_2/INT9 → INT0 {3,10}
P3_3/INT1 → R125 1% W1 5K10 → STRAL {1}
P3_4/INT2 → NEURON_INT {6}
P3_5/INT3 → IR_INT {5}
P3_6/PWRDOWN → R133 1% W1 100E → BS_TDD {1}
P3_7/COMCLK → BS_TDA {1}

R123 1% W1 10K0 (+3V3) ← D10 BAV23
D13 BAV23 → R124 1% W1 10K0 → GND

R151 1% W1 10K0 (+3V3)
U4 74LVC2G00DP (&): 5, 6 → 3
DS2 LS-A670-X12-1 RED (+3V3)
R118 1% W1 220E

+3V3 → U4 VCC 74LVC2G00DP GND (8, 4)
C116 100N 10% 16V → GND

C19 C27 C26 C3 C4 C38 100N 10% 16V → GND
U33 VCC (9, 15, 28, 38, 47, 60, 71, 81, 88, 109, 121, 127)
U33 Vss (3, 17, 31, 36, 46, 64, 69, 83, 97, 100, 116, 130)
C45 C10 C23 C5 C44 C66 C43 100N 10% 16V

Not mounted components are marked with *N.

SHEET TITLE	X110 DATACAM PROCESSOR	DOCUMENT NUMBER	5592.1100.2
DESIGNER BRO	CHECKED BY RDJ	SHEET 2 OF 11	A1
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40	2007-05-24
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{3} WDTOUT
{1,2,4} CS_RAM8_N
{1} FLASH_WP_N

R45 1% W1 62K0
B1 3V
C39 100N 16V 10%
X110_BATT_SENSE {8}

U17 TPS3613-01DGS
VBAT VOUT
VDD
SENSE RESET
MR_N RESET_N
CEIN_N CEOUT_N
GND
R35 1% W1 36K0
R28 1% W1 22K0
C384 100N 16V 10%
VCC_SRAM {4,7}
RESET {1,2,10}
RESET_N {1,2,4,5,6}
CS_RAM8_GATE_N {4,5}

R26 1% W1 100K
U32 SN74LVC74AD
S_N CLK Q1 D Q1_N R_N
R2004 <=1A 0E
R2005 <=1A 0E
INT0 {2}
DSR1_N {2}

U47 74LVC2G08DP
U3 74LVC2G02DP
U3 74LVC2G02DP
R10 1% W1 22K0
R25 1% W1 100K
U10 TLC7705IPW
VCC SENSE RESIN_N RESET_N CT CONTROL RESET GND
SW1 TP113H
C20 100P 50V 5%

C12 100N 16V 10%

U7 SN74LV4040APW
CLR CLK
Q0 Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11
R8 1% W1 10E0
RC5_CLK {5}

U2 O_32.0-VX3MH-T1-LF
VCC EN GND OUT 32MHZ
C4 100N 16V 10%
R12 1% W1 27E0
CLK_32MHZ {1,2}
R76 1% W1 100E
C77 1U0 10V 10%
(Located at the end of the net)

{1,2,4,5,10} RD_N
{1,2,4,5,9,10} WR_N
{1,2} PROG_FLASH_N
U9 SN74LVC10AD

U31 SN74LVC74AD *N
U31 SN74LVC74AD *N
U8 SN74LVC74AD
{2,5,6} ADS_N
R182 <=1A 0E

CS_ROM_N
CS_RAM_N
U9 SN74LVC10AD
U9 SN74LVC10AD
BUFEN_N {4,5}
ADS_D_N {4,6}

U8 SN74LVC74AD
{1,2} W_R_N
NEURON_RW_N {5,6}

U47 74LVC2G00DP
U45 74LVC2G32DP
BUF_DIR {4,5}

C51 100N 16V 10% U3 74LVC2G02DP
C7 100N 16V 10% U47 74LVC2G00DP
C29 100N 16V 10% U7 SN74LV4040APW
C32 100N 16V 10% U9 SN74LVC10AD
C44 100N 16V 10% U8 SN74LVC74AD
C87 100N 16V 10% U31 SN74LVC74AD *N
C11 100N 16V 10% U32 SN74LVC74AD

Not mounted components are marked with *N.

SHEET TITLE	X110 DATACAM RESET_CIRCUIT_&_GLUE_LOGIC	DOCUMENT NUMBER	5592.1100.2
DESIGNER BRO	CHECKED BY RDJ	SHEET 3 OF 11	A1
DATE		PROPERTY OF	Chess eT Best

10	2006-01-23
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A[22:1]

{1,2,3,6} RESET_N
{1,2,3} CS_ROM_N
{1,2,3,5,9,10} WR_N
{1,2,3} CS_RAM8_N
{1,2,3,5,10} RD_N
{3,6} ADS_D_N
{1,2,5,6,10} BLE_N
{5} CS_RAM_LOW_N
{5} OE_RAM_N
{1,2,3} CS_RAM_N
{1,2} BHE_N
{5} CS_RAM_HI_N
{3,5} BUFEN_N
{3,5} BUF_DIR
{2} WE_WP
{1} JTAG_WP
{3,5} CS_RAMS_GATE_N
D[15:0]

OE_RAM8_N {5}
OE_ROM_N {5}

U5 74LVC2G32DP
U20 74LVC2G32DP
U15 74LVC2G32DP
U45 74LVC2G32DP

U42 BS616LV1613FIP70 SRAM 1Mx16
A[19:0] 1M-1
D0 A, 3D
D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11 D12 D13 D14 D15
CE2
CE1_N
WE_N
OE_N
UB_N
LB_N
NC NC

U30 74LVC1G57GW
GND
WP_N 6
WR_N 1
OR function, pin 6= inverted input

U12 S29JL064N70TFI00 FLASH 4Mx16
A[21:0] 4M-1
CE_N
OE_N
WE_N
WP_N [ACC]
RESET_N
BYTE_N
BY_N [RY]
+3V3
NC
DQ0 A, 3D
DQ1 DQ2 DQ3 DQ4 DQ5 DQ6 DQ7 DQ8 DQ9 DQ10 DQ11 DQ12 DQ13 DQ14
DQ15 [A-1]

U19 74LVC245APW
U18 74LVC245APW
3EN1 3EN2
D0 D1 D2 D3 D4 D5 D6 D7
D_BUF0 D_BUF1 D_BUF2 D_BUF3 D_BUF4 D_BUF5 D_BUF6 D_BUF7
D8 D9 D10 D11 D12 D13 D14 D15
D_BUF8 D_BUF9 D_BUF10 D_BUF11 D_BUF12 D_BUF13 D_BUF14 D_BUF15
D_BUF[15:0]

R156 1% W1 22K0
R2008 1% W1 22K0
R155 1% W1 22K0
U14 74LVC1G57GW
WP_N
OR function, pin 6= inverted input

U16 BS62LV1027STIP70 SRAM 128Kx8
A[16:0] 128K-1
BLE_N
CS_RAMS_GATE
CE1_N
CE2
WE_N
OE_N
NC
A, 3D
D_BUF0 D_BUF1 D_BUF2 D_BUF3 D_BUF4 D_BUF5 D_BUF6 D_BUF7

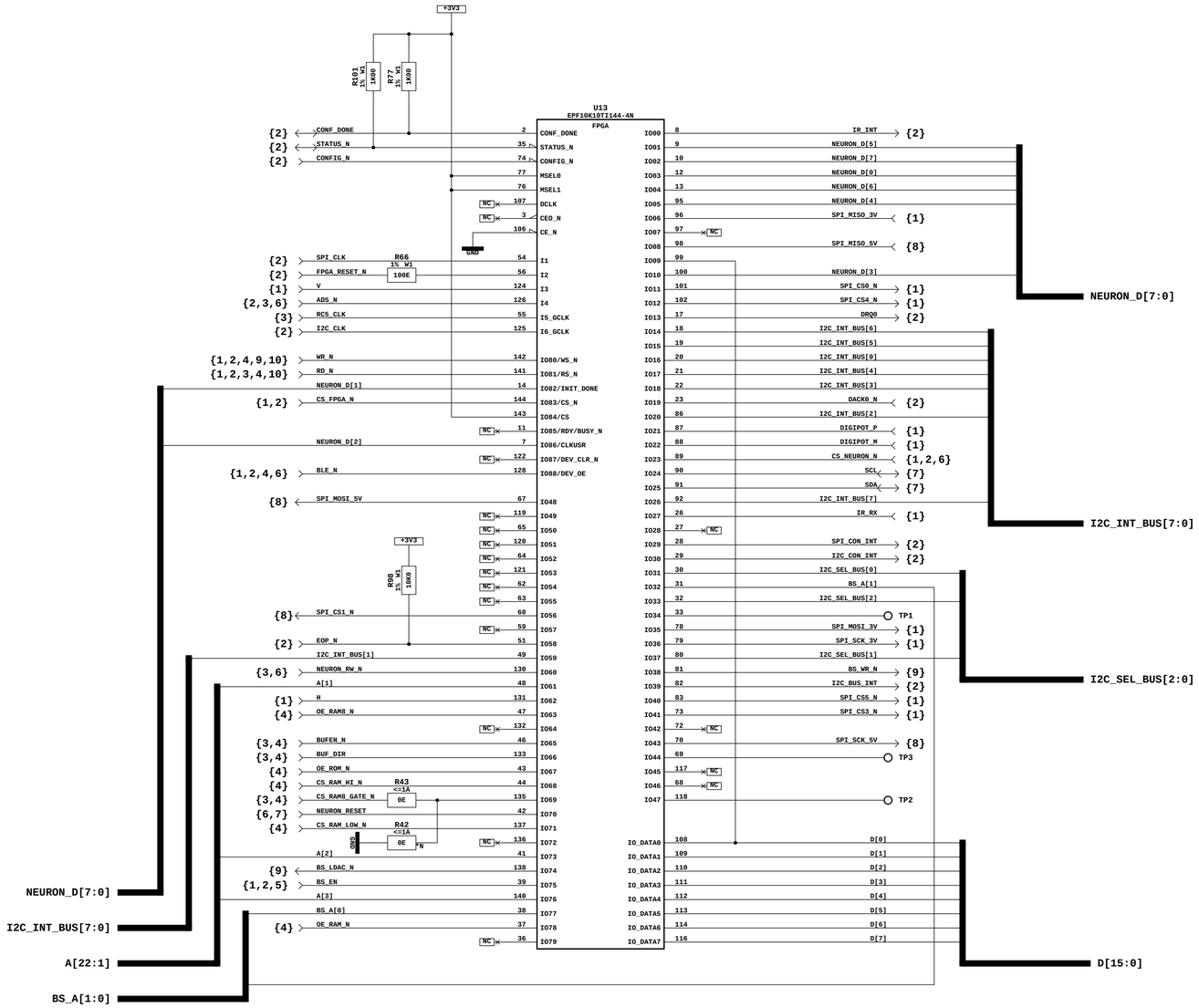
VCC_SRAM {3,7}

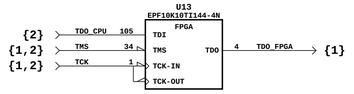
Not mounted components are marked with *N.

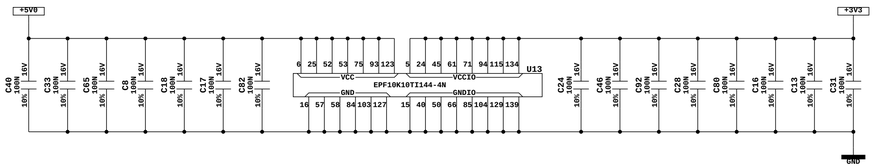
SHEET TITLE	X110 DATACAM MEMORY	DOCUMENT NUMBER	5592.1100.2
		10	2006-01-23
		20	2006-08-24
		30	2006-10-20
		40	2007-05-24
		50	
DESIGNER BRO	CHECKED BY RDJ	SHEET 4 OF 11	A1
DATE		PROPERTY OF Chess eT Best	

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Not mounted components are marked with *N.

SHEET TITLE: X110 DATACAM FPGA	DOCUMENT NUMBER: 5592.1100.2	10	2006-01-23
		20	2006-08-24
		30	2006-10-20
		40	2007-05-24
		50	
DESIGNER: BRO	CHECKED BY: RDJ	SHEET 5 OF 11	A1
DATE	PROPERTY OF: Chess eT Best		

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NEURON_D[7:0]

{1,2,5} CS_NEURON_N
{3,4} ADS_D_N
{3,5} NEURON_RW_N
{5,7} NEURON_RESET
{2,3,5} ADS_N
{1,2,4,5} BLE_N

U46 74LVC2G32DP
U23 CD74HCT03M
U32 SN74LVC74AD
U37 TMPN3150B1AFG
U29 5518.1030.210 256K (32K x 8) OTP EPROM

R55 1% W1 22K0
R180 1% W1 220E
R0 1% W1 220E
R95 1% W1 2K00
DS1 LS-A670-A1L2-1 RED
R160 1% W1 10K0
R48 1% W1 27E
X2 10.0MHZ 30/50PPM
C60 100N 16V 10% 5%
C36 330P 16V 5%
C52 100P 16V 5%

NEURON_DATA[7:0]

R97 1% W1 2K00
R96 1% W1 2K00
R100 27E0 W1 1%
R99 27E0 W1 1%
R148 27E0 W1 1%
R126 27E0 W1 1%
R1000 1% W1 10E
R153 1% W1 2K70
D15 BAS16
D12 BAS16
D14 BAS16
D11 BAS16
D13 BZX84C5V1 5V1
W25

LON_DATA {10}
LON_DATA_N {10}

R120 1% W1 10K0
U38 SN74LVC74AD

NEURON_INT {2}
NEURON_IACK {2}

Not mounted components are marked with *N.

SHEET TITLE: X110 DATACAM LON	DOCUMENT NUMBER: 5592.1100.2	10	2006-01-23
		20	2006-08-24
		30	2006-10-20
		40	2007-05-24
		50	
DESIGNER BRO	CHECKED BY RDJ	SHEET 6 OF 11	A1
DATE	PROPERTY OF Chess eT Best		

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{3,7} VCC_SRAM

U1 DS1307ZN+ — X1 32768HZ — C21 100N 16V 10% — C120 100N 16V 10% — R30 1% W1 2K70 — R31 1% W1 2K70

U11 PCF8582C-2T EEPROM — C15 100N 16V 10% — C53 100N 16V 10%

U6 PCF8574T — C53 100N 16V 10%

R27 1% W1 10K0 — R22 1% W1 10K0 — R4 1% W1 10K0 — R18 1% W1 10K0 — R3 1% W1 10K0 — R2 1% W1 *N — R157 1% W1 10K0 *N — R20 1% W1 220E — R19 1% W1 220E

D53 QTLP650C-4 GREEN — D54 QTLP650C-4 GREEN

D5 BAV23 — D5 BAV23 — D1 BAV23 — D1 BAV23

R149 1% W1 10K0 *N — R150 1% W1 10K0 *N

R85 1% W1 100E — ADPT_ID_0 {1}
R84 1% W1 100E — ADPT_ID_1 {1}
R82 1% W1 100E — ADPT_ID_2 {1}
R72 1% W1 100E — ADPT_ID_3 {1}
NEURON_RESET {5,6}

I2C_SEL_BUS[2:0]

U34 IDTQS3251QG — C75 100N 16V 10%

U35 IDTQS3251QG — C67 100N 16V 10%

I2C_SEL_BUS[0]
I2C_SEL_BUS[1]
I2C_SEL_BUS[2]

{5} SDA
{5} SCL

R110 1% W1 2K70 — R74 1% W1 2K70 — R91 1% W1 2K70 — R90 1% W1 2K70 — R112 1% W1 2K70 — R114 1% W1 2K70 — R111 1% W1 2K70

R94 1% W1 2K70 — R89 1% W1 2K70 — R92 1% W1 2K70 — R110 1% W1 2K70 — R93 1% W1 2K70 — R75 1% W1 2K70 — R116 1% W1 2K70

R1 1% W1 10K0 — R21 1% W1 10K0 — R17 1% W1 10K0 — R5 1% W1 10K0 — R41 1% W1 10K0 — R7 1% W1 10K0 — R33 1% W1 10K0 — R38 1% W1 10K0

D8 BAV23 — D9 BAV23 — D3 BAV23 — D2 BAV23

R87 1% W1 100E — SDA_B {1}
R88 1% W1 100E — SDA_C {1}
R136 1% W1 100E — SDA_D {1}
R113 1% W1 100E — SDA_E {1}
R137 1% W1 100E — SDA_F {1}
R139 1% W1 100E — SDA_G {1}

R115 1% W1 100E — SCL_B {1}
R141 1% W1 100E — SCL_C {1}
R117 1% W1 100E — SCL_D {1}
R143 1% W1 100E — SCL_E {1}
R119 1% W1 100E — SCL_F {1}
R145 1% W1 100E — SCL_G {1}

I2C_INT_BUS[7:0]

I2C_INT_BUS[0]
I2C_INT_BUS[1]
I2C_INT_BUS[2]
I2C_INT_BUS[3]
I2C_INT_BUS[4]
I2C_INT_BUS[5]
I2C_INT_BUS[6]
I2C_INT_BUS[7]

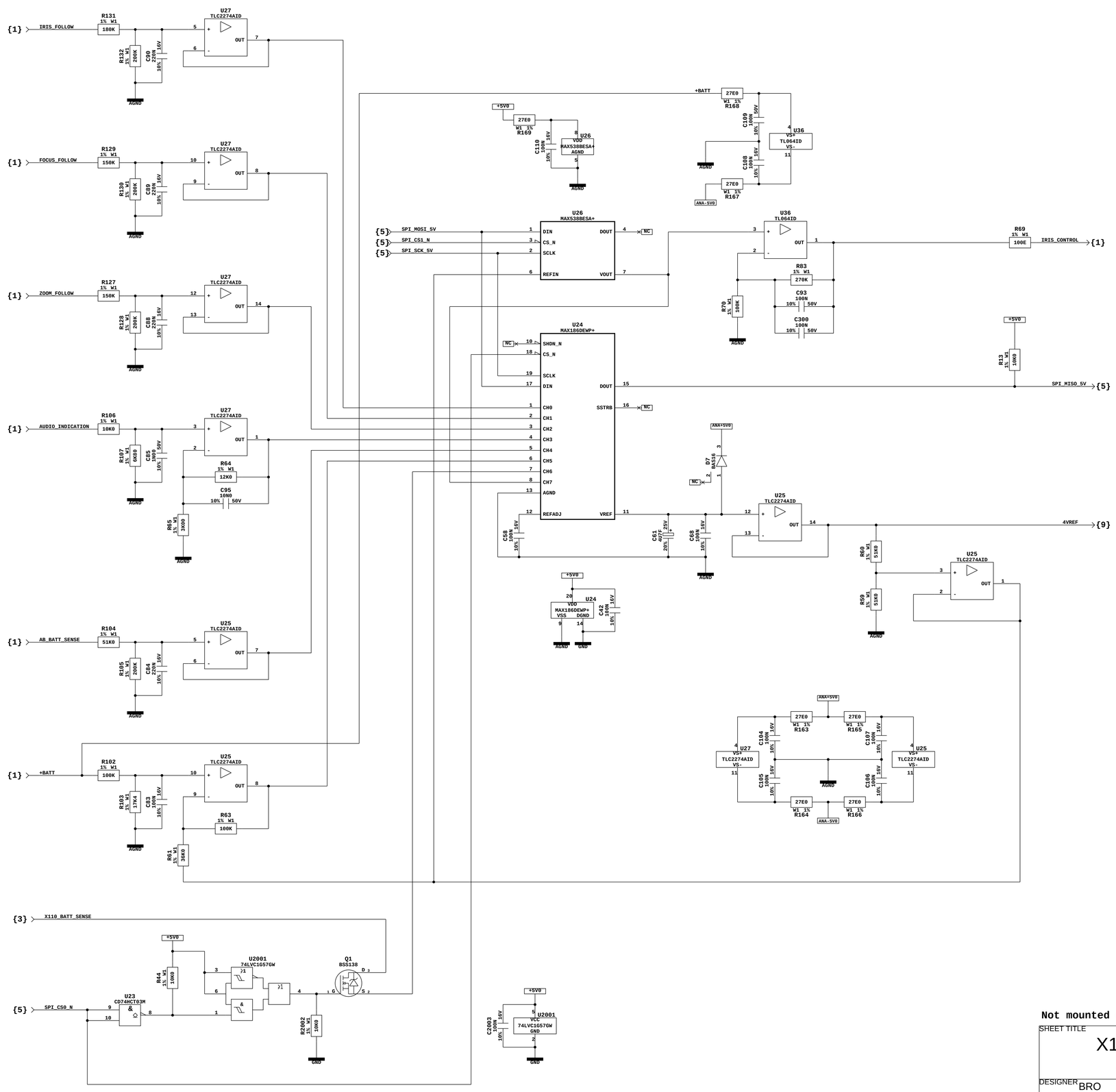
R14 1% W1 100E — INTN_B {1}
R16 1% W1 100E — INTN_C {1}
R15 1% W1 100E — INTN_D {1}
R40 1% W1 100E — INTN_E {1}
R6 1% W1 100E — INTN_F {1}
R23 1% W1 100E — INTN_G {1}

Not mounted components are marked with *N.

SHEET TITLE: X110 DATACAM — I2C	DOCUMENT NUMBER: 5592.1100.2	10 2006-01-23 20 2006-08-24 30 2006-10-20 40 2007-05-24 50	
DESIGNER: BRO	CHECKED BY: RDJ	SHEET 7 OF 11	A1
DATE	PROPERTY OF: Chess eT Best		

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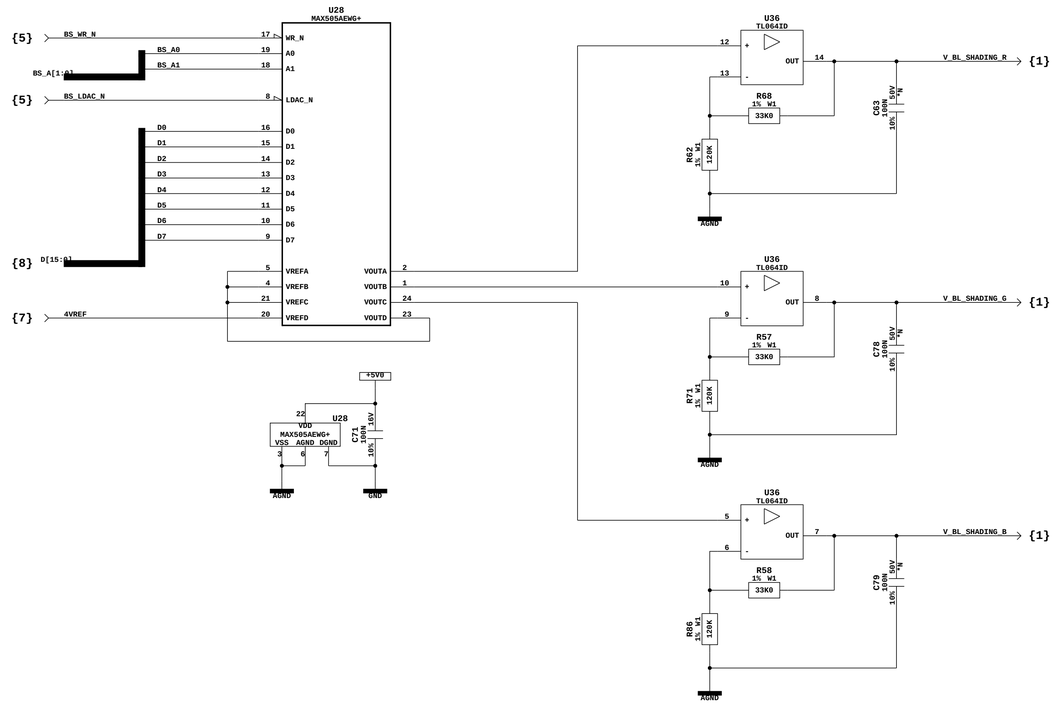


Not mounted components are marked with *N.

SHEET TITLE: X110 DATACAM SPI_DEVICES	DOCUMENT NUMBER: 5592.1100.2	10	2006-01-23
		20	2006-08-24
		30	2006-10-20
		40	2007-05-24
		50	
DESIGNER: BRO	CHECKED BY: RDJ	SHEET 8 OF 11	A1
DATE	PROPERTY OF: Chess eT Best		

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SHEET TITLE: X110 DATACAM BLACK_SHADING	DOCUMENT NUMBER: 5592.1100.2	10	2006-01-23
		20	2006-08-24
		30	2006-10-20
		40	2007-05-24
		50	
DESIGNER: BRO	CHECKED BY: RDJ	SHEET 9 OF 11	A1
DATE	PROPERTY OF: Chess eT Best		

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D[15:0]

A[22:0]

A3

U41 TL16C752BPT (TSSOP)

XTAL1	13	D0	44 D0
XTAL2	14	D1	45 D1
RESET	36	D2	46 D2
A0	28	D3	47 D3
A1	27	D4	48 D4
A2	26	D5	1 D5
IOR_N	19	D6	2 D6
IOW_N	15	D7	3 D7
CSA_N	10		
INTA	30		
CSB_N	11		
INTB	29		

CHANNEL A

TXA	7		
RTSA_N	33		
DTRA_N	34		
RXA	5		
CTSA_N	38		
DSRA_N	39		
CDA_N	40		
RIA_N	41		
RXRDYA_N	31	NC	
TXRDYA_N	43	NC	
OPA_N	32		

CHANNEL B

TXB	8		
RTSB_N	22	NC	
DTRB_N	35	NC	
RXB	4		
CTSB_N	23		
DSRB_N	20		
CDB_N	16		
RIB_N	21		
RXRDYB_N	18	NC	
TXRDYB_N	6	NC	
OPB_N	9	NC	

U22 MAX3243EIPW

T1IN	14	T1OUT	9 SIO_TXD {1}
T2IN	13	T2OUT	10 SIO_RTS {1}
T3IN	12	T3OUT	11 SIO_DTR {1}
R1OUT	19	R1IN	4 SIO_RXD {1}
R2OUT	18	R2IN	5 SIO_CTS {1}
R3OUT	17	R3IN	6 SIO_DSR {1}
R4OUT	NC 16	R4IN	7
R5OUT	NC 15	R5IN	8
FORCEON	23	R2OUTB	20 NC
FORCEOFF	22	INVALID	21 NC
C1+	28	C2+	1
C1-	24	C2-	2
V+	27	V-	3
VCC	26		
GND	25		

{2,3,10} RESET
{1,3,4,5,6} BLE_N
{1,2,3,4,5} RD_N
{1,2,3,4,5,9} WR_N
{1,2} CS_DUART_N
{2} UART1_INT
{2} INT0
{2} UART2_INT
{6} LON_DATA_N
{6} LON_DATA (Route as differential pair)
{2} LON_UART_SWITCH
TXD1_LON_DATA_N {1} (Route as differential pair)
RXD1_LON_DATA {1}

(Default Interrupt on INT0)

U21 74LVC2G32DP ≥1
U39 74LVC1G57GW
U40 74LVC2G32DP
U43 TS5A3159DCKR
U44 TS5A3159DCKR

R172 1% W1 1M00 · X3 3.6864MHZ 30/50PPM · R173 1% W1 1K50
C94 22P0 5% 50V · C81 22P0 5% 50V · C56 22P0 5% 50V
R184 1% W1 10K0 · R178 <=1A 0E · R183 1% W1 10K0
R162 1% W1 10K0 · R52 1% W1 100E N · R53 1% W1 100E
R54 1% W1 100E · R176 1% W1 100E · R161 1% W1 10K0
D2003 BAS 3300 · V1 BAV23

C55 100N 16V 10% · C47 100N 16V 10% · C115 1U00 25V 10% · C48 100N 16V 10% · C41 100N 16V 10%

C114 100N 16V 10% · C111 100N 16V 10% · C112 100N 16V 10% · C113 100N 16V 10% · C117 100N 16V 10% · C118 100N 16V 10%

+3V3 · +5V0 · GND

Not mounted components are marked with *N.

SHEET TITLE	X110 DATACAM DUART	DOCUMENT NUMBER	5592.1100.2
DESIGNER	BRO	CHECKED BY	RDJ
DATE		SHEET 10 OF 11	A1
PROPERTY OF	Chess eT Best		

10	2006-01-23
20	2006-08-24
30	2006-10-20
40	2007-05-24
50	

5-24-2007_14:47

Mechanical parts on PCA

REF	DEVICE	MANUFACTURER	PARTTYPE	VALUE/COMMENT	NO_PLACE
_MECH1	5518.1000.230	-	PCB VERSION 2.3		-
_MECH2	UITWERPER BTS	-	3922.400.08432		-
_MECH3	UITWERPER BTS	-	3922.400.08432		-
_MECH4	SPANHULS	DOWEL	DIN1481-1.5X6-A2		-
_MECH5	SPANHULS	DOWEL	DIN1481-1.5X6-A2		-
_MECH6	5518.5004.001	ANY	UITWERPER LABEL 6*11MM	TEXT: "2"	-
_MECH7	5518.5003.001	ANY	UITWERPER LABEL 6*11MM	TEXT: "DATA C"	-

A component marked with *N will not be mounted

Marking materials on PCA

REF	DEVICE	MANUFACTURER	PARTTYPE	VALUE/COMMENT
MARK1	5518.5001.100	ANY	STATUS STICKER	ATTACHED ON U12
MARK2	5518.5002.100	ANY	SERIAL NR STICKER	ATTACHED ON U12

Packing materials

REF	DEVICE	MANUFACTURER	PARTTYPE	VALUE/COMMENT
PACK1	ANTISTATIC_BAG	ANY	127*203MM	BAG FOR PCB

Revision history

Page	Zone	Rev	Date	Description
ALL	ALL	2.0	2005-12-05	PROTOTYPE RELEASE
ALL	ALL	2.1	2006-01-23	INITIAL PRODUCTION RELEASE
3	F3	2.2	2006-08-24	WAIT-STATE REDUCTION BY BRIDGING U31 WITH A ZERO-OHM RESISTOR R182
1,10	E2,D3~E3	2.3	2006-10-27	REVERSE POLARITY OF C59, PULL DOWN RESISTORS R183/R184 ADDED
9	D6~G6	2.4	2007-05-24	C63, C78 AND C79 ARE MADE NON-PLACED COMPONENTS

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SHEET TITLE: X110 DATACAM
MECHANICAL PARTS

DOCUMENT NUMBER: 5592.1100.2

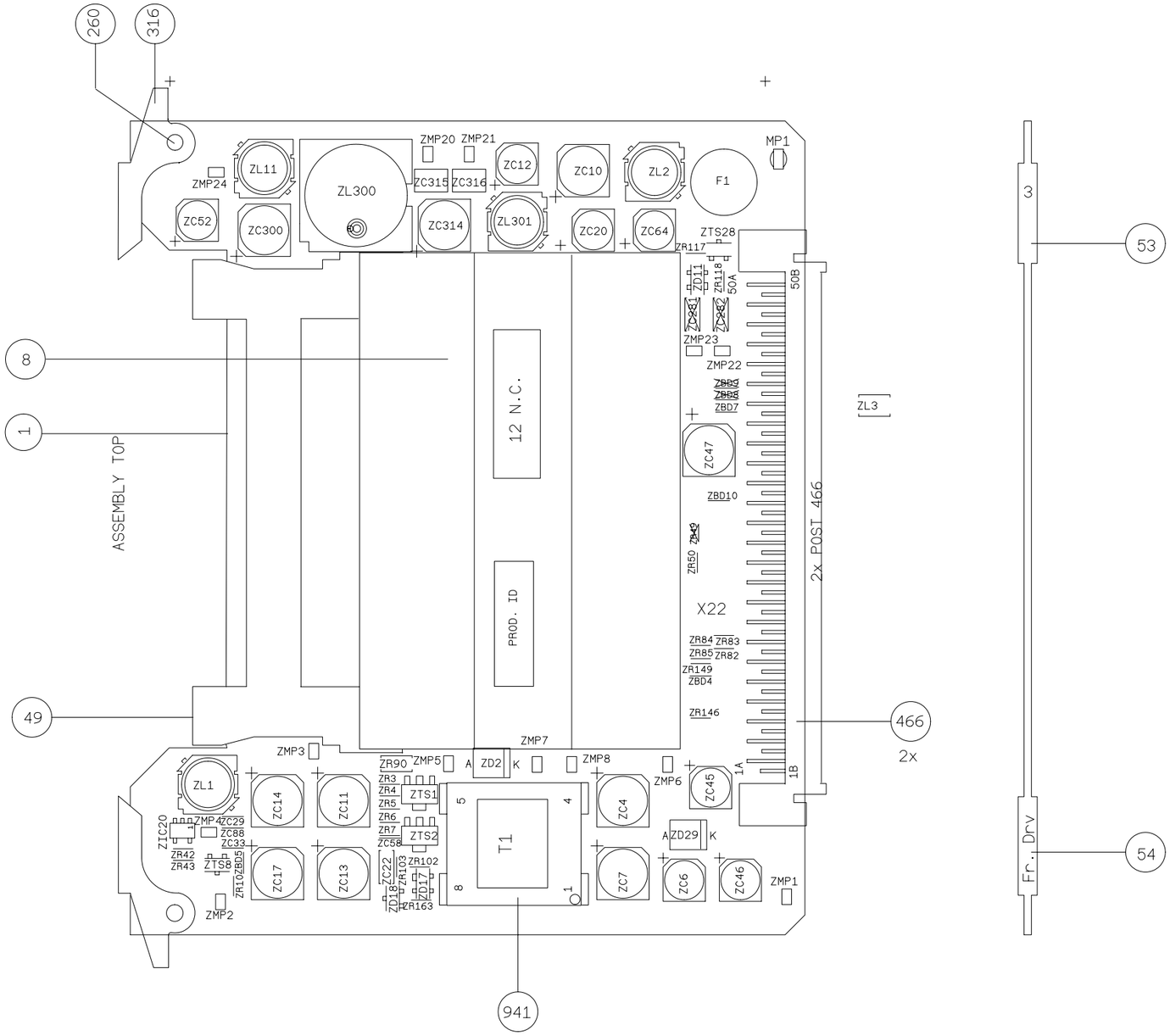
10	2006-01-23
20	2006-08-24
30	2006-10-20
40	2007-05-24
50	

DESIGNER: BRO
CHECKED BY: RDJ
SHEET 11 OF 11
A1
DATE
PROPERTY OF: Chess eT Best

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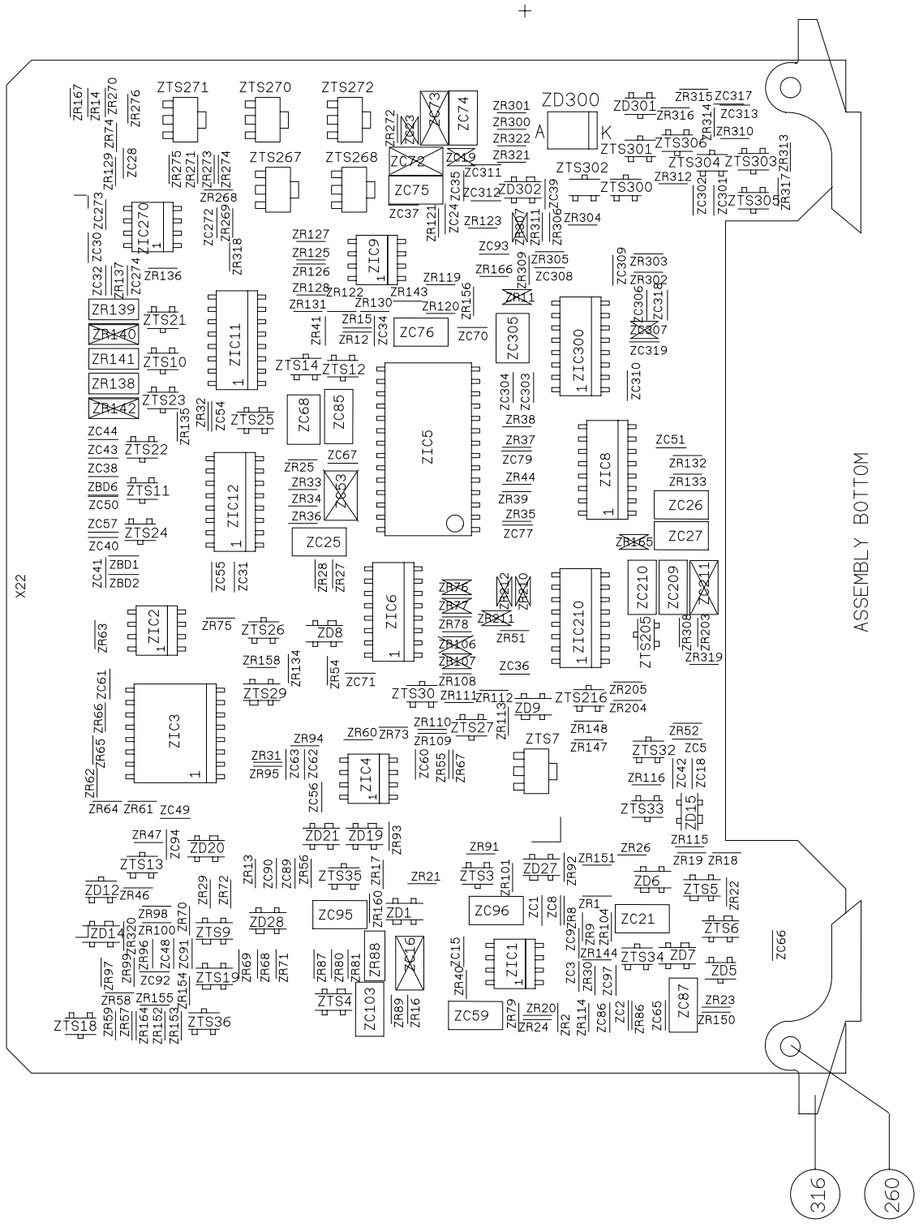
3922 406 51161;16 FRONT DRIVER MULTI FORMAT

Ref	Description	Part 12nc	Service part
316	PRINT EJECTOR	3922 400 08432	Yes
F1	FUSE TR5-T 1,0A	2422 086 10143	Yes



COMPONENTS MARKED WITH A
CROSS ARE NOT MOUNTED.

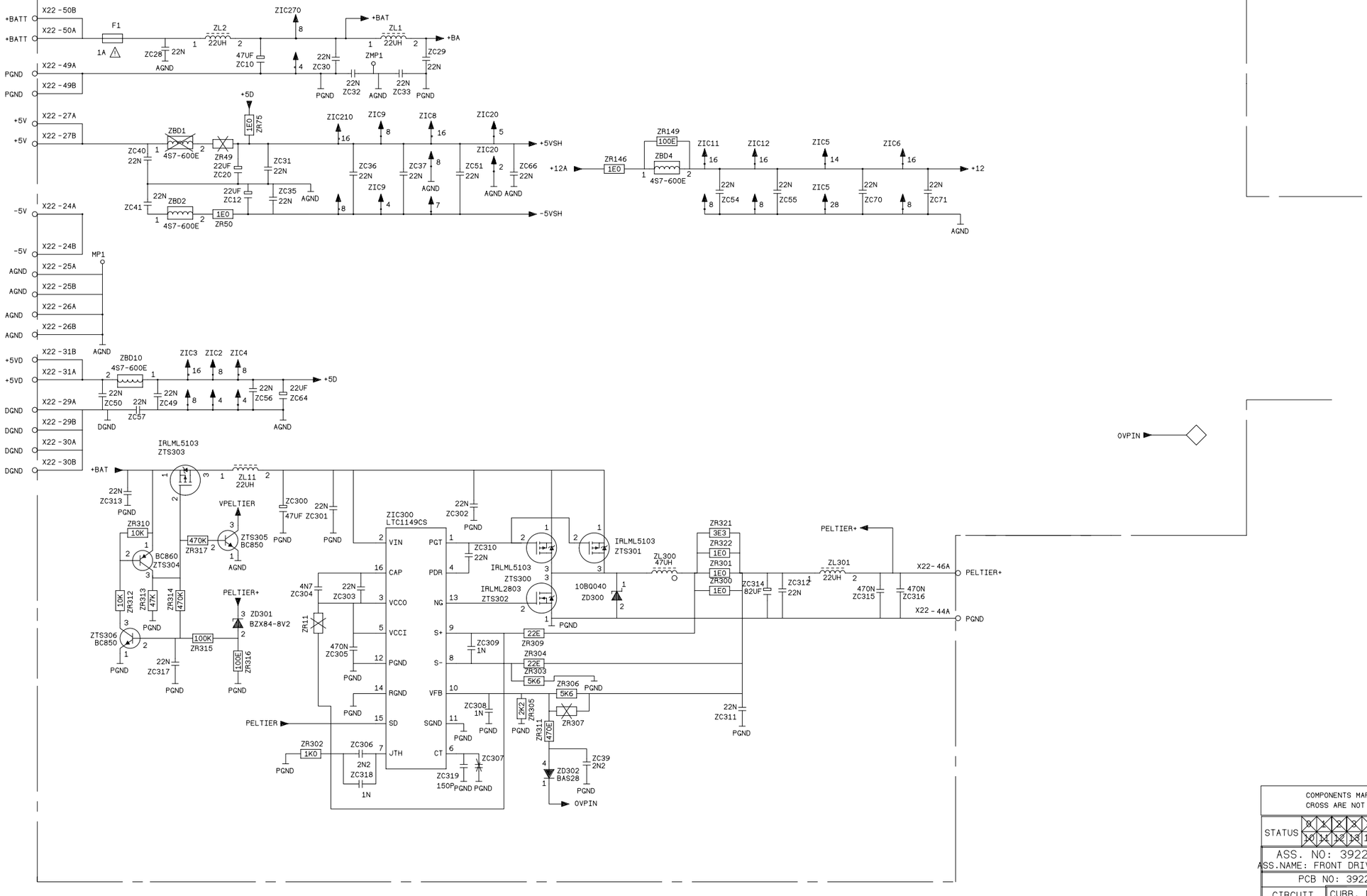
STATUS:	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	
ASS. 12NC: 3922 406 51160 ASS. NAME:FRONT DRIVER MULTI FORMAT		
PCB 12NC: 3922 411 51162		
ASSEMBLY DRAWING	CURR. DATE:	08-05-14
	PREV. DATE:	07-06-14
NAME: P VISSERS	ORG. DATE:	03-12-18
PROPERTY OF:	4 SH	SHEET 110-1
THOMSON BREDA - THE NETHERLANDS		



COMPONENTS MARKED WITH A
CROSS ARE NOT MOUNTED

STATUS:	0	1	2	3	4	5	6	7	8	9
	10	11	12	13	14	15	16	17	18	19

ASS. 12NC: 3922 406 51160 ASS. NAME:FRONT DRIVER MULTI FORMAT	
PCB 12NC: 3922 411 51162	
ASSEMBLY DRAWING	CURR. DATE: 08-05-14
	PREV. DATE: 07-06-14
NAME: P VISSERS	ORG. DATE: 03-12-18
PROPERTY OF:	4 SH | SHEET 110-2
THOMSON BREDA - THE NETHERLANDS	



COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED

STATUS	0	1	2	3	4	5	6	7	8	9
	10	11	12	13	14	15	16	17	18	19

ASS. NO: 3922 406 51160	
ASS.NAME: FRONT DRIVER MULTI FORMAT	
PCB NO: 3922 411 51162	
CIRCUIT DIAGRAM	CURR. DATE: 08-05-14
	PREV. DATE: 07-06-14
NAME: P.VISSERS	ORG. DATE: 03-12-18
PROPERTY OF:	3 SH SHEET: 130-1

THOMSON BREDA THE NETHERLANDS

AGND

8 SMARTCARD

+5D SCL SDA CARDIN AGND

SCL-B X22-15B ZR82 100E SCL
SDA-B X22-15A ZR83 100E SDA
INTN-B X22-14A

OVPIN X22-33A OVPIN
SHUTREF1 X22-39A SHUTREF1
SHUTREF2 X22-39B SHUTREF2

POWER START-UP

BCV62 ZTS5 ZTS6 BCV61 ZMP4 ZMP2 ZMP3 ZMP5 ZMP7 ZMP8 ZMP6
ZD6 BAS28 ZD27 ZD28 ZD29 ZD1 ZD2 ZD17 ZD18 BZX84-C18 ZD7 ZD20 ZD14 ZD12
LM4040 ZD5
ZIC1 (+)
ZR19 470E ZR18 47E ZR22 100K ZR26 220E ZR21 1K0 ZR30 100K 47K ZR86 ZR9 15K ZR1 1K0 ZR104 1E
ZR23 22K ZR40 22K ZR24 1M ZR79 1M ZR101 100K CL
ZR144 8K2 ZR114 470K ZR2 2K2 ZR3 22P ZR150 470K ZR87 100N
ZR102 1K0 ZR103 1E ZR163 4K7 ZR58 47N ZR90 E15 ZR4 1E ZR6 1E ZR5 1E ZR7 1E ZR8 8K2 ZR20 220K
ZR72 4K7 ZR29 4K7 ZR13 1K0 ZR154 4K7 ZR70 100K
ZR155 220K ZR152 1M ZR153 470K ZR164 1M
ZR88 E15 ZR81 1E ZR80 1E ZR68 1E ZR69 1E ZR87 1E0 ZR71 1E0
ZR91 10K ZR92 10K ZR151 10K ZR31 10K
ZR97 100K ZR99 220K ZR100 220K ZR96 47K ZR98 470K ZR94 18K ZR95 2K2
ZR58 10K ZR59 47K ZR67 100K ZR320 220E
ZR47 470E ZR46 100E
ZR89 3E3 ZR56 1K2 ZR17 470K
ZR160 2K2
ZR10 22E ZR85 100K ZR84 100K

ZC1 330P ZC9 150P ZC2 2N2 ZC3 22P ZC86 470P ZC87 100N ZC88 22N ZC15 22N ZC96 220N ZC17 100UF
ZC97 22N ZC65 2N2 ZC8 1N ZC58 47N ZC22 ZC4 22UF ZC7 22UF
ZC14 22UF ZC11 22UF ZC13 22UF ZC60 1N ZC61 1N ZC62 1N ZC63 1N
ZC21 100N ZC59 100N ZC90 2N2 ZC94 2N2 ZC89 2N2
ZC48 22N ZC92 22N ZC91 100N
ZC95 100N ZC103 220N ZC16

ZBD6 4S7-600E ZBD7 4S7-600E ZBD8 4S7-600E ZBD9 4S7-600E ZL3 2U7H
ZC38 22N ZC45 22UF ZC43 22N ZC46 22UF ZC44 22N ZC47 22UF

+28A X22-34A +28V X22-34B +28V
+18A X22-35A +18V X22-35B +18V
+12A X22-36A +12V X22-36B +12V

SHUTRUN
SHUTREF1
SHUTSTPN

POWER CONTROL
ZIC1 UCC2801D
FB COMP REF RC OUT CS
ZTS7 2SK2112 ZTS1 2SK2112 ZTS2 2SK2112 ZTS3 BC860
BC850 ZTS34 BC850 ZTS35 BC850 ZTS36 BC850 ZTS18 BC860 ZTS13

POWER STAGE

T1

OVPIN
LM4040 ZD5
ZB05 4S7-600E

ZIC2 PCF8582C
ZIC3 PCF8574
A0 A1 A2 SCL SDA PTC P0 P1 P2 P3 P4 P5 P6 P7 INT
PELTIER VPELTIER CARDIN SHUTRUN SHUTSTPN
ZR63 100K ZR62 100K ZR61 100K
X22-9B SCL-F ZR66 100E
X22-9A SDA-F ZR65 100E
X22-8A INTN-F ZR64 100E

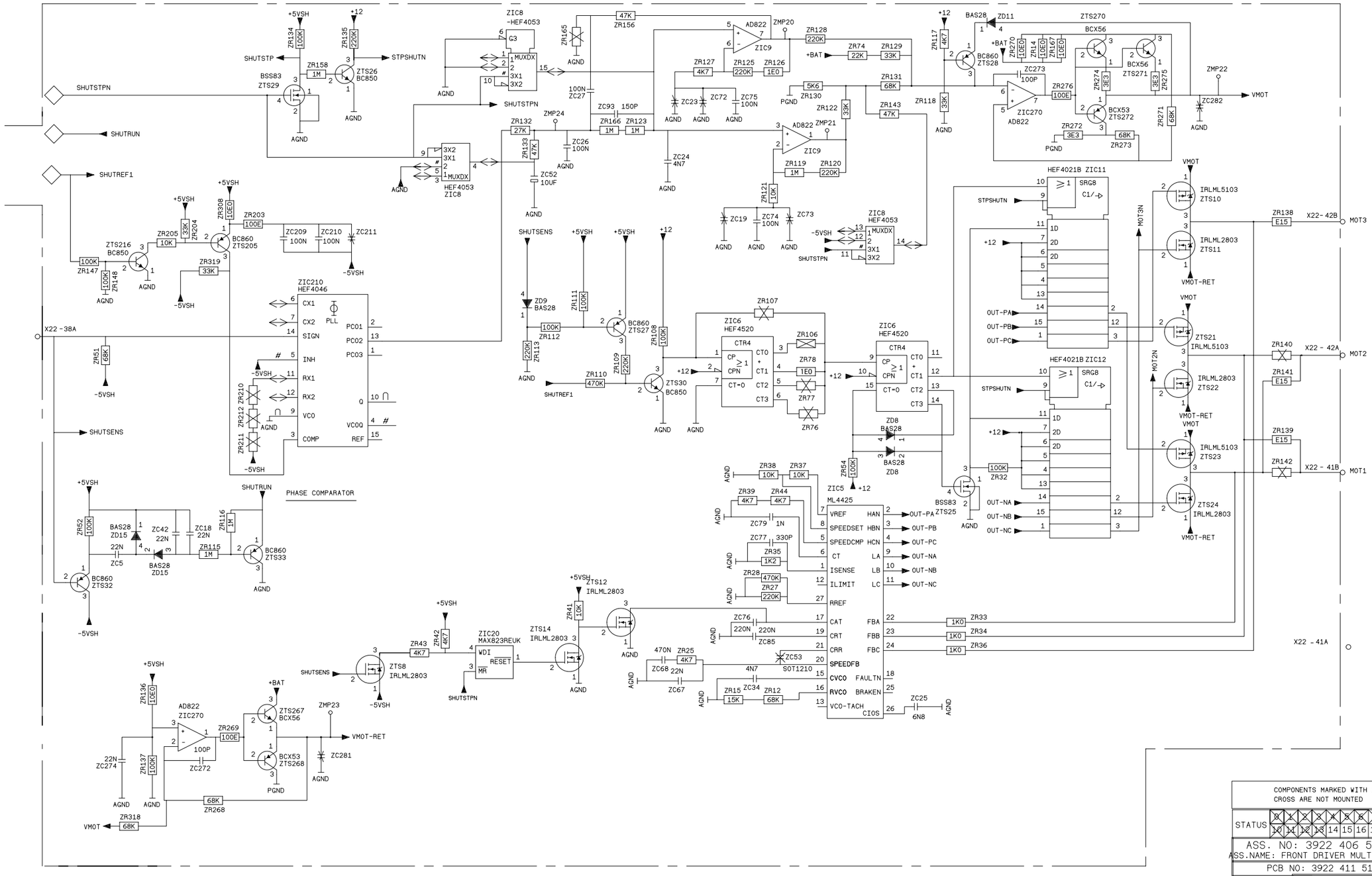
ZIC4 LM393D

I2C INTERFACE
CURRENT LIMIT / OVP
MINIMUM VOLTAGE DETECTION
OVERVOLTAGE MEAS.
NOT USED COMPONENT

COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED

STATUS	0	1	2	3	4	5	6	7	8	9
	10	11	12	13	14	15	16	17	18	19

ASS. NO: 3922 406 51160
ASS.NAME: FRONT DRIVER MULTI FORMAT
PCB NO: 3922 411 51162
CIRCUIT DIAGRAM
CURR. DATE: 08-05-14
PREV. DATE: 07-06-14
NAME: P.VISSERS
ORG. DATE: 03-12-18
PROPERTY OF:
3 SH SHEET: 130-2
THOMSON BREDA THE NETHERLANDS



COMPONENTS MARKED WITH A CROSS ARE NOT MOUNTED

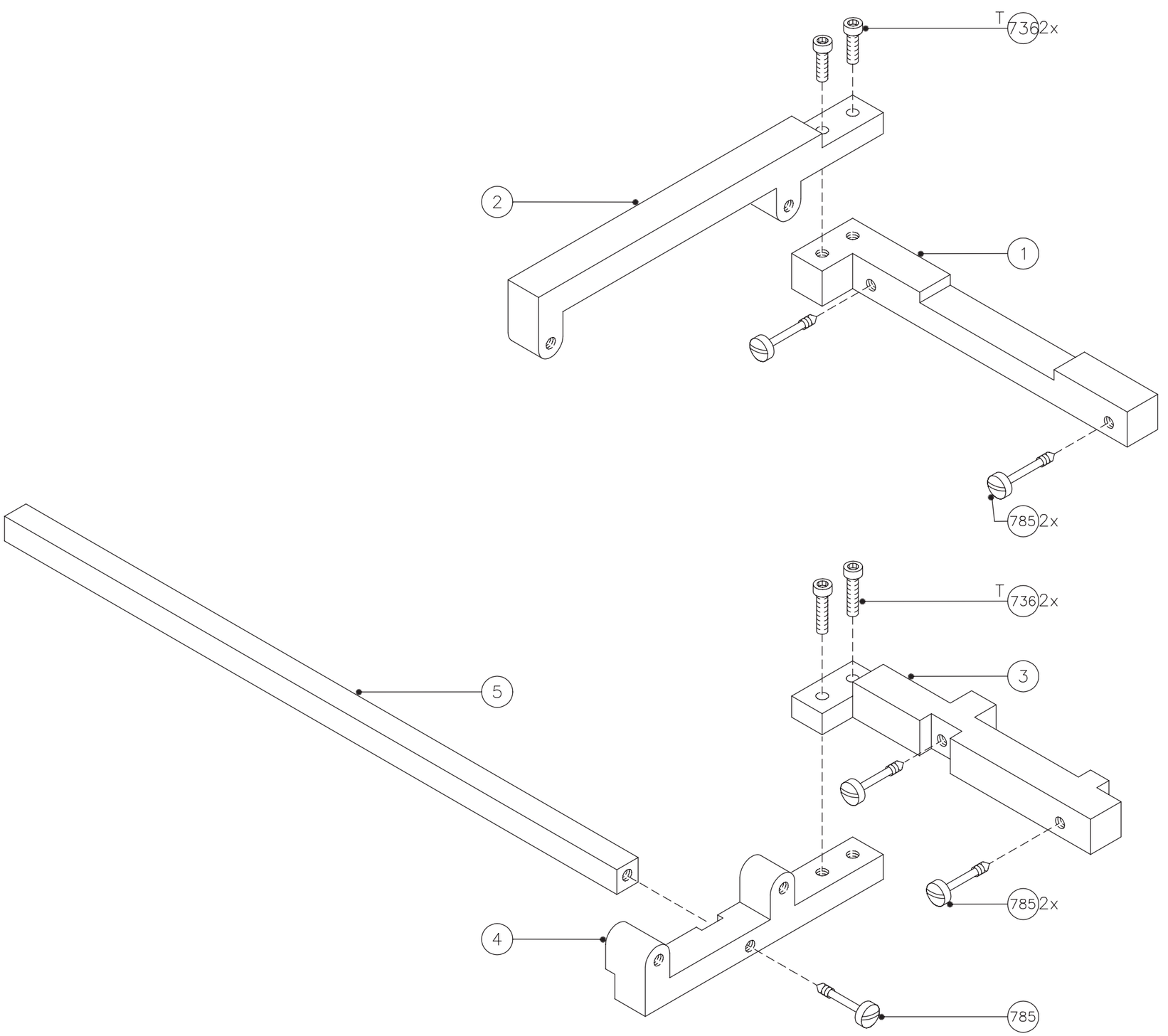
STATUS	0	1	2	3	4	5	6	7	8	9
	10	11	12	13	14	15	16	17	18	19

ASS. NO: 3922 406 51160	
ASS.NAME: FRONT DRIVER MULTI FORMAT	
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CIRCUIT DIAGRAM	CURR. DATE: 08-05-14
	PREV. DATE: 07-06-14
NAME: P.VISSERS	ORG. DATE: 03-12-18
PROPERTY OF:	3 SH SHEET: 130-3

THOMSON BREDA THE NETHERLANDS

3922 407 27241;9 FRONT EXTENDER

Ref	Description	Part 12nc	Service part
1	BRACKET		
2	BRACKET		
3	BRACKET		
4	BRACKET		
5	BRACKET		
80	WIRE ASSY FRONT-SWITCH	3922 407 27271	Yes
81	WIRE ASSY INTERCONN.	3922 407 27282	Yes
U1	EXTENDER FRONT X110	3922 406 85871	Yes
U2	FRONT EXTENDER BOARD	3922 406 87041	Yes



DELIVER SEPARATELY
LOS BIJLEVEREN (80) (81) (U1) (U2)

STATUS	00	10	20	30	40	50	60	70	80	90	98-01-16	00-01-06
	0	1	2	3	4	5	6	7	8	9	98-02-24	
											98-11-11	

FRONT EXTENDER

3922 407 27240

MICROFILM ☐

NAME: H Paardekam | PAPERS: 1 SH | SH 110- 1 | DATE: 98-01-09 | A3

EH | PROPERTY OF: PHILIPS DIGITAL VIDEO SYSTEMS B.V. BREDA – THE NETHERLANDS

Declaration of Conformity

We, Grass Valley Nederland B.V., Kapittelweg 10, 4827 HG Breda, The Netherlands declare under our sole responsibility that this product is in compliance with the following standards:

- EN60950-1 : Safety
- EN55103-1 : EMC (Emission)
- EN55103-2 : EMC (Immunity)

following the provisions of:

a. low voltage directive 2006/95/EC
b. EMC directive 2004/108/EC.

FCC Class A Statement

This product generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause interference to radio communications.
It has been tested and found to comply with the limits for a class A computing device pursuant to Subpart J of part 15 of FCC rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment.
Operation of this product in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

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