LG TRAINING CENTER

1080P

Direct View LCD

42SL80

LG

Life's Good

Original February 11, 2010

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42SL80

Section 1

Contact Information, Preliminary Matters, Specifications,
LCD Overview, General Troubleshooting Steps,
Signal Distribution, Disassembly Instructions and Voltages

Section 2

Circuit Board Operation, Troubleshooting of :

- Switch mode Power Supply
- Two Inverter Boards
- Main Board
- T-CON Board
- Ft Control Board

P-DIM (Digital Dimming) Routed from the Main board to the T-CON to the Ballast.

42SL80 LCD Direct View Display

Section 1

This Section will cover Contact Information and remind the Technician of Important Safety Precautions for the Customers Safety as well as the Technician and the Equipment.

Basic Troubleshooting Techniques which can save time and money sometimes can be overlooked. These techniques will also be presented.

This Section will get the Technician familiar with the Disassembly, Identification and Layout of the LCD Display Panel.

At the end of this Section the Technician should be able to Identify the Circuit Boards and have the ability and knowledge necessary to safely remove and replace any Circuit Board or Assembly.

IMPORTANT SAFETY NOTICE

The information in this training manual is intended for use by persons possessing an adequate background in electrical equipment, electronic devices, and mechanical systems. In any attempt to repair a major Product, personal injury and property damage can result. The manufacturer or seller maintains no liability for the interpretation of this information, nor can it assume any liability in conjunction with its use. When servicing this product, under no circumstances should the original design be modified or altered without permission from LG Electronics. Unauthorized modifications will not only void the warranty, but may lead to property damage or user injury. If wires, screws, clips, straps, nuts, or washers used to complete a ground path are removed for service, they must be returned to their original positions and properly fastened.

CAUTION

To avoid personal injury, disconnect the power before servicing this product. If electrical power is required for diagnosis or test purposes, disconnect the power immediately after performing the necessary checks. Also be aware that many household products present a weight hazard. At least two people should be involved in the installation or servicing of such devices. Failure to consider the weight of an product could result in physical injury.

ESD Notice (Electrostatic Static Discharge)

Today's sophisticated electronics are electrostatic discharge (ESD) sensitive. ESD can weaken or damage the electronics in a manner that renders them inoperative or reduces the time until their next failure. Connect an ESD wrist strap to a ground connection point or unpainted metal in the product. Alternatively, you can touch your finger repeatedly to a ground connection point or unpainted metal in the product. Before removing a replacement part from its package, touch the anti-static bag to a ground connection point or unpainted metal in the product. Handle the electronic control assembly by its edges only. When repackaging a failed electronic control assembly in an anti-static bag, observe these same precautions.

Regulatory Information

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: Reorient or relocate the receiving antenna; Increase the separation between the equipment and the receiver; Connect the equipment to an outlet on a different circuit than that to which the receiver is connected; or consult the dealer or an experienced radio/TV technician for help.

Safety and Handling Regulations

1. Approximately 20 minute pre-run time is required before making any picture performance adjustments from the Menu.
2. Refer to the Voltage/Current silk screening on the Switch Mode Power Supply.
3. C-MOS circuits are sensitive to static electricity.
   Use caution when dealing with these IC and circuits.
4. Exercise care when making voltage and waveform checks to prevent costly short circuits from damaging the unit.
5. Be cautious of lost screws and other metal objects to prevent a possible short in the circuitry.

Checking Points to be Considered

1. Check the appearance of the Replacement Panel and Circuit Boards for both physical damage and part number accuracy.
2. Check the model label. Verify model names and board model matches.
3. Check details of defective condition and history. Example: Oscillator failure dead set, etc…

Basic Troubleshooting Steps

Define, Localize, Isolate and Correct

•**Define** Look at the symptom carefully and determine what circuits could be causing the failure. Use your senses Sight, Smell, Touch and Hearing. Look for burned parts and check for possible overheated components. Capacitors will sometimes leak dielectric material and give off a distinct odor. Frequency of power supplies will change with the load, or listen for relay closing etc. Observation of the front Power LED may give some clues.

•**Localize** After carefully checking the symptom and determining the circuits to be checked and after giving a thorough examination using your senses the first check should always be the DC Supply Voltages to those circuits under test. Always confirm the supplies are not only the proper level but be sure they are noise free. If the supplies are missing check the resistance for possible short circuits.

•**Isolate** To further isolate the failure, check for the proper waveforms with the Oscilloscope to make a final determination of the failure. Look for correct Amplitude Phasing and Timing of the signals also check for the proper Duty Cycle of the signals. Sometimes “glitches” or “road bumps” will be an indication of an imminent failure.

•**Correct** The final step is to correct the problem. Be careful of ESD and make sure to check the DC Supplies for proper levels. Make all necessary adjustments and lastly always perform a Safety AC Leakage Test before returning the product back to the Customer.

42SL80 PRODUCT INFORMATION SECTION

This section of the manual will discuss the specifications of the
42SL80
LCD Direct View Display

42SL80 Basic Specifications

- TruMotion 240Hz
- Intelligent Sensor Mode
- Full HD 1080p HD Resolution
- 150,000:1 Dynamic Contrast Ratio (Brightness 500 cd/m^2)
- 2.2ms Response Time (Gray To Gray)
- 500 cd/m2 Brightness
- Wide Color Gamut
- Super IPS Panel
- Wide Viewing Angle (178º / 178º)
- XD Engine®
- 24p Real Cinema
- ISFccc® Ready
- Picture Wizard
- AV Mode II (Cinema, Sports, Game)
- 60,000 Hour Panel Life (typical)
- NTSC/ATSC Tuners with Clear QAM
- 2 HD Component Video Inputs
- 2 Composite inputs
- 1 Digital Audio Out
- USB 2.0 (JPEG, MP3, MP4, Divx)
- PC Connectivity (D-Sub 15pin)

Basic Specifications (LOGO Familiarization)

Full HD 1080p Resolution
Displays HDTV programs in full **1920 x 1080p** resolution for a more detailed picture.

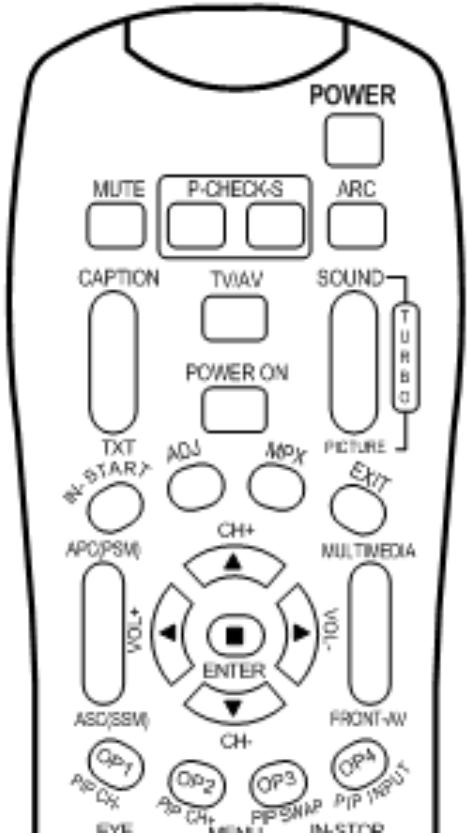
Remote Control Familiarization

p/n MKJ61841701

TOP PORTION

BOTTOM PORTION

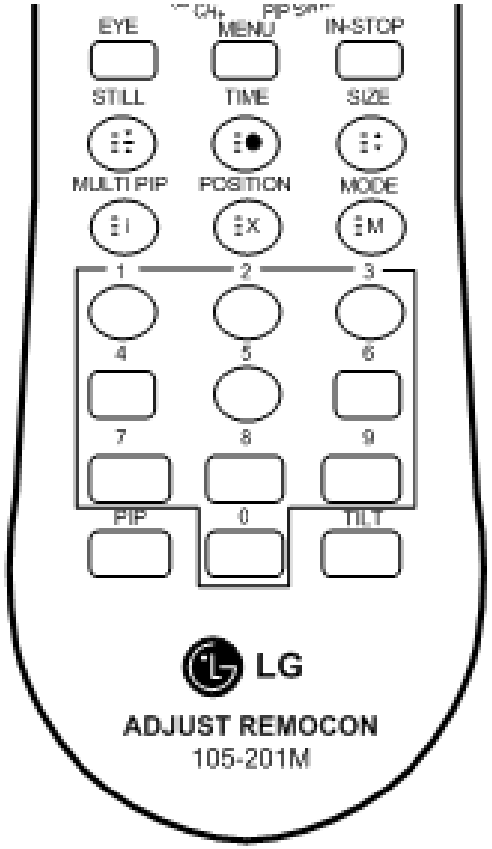
Accessing the Service Menu

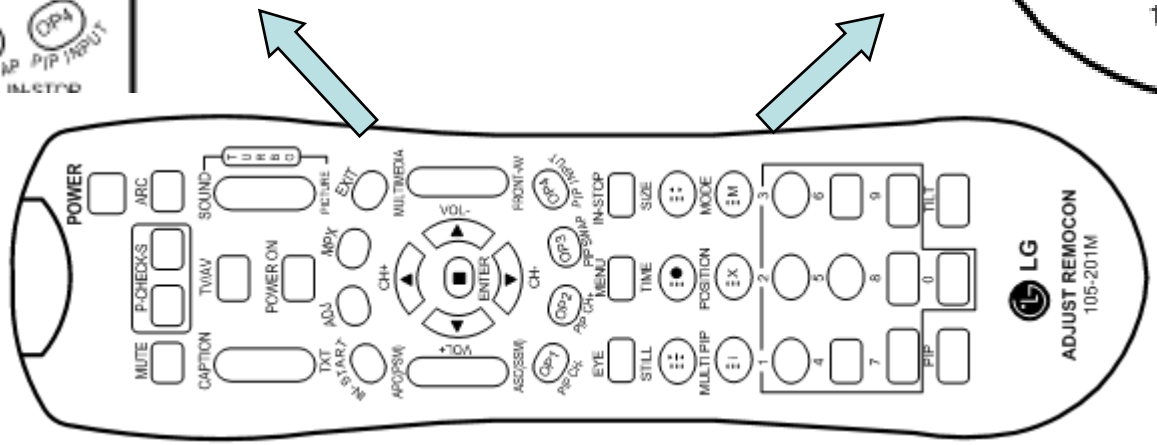


To access the Service Menu.

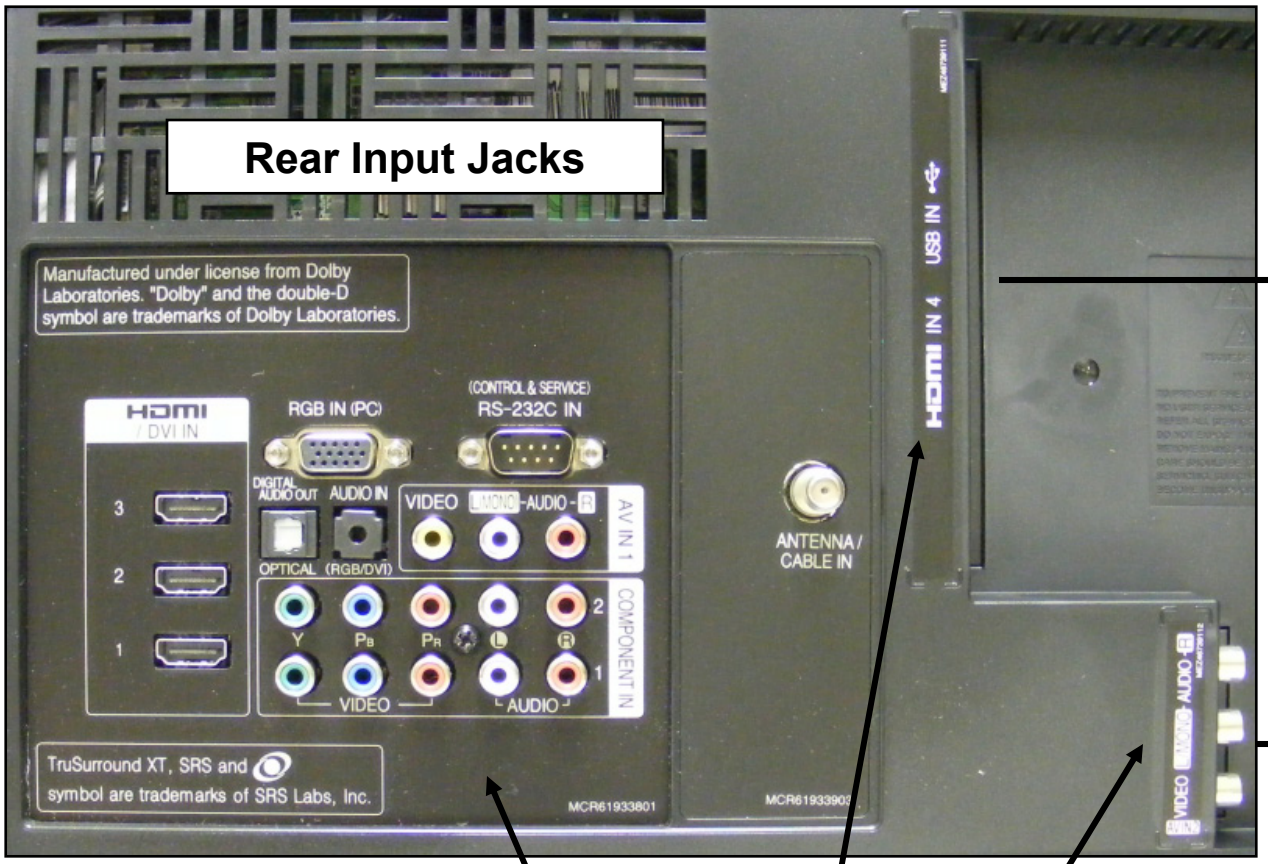
1) **You must have the Service Remote. p/n 105-201M**
2) **Press "In-Start"**
3) **A Password screen appears.**

Note: A Password is required to enter the Service Menu.
Enter; **0000**

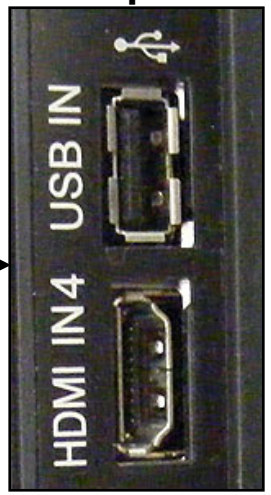




Rear and Side Input Jacks



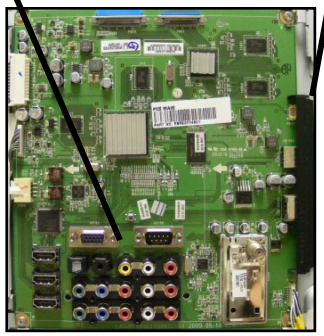
Side Input Jacks



Side A/V Input

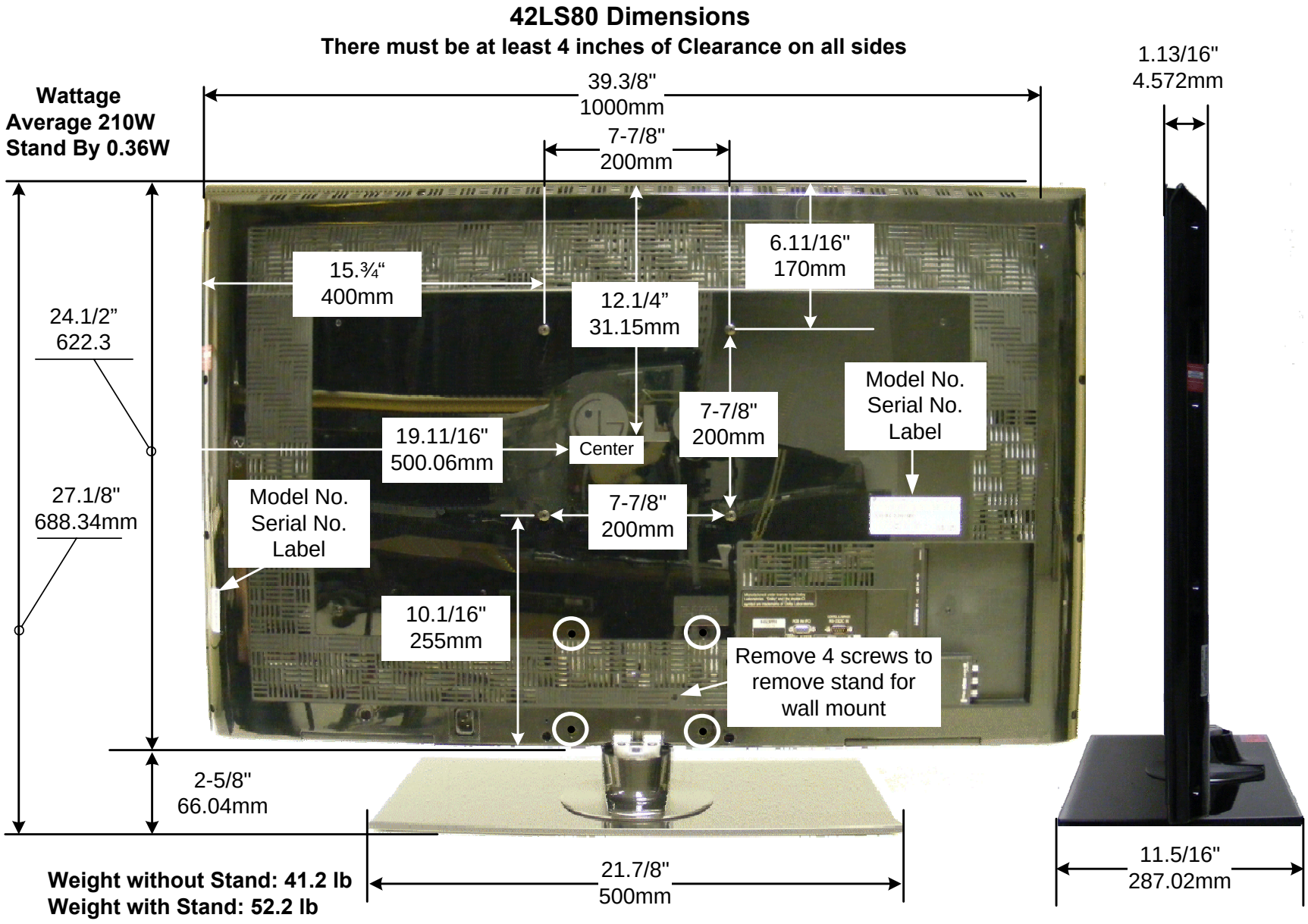
Main Board

Orientation



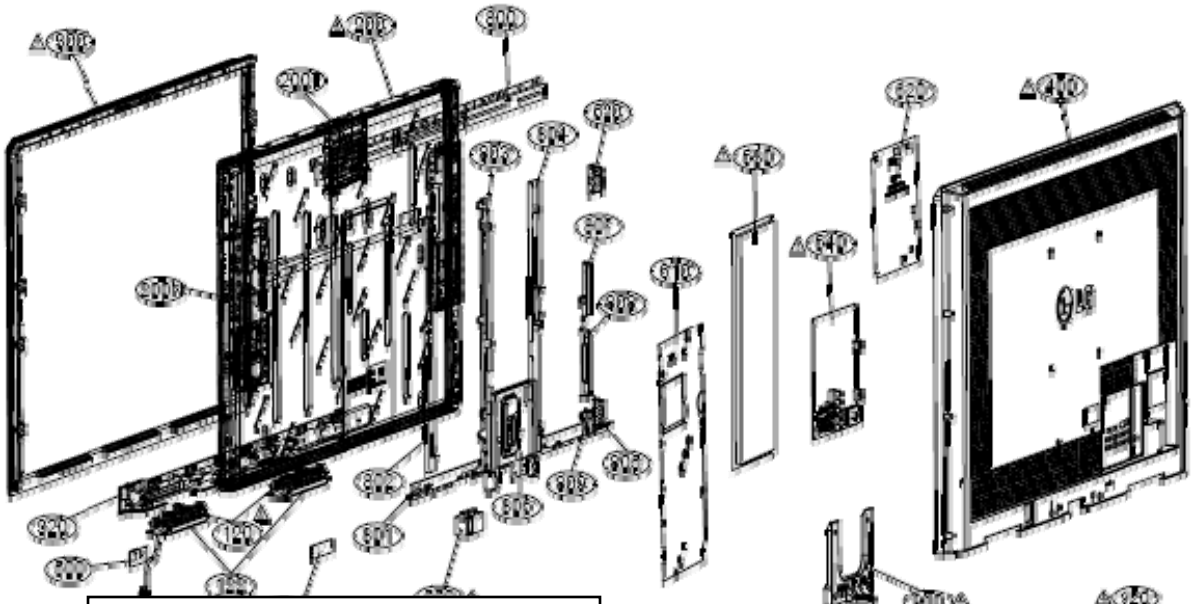
Side AV

42SL80 Product Dimensions



DISASSEMBLY and TROUBLESHOOTING SECTION

This section of the manual will discuss Disassembly, Layout and Circuit Board Identification, of the 42SL80 LCD Direct View Television.

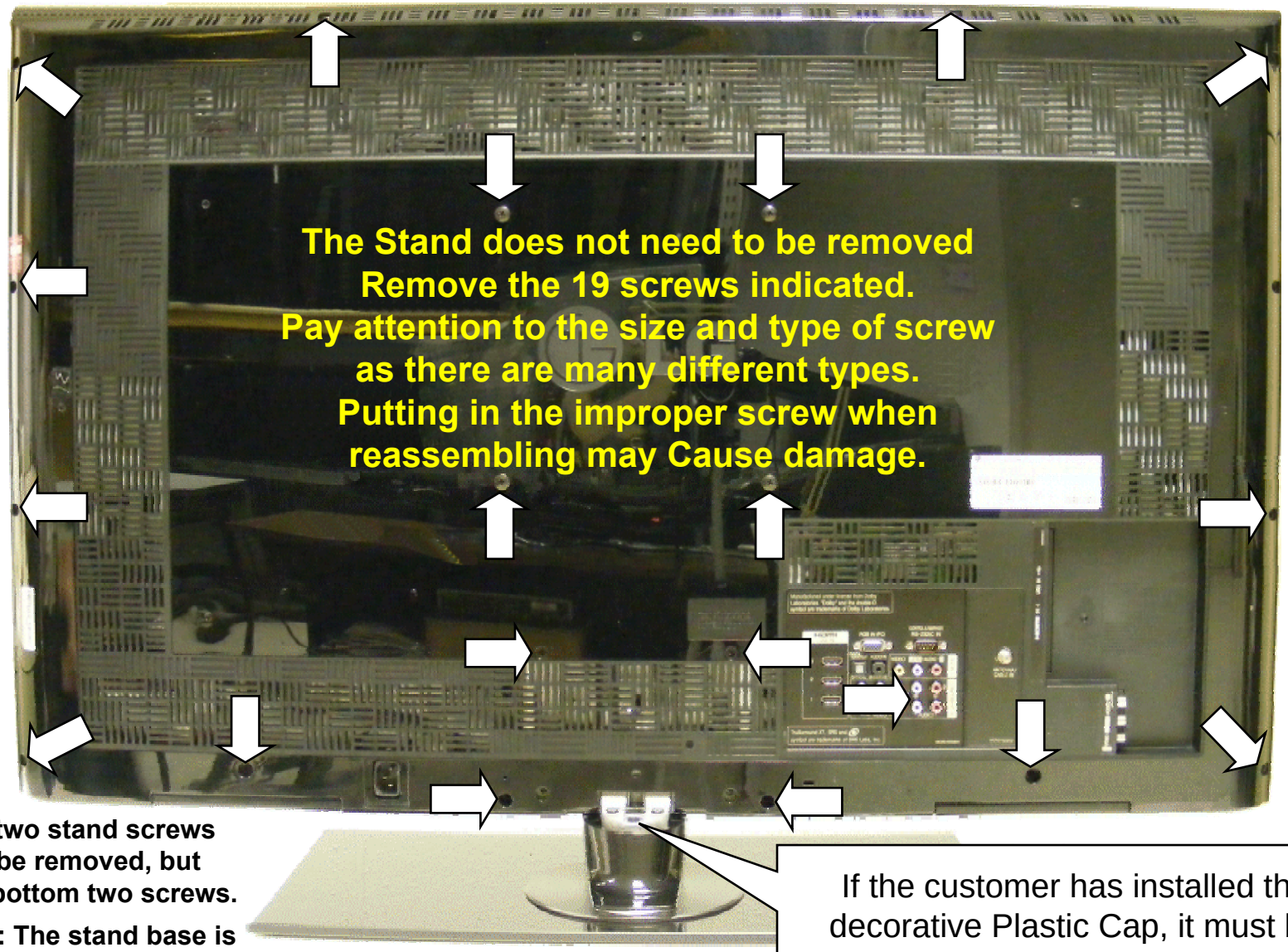


The Stand must be assembled when TV first received out of the box.

Decorative Cap (If Installed) Must be removed To take back off.

Upon completion of this section the Technician will have a better understanding of the disassembly procedures, the layout of the printed circuit boards and be able to identify each board.

Removing the Back Cover

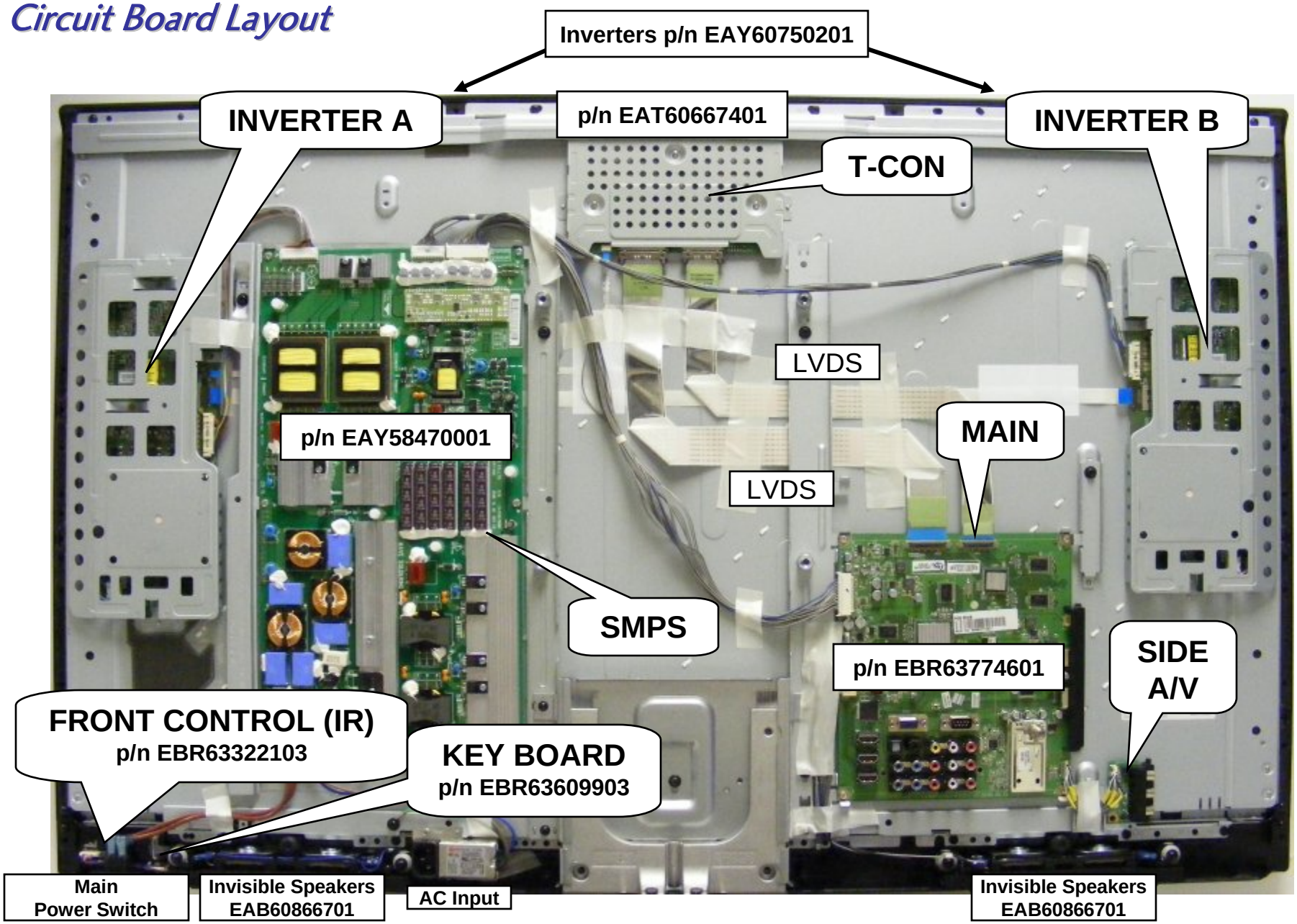


The top two stand screws Need to be removed, but Not the bottom two screws.

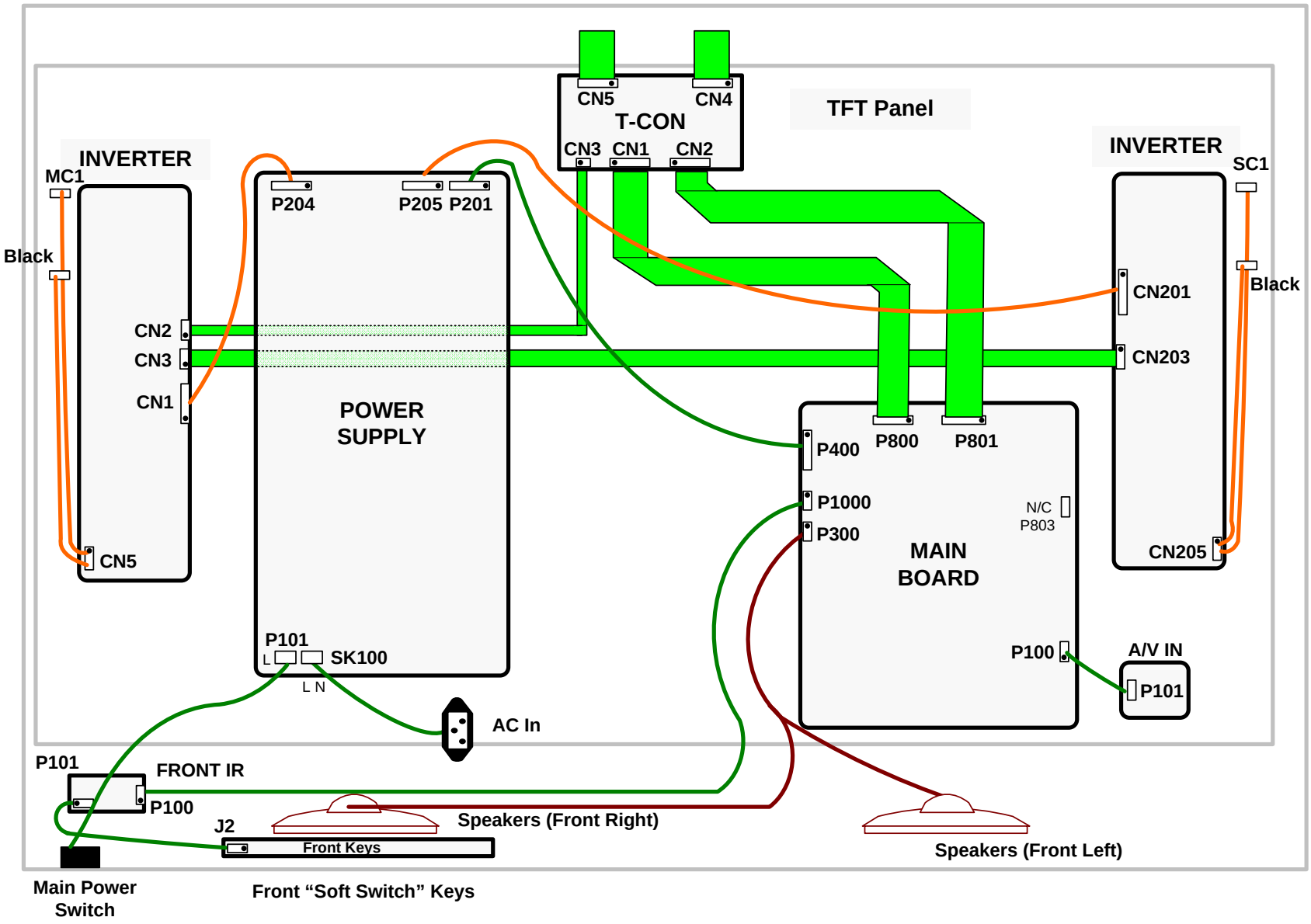
Warning: The stand base is "Glass" be careful, it will break.

If the customer has installed the decorative Plastic Cap, it must be removed before the back will come off.

Circuit Board Layout



42LS80 Connector Identification Diagram



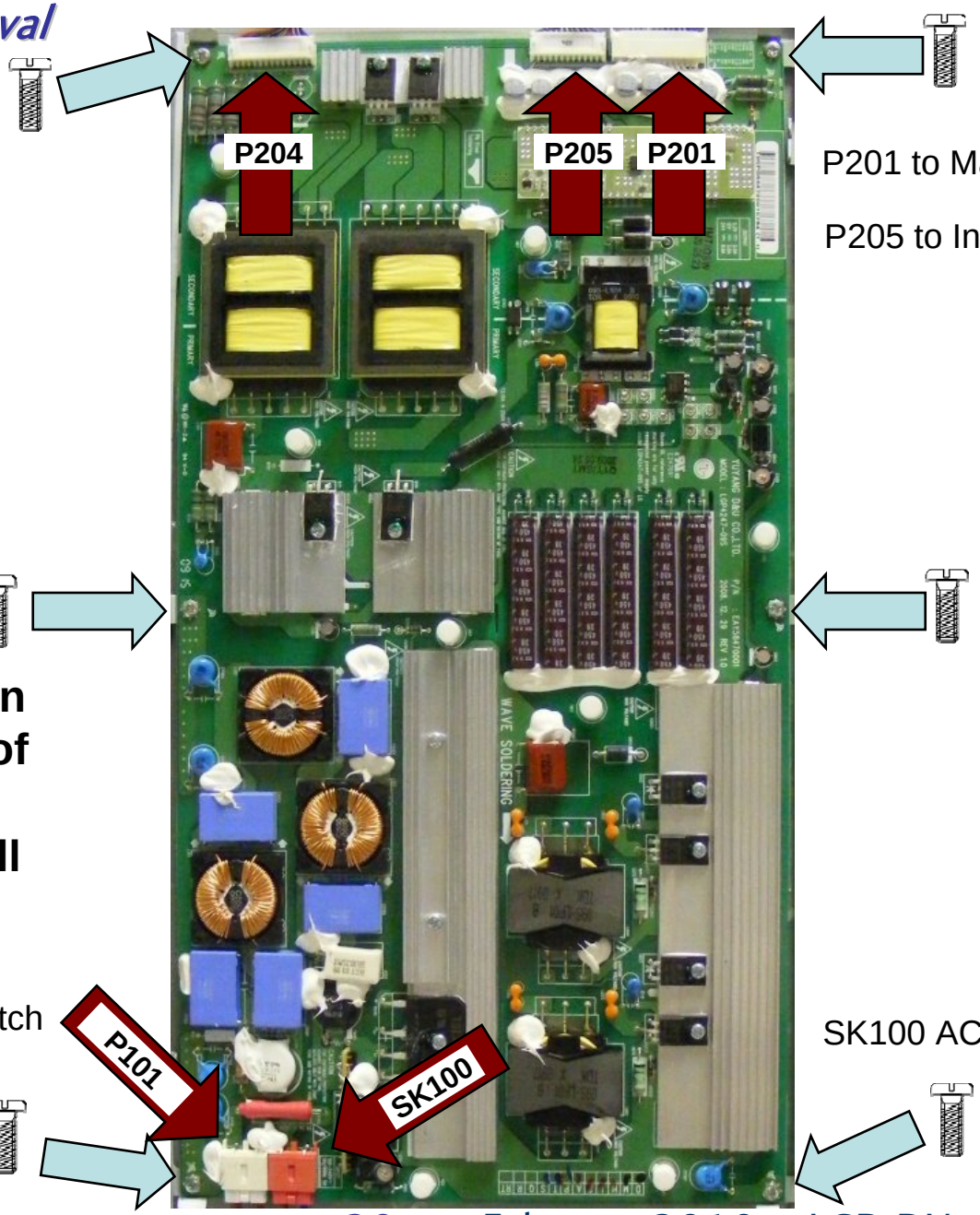
Power Supply Board Removal

P204 to Inverter A

Disconnect P201, P205, P204, P101 and AC In SK100.

Remove the 6 screws indicated by the arrows.

Caution: Be careful when touching the back side of the Power Supply as some capacitors can still hold a charge.



P201 to Main

P205 to Inverter B

To Main Power Switch

SK100 AC In

Main Board Removal

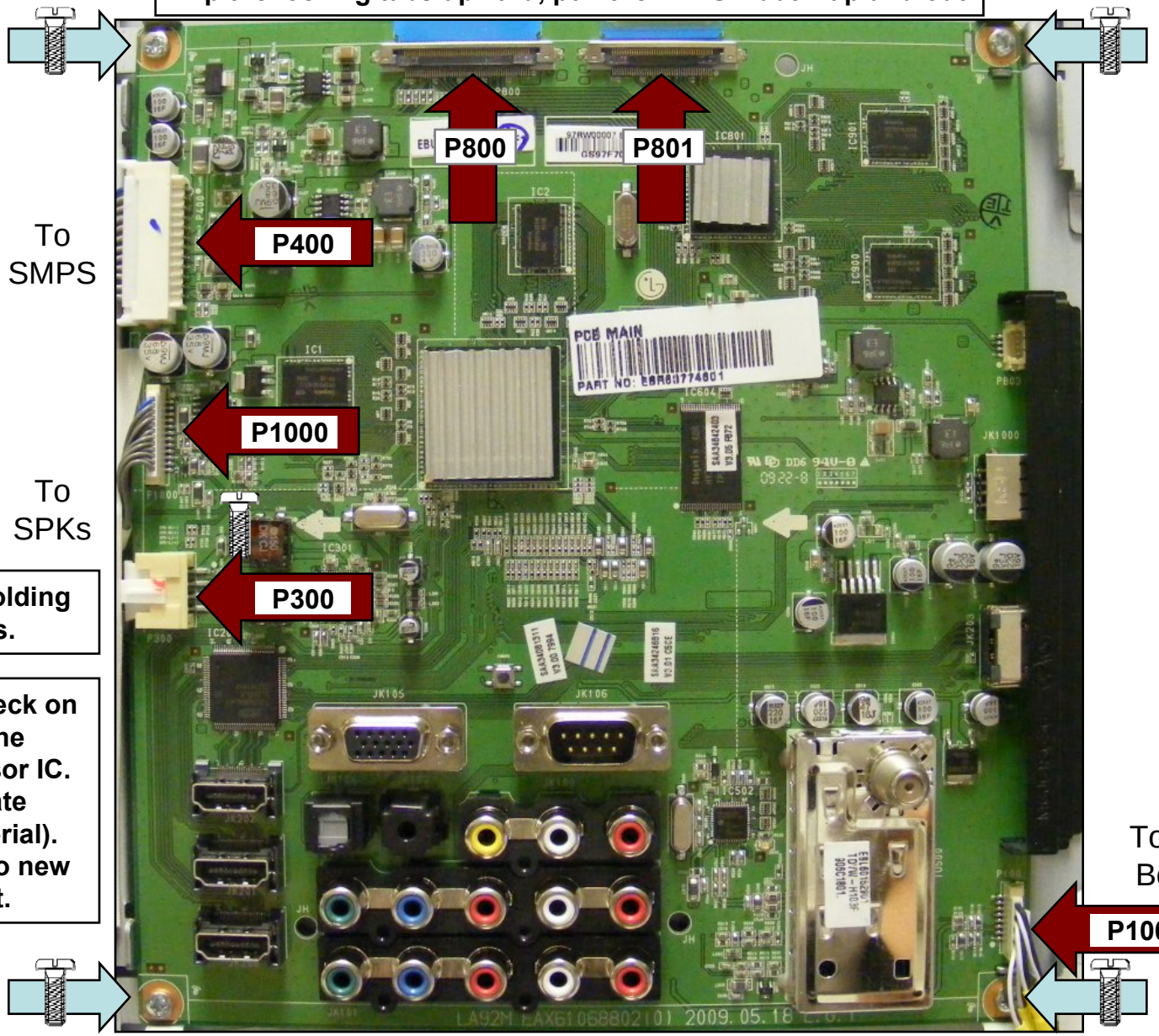
Flip the locking tabs upward, pull the LVDS ribbon up and out

Disconnect P100, P300, P400, P800, P801

Remove the 4 screws indicated by the arrows.

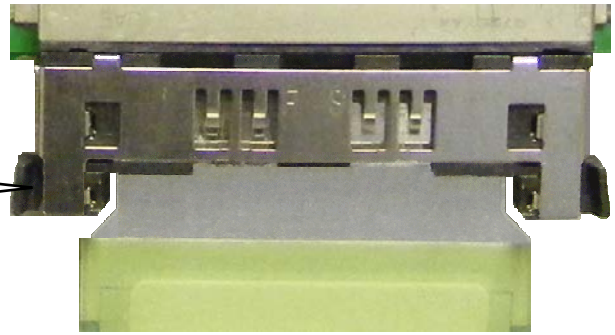
Remove any tape holding down any cables.

NOTE: Be sure to check on top and behind the Micro/Video Processor IC. Look for Chocolate (Heat Transfer Material). Be sure to transfer to new Board if present.



Removing the T-CON Board (1 of 2)

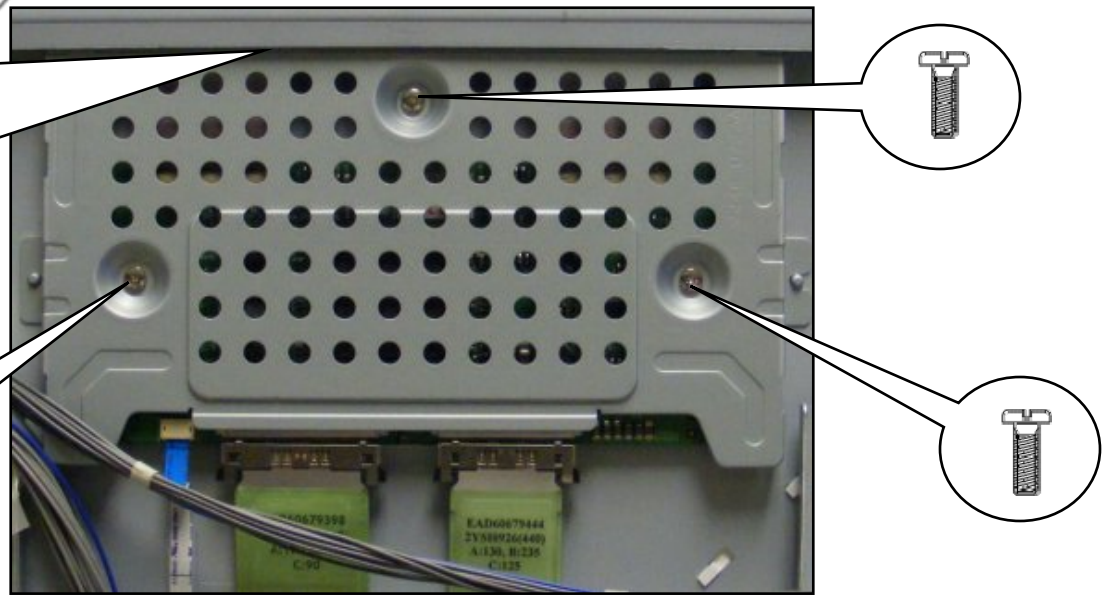
1 **Remove the LVDS Connectors CN1 and CN2**



Be careful with the tabs.
They are fragile and will break.
Rock the connector side ways while pulling the cable out.

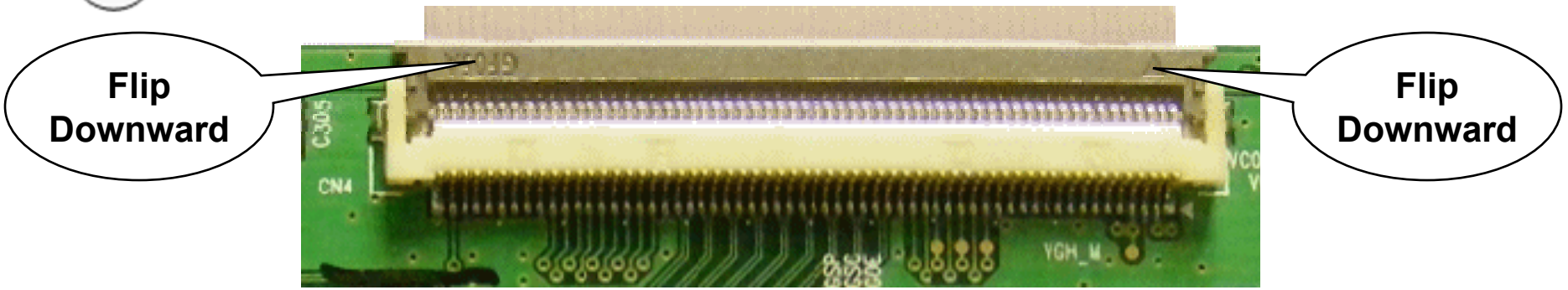
2 **Remove the 3 Screws in the T-CON shield.**

There is a small lip at the top of the shield, pull straight out slightly to remove.

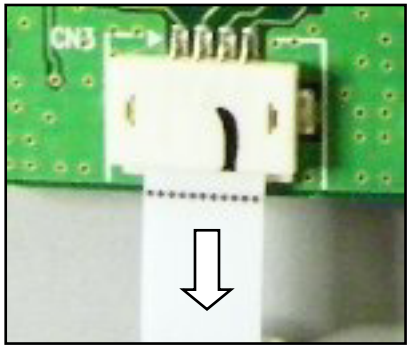


Removing the T-CON Board (2 of 2)

3 Flip the Locking Mechanism upward on CN4 and CN5 to release the LVDS cables to the Panel.

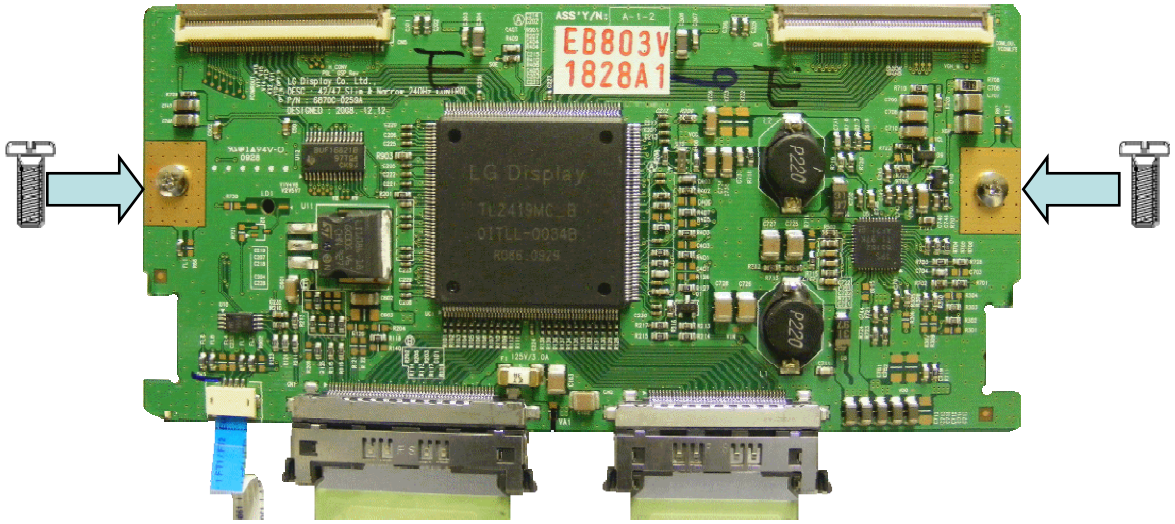


4 Pull out (CN3)



Pull Out

T-CON SERVICE POSITION
Remember, these two screws have to be replaced in the board if the TV is to be run with the T-CON shield removed.

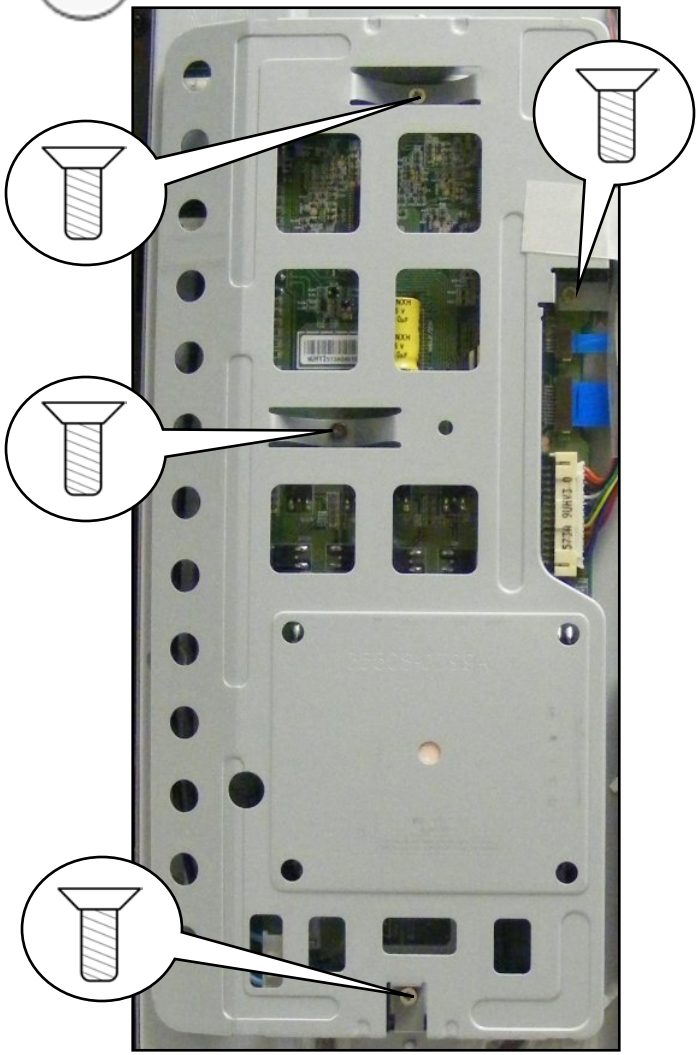


Inverter A Removal

Be careful not to drop these screws.

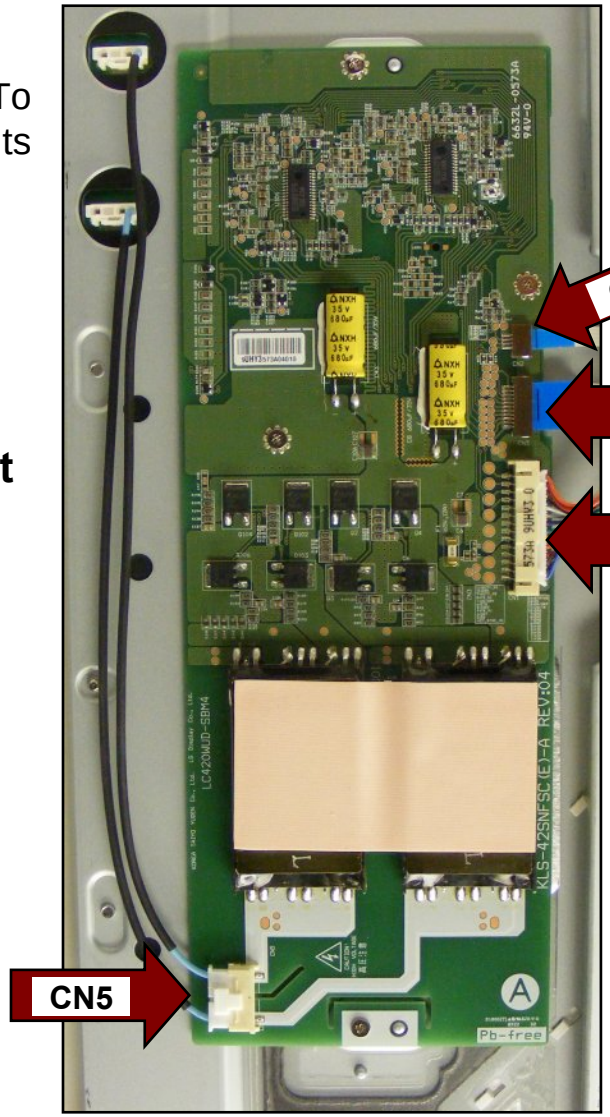
p/n EAY60750201
Includes both Inverters

1 **Remove 4 screws.**



2

Disconnect CN1, CN2, CN3 and CN5

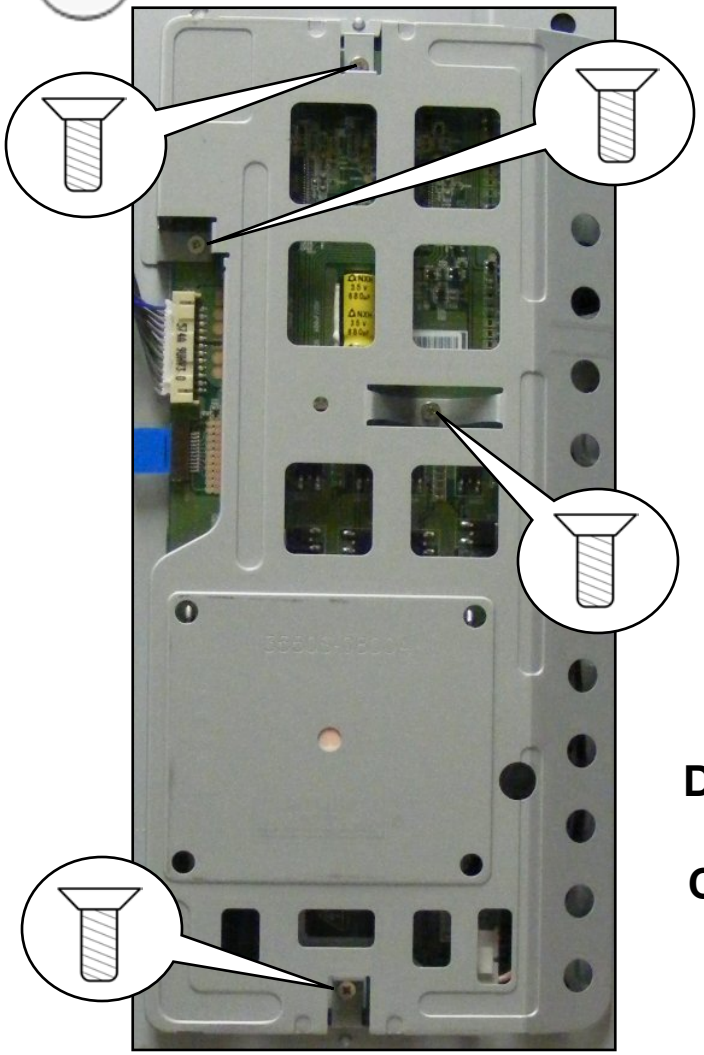


Inverter B Removal

Be careful not to drop these screws.

p/n EAY60750201
Includes both Inverters

1 **Remove 4 screws.**



To SMPS

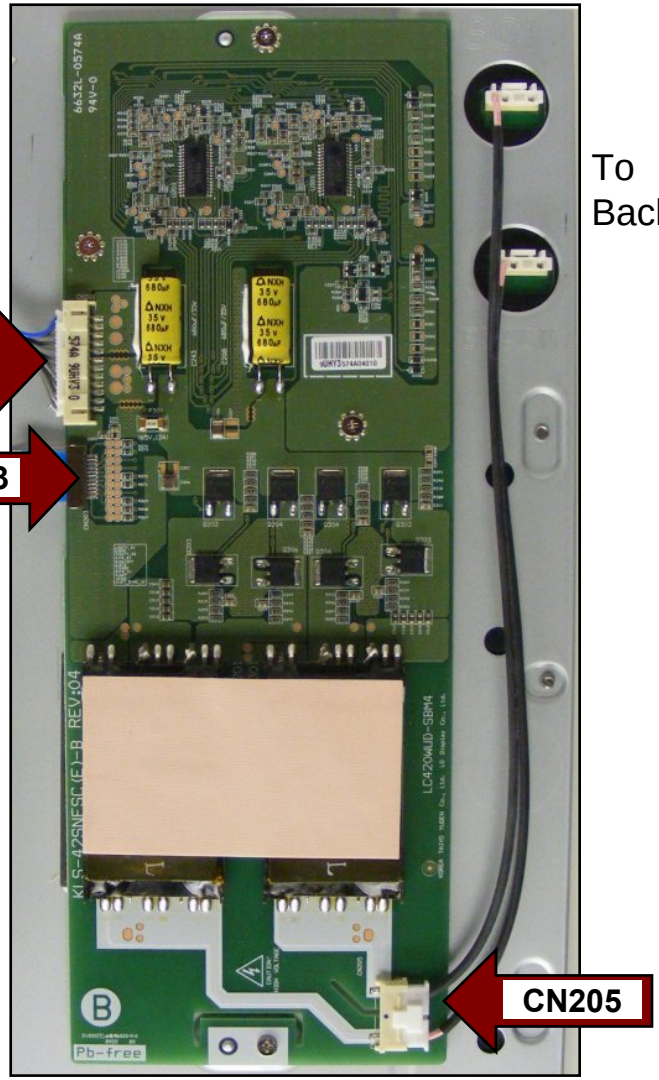
CN201

CN203

To Inverter A

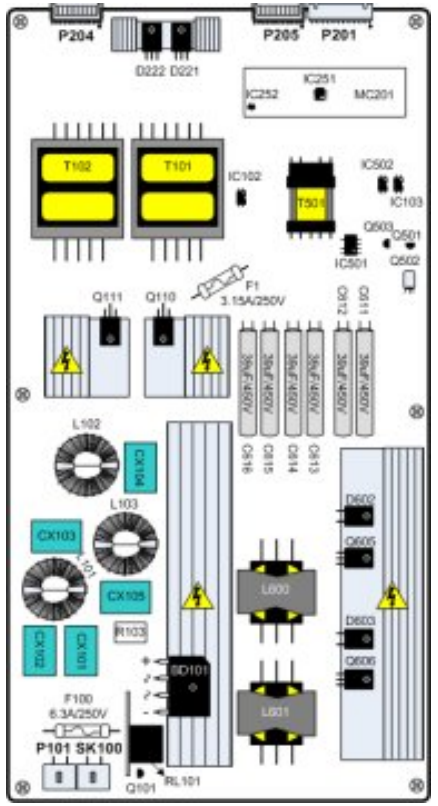
2

Disconnect CN201, CN203 and CN205



POWER SUPPLY SECTION

p/n EAY58470001



This set utilizes a Switch Mode Power Supply.

Input Voltages: AC

Stand-By Output Voltages:

- **+5V (Stand By 5V) to the Main.**

Run Output Voltages:

- **+5V (Stand By 5V) to the Main**
- **12V to the Main**
  (Video Processing, Tuner B+
  and T-CON B+)
- **24V to the Main**
  (Audio B+)
- **24V to both Inverters**

Run Input Commands from Main:

- **PWR-ON (Relay On Command)**
  Brings the SMPS out of Stand-By
- **INV-ON (In and Out to the Ballast)**
  This line also called "I-C"
  Turns on the Backlights

Power Supply (Main Power Switch Type 1) Location

There are three types of Main Power switch used in LG televisions.

Type 1: Shuts off AC to the Power Supply.

Type 2: Opens ground to the front IR board. (Stand-By 5V Remains, the Main board stays alive).

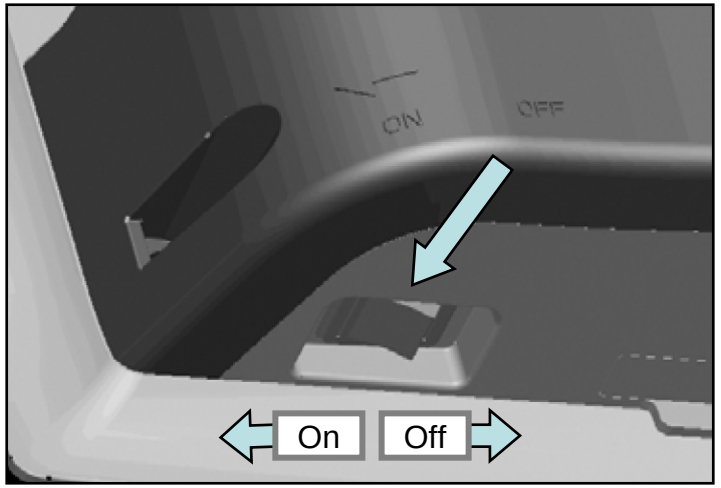
This prevents any activity of the IR or the Key Board. When the Switch is opened, a line called Power Key pulls up high when ground opens. When the switch is closed, this same line called Power Key feeds back to the Microprocessor and the Micro. Turns on the Power.

Type 3: Opens ground to the front IR board. (Stand-By 5V turns off, the Main board is dead).

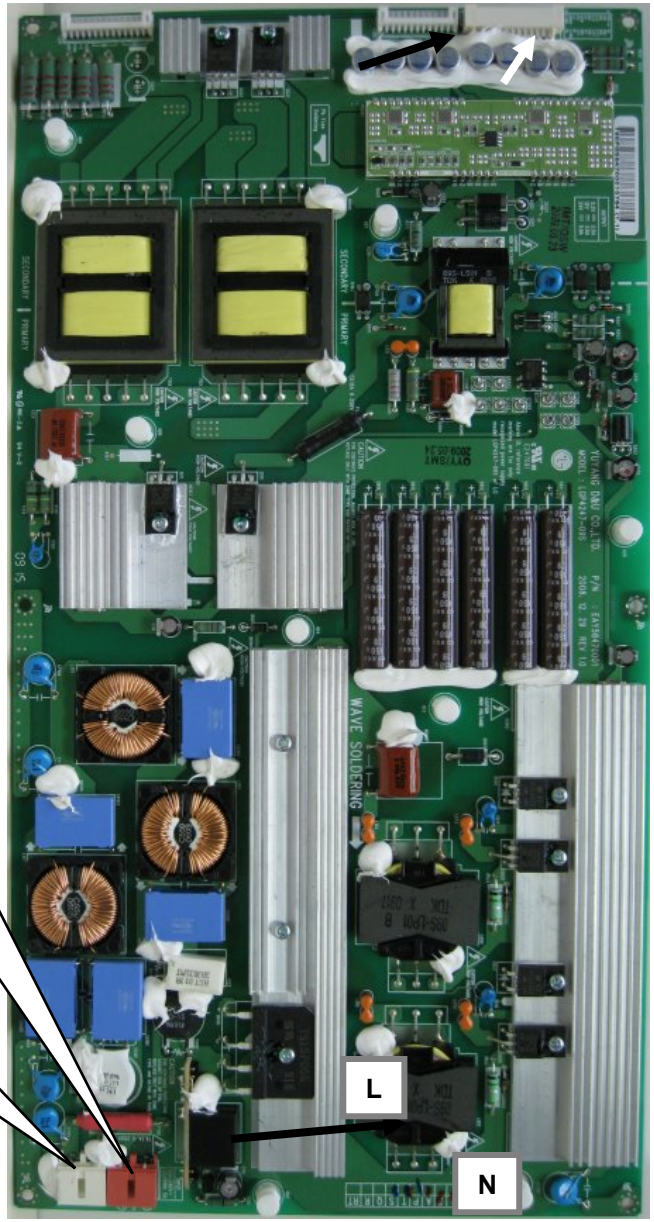
This prevents any activity of the IR or the Key Board. When the Switch is opened, a line called Power Key pulls up high when ground opens. This line feeds back to the Main board and from there it routes to the Power Supply. The high tells the Controller chip to turn off STBY-5V. When the switch is closed, this same line called Power Key now goes high and feeds back to the Power Supply and tells the controller chip to turn STBY-5V on.

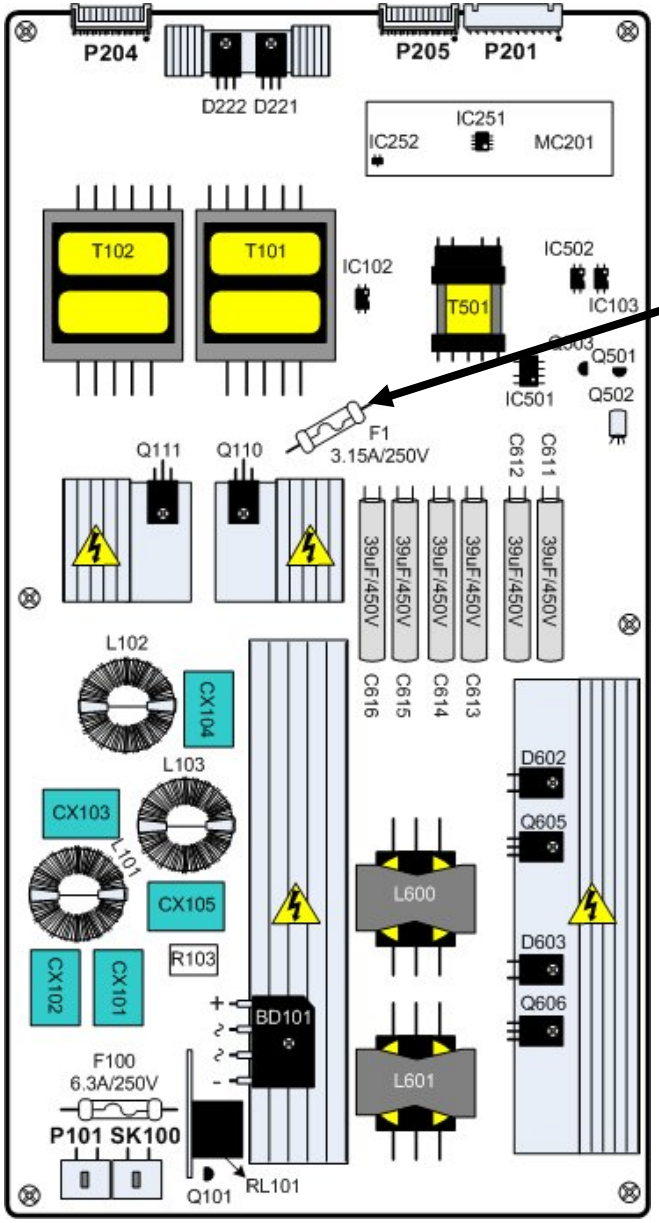
If the TV won't come on, be sure to check the Main Power Switch before assuming a failure has occurred. This switch breaks AC to the SMPS.

MAIN POWER SWITCH LOCATION
Type 1
(Bottom Left Side viewed from rear)



Power Supply (SMPS) Board Layout

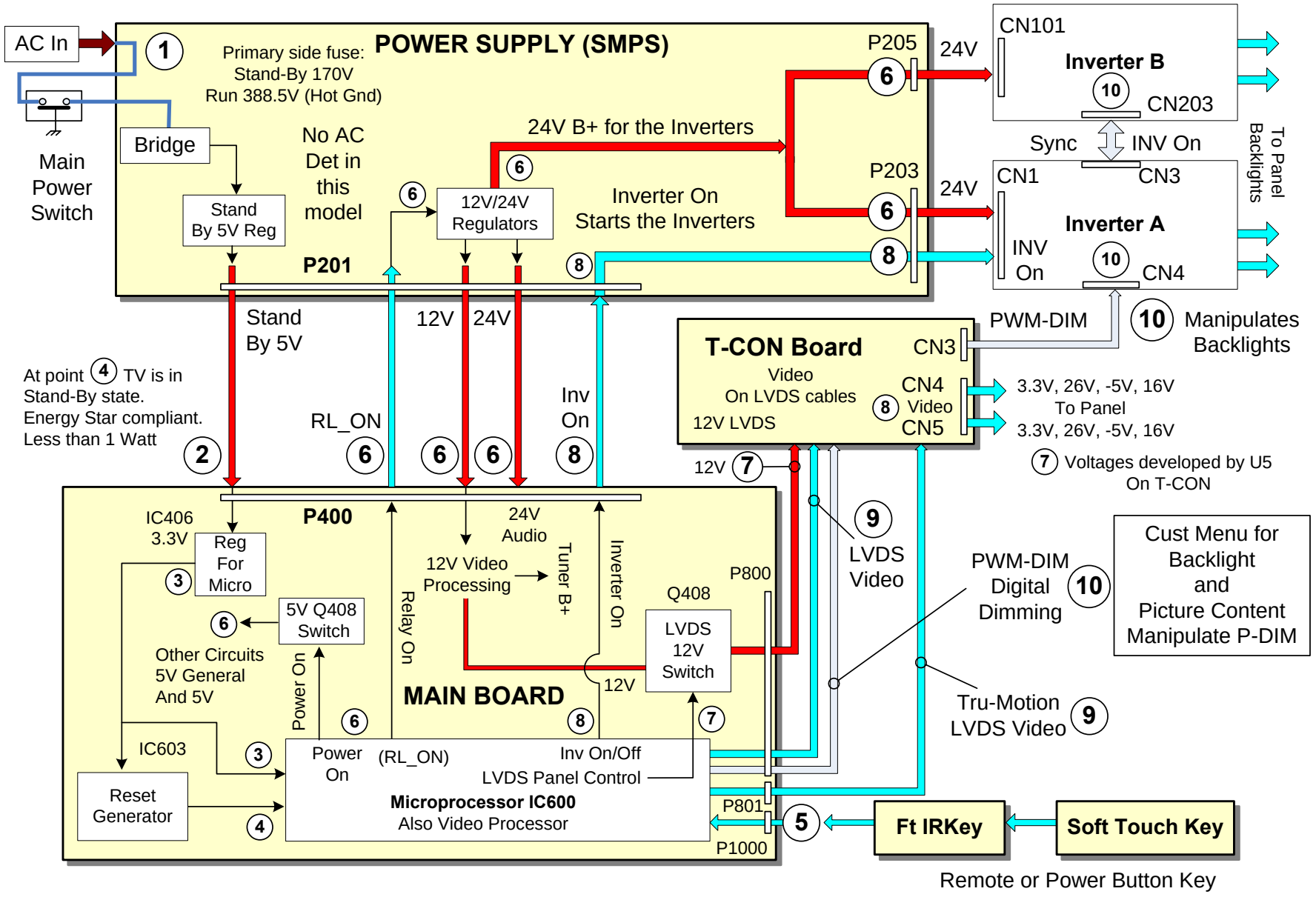




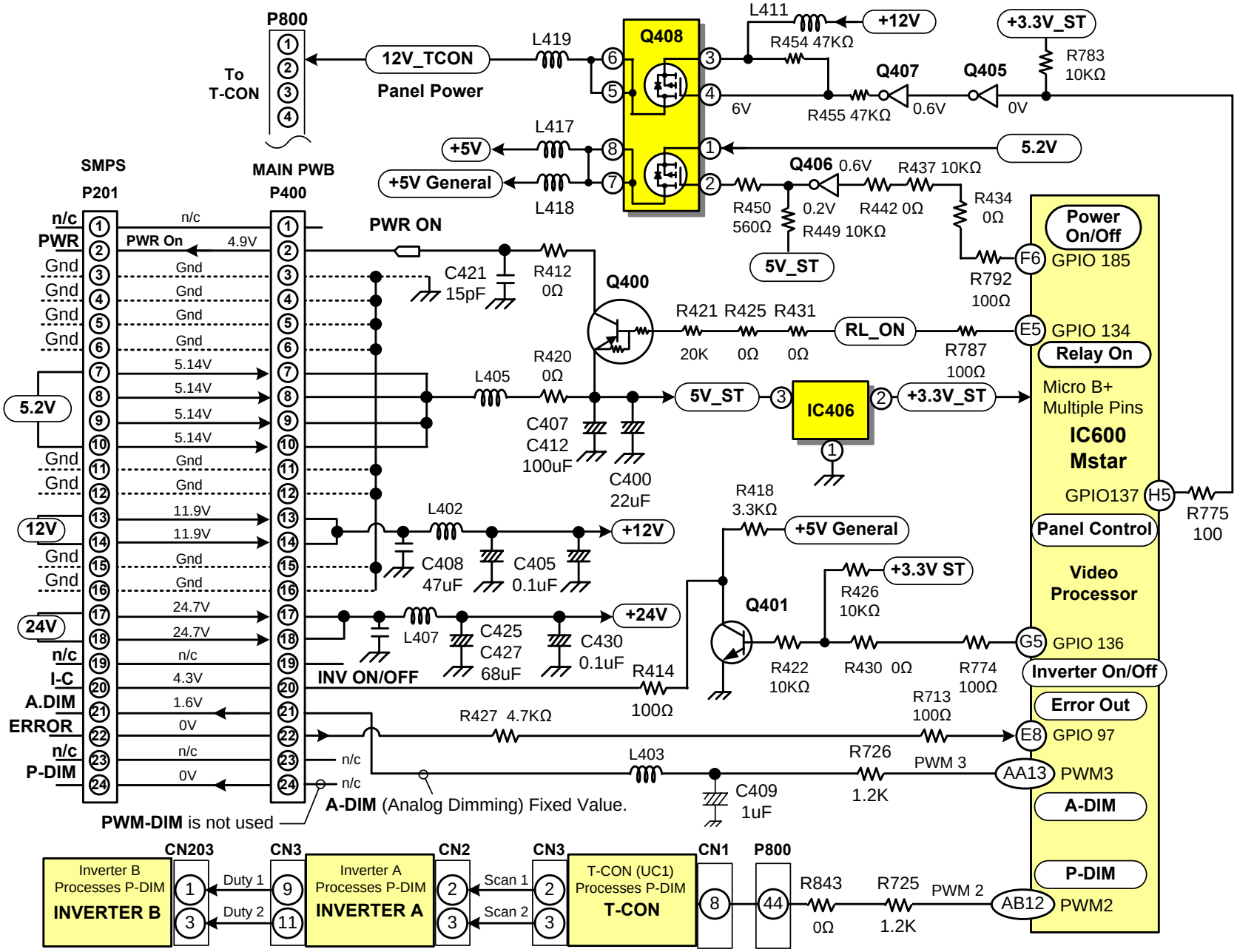
F1
3.15A/250V
STBY 170V
Run 388.5V
From Hot
Gnd

Hot Ground Shock Hazard

42SL80 Power Supply Start Up Sequence



47LH85 P400 on Main Board to SMPS P201 Turn On Circuit



Power Supply Troubleshooting

AC voltage is supplied to the Power Supply at Connector SC100. This set does not use AC Detect. The AC input generates a Hot Ground primary power supply that runs in two states, Stand-By (170) and Run (388.5V) measured at Fuse F1 from Hot Ground. This primary voltage develops all other voltages that are output from the SMPS. During Stand-By, the 5 Volt Standby (5V_ST) should be present at connector P201, Pins 7,8,9 or 10. If Missing remove AC Power and unplug Connector P201, apply AC Power and recheck for presence of 5V_ST (5.1V to 4.7V). Loss of 5V_ST would be a SMPS Failure. If 5V_ST returns, it would be an indication of a failure on the Main Board or possibly the Front Board (IR) assembly. Suspect a possible short circuit loading the supply. **Remember to observe the Front Power Indicating LED this may save some time. A lit LED indicates the Stand-By 5V voltage is present and the Microprocessor is communicating with the front LED driver IC!**

The Main Board sends two commands to the Power Supply Board one being PWR_ON and the other is INV ON. These two signals are used to control the SMPS turn on sequence. First the command PWR_ON (Pin 2) also known as POWER ON, activates the Inverter voltages 24V and the 24V and 12V lines to the Main board. The 2nd command is INV ON (I_C) (P201 pin 20). It is the Lamp Lighting Command Signal. If either command (PWR-ON or INV-ON) is missing it will result in a no picture symptom and the backlights will not turn on.

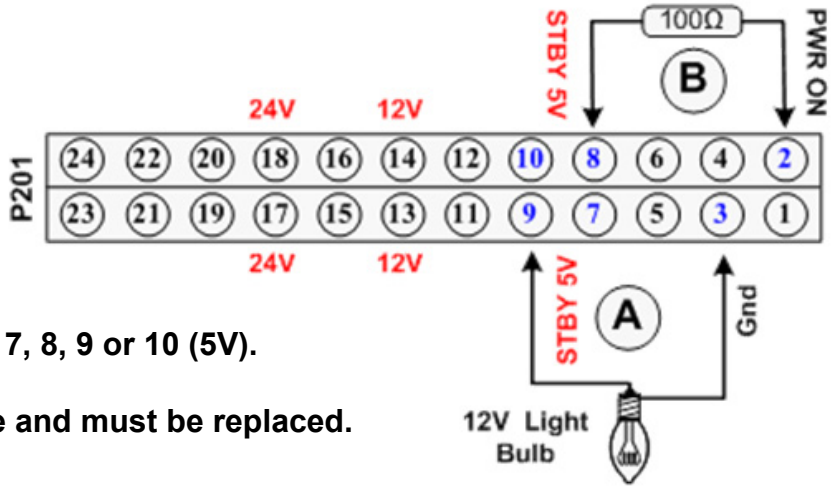
These voltages can not be easily checked using the normal “Stand-Alone” Power Supply check. This Power Supply utilizes many different voltage sensing circuits that will prevent the usual procedure.

The Stand-By 5V to the Main Board MUST BE LOADED for the SMPS to stay on.

You can not just jump the PWR_ON command from 5V_ST like it was done before. Using a simple 12V flashlight bulb from 5V_ST to Gnd. Will supply a sufficient load to run the SMPS stand alone.

TEST 1 Power Supply Board Low Voltage Test

AC Should not be applied at any time while adding the light bulb, resistors or while unplugging connectors as damage to the circuit Board may occur.



- **The SMPS "MUST" be producing STBY 5V on either pin 7, 8, 9 or 10 (5V).**

If 5V Standby is not being generated, the SMPS is defective and must be replaced. There is no need to continue with the next test.

- **Unplug P400 on the Main Board. Use Main Board P400 Side to insert the light bulb and resistors.**

TEST 1: LOW VOLTAGE TEST:

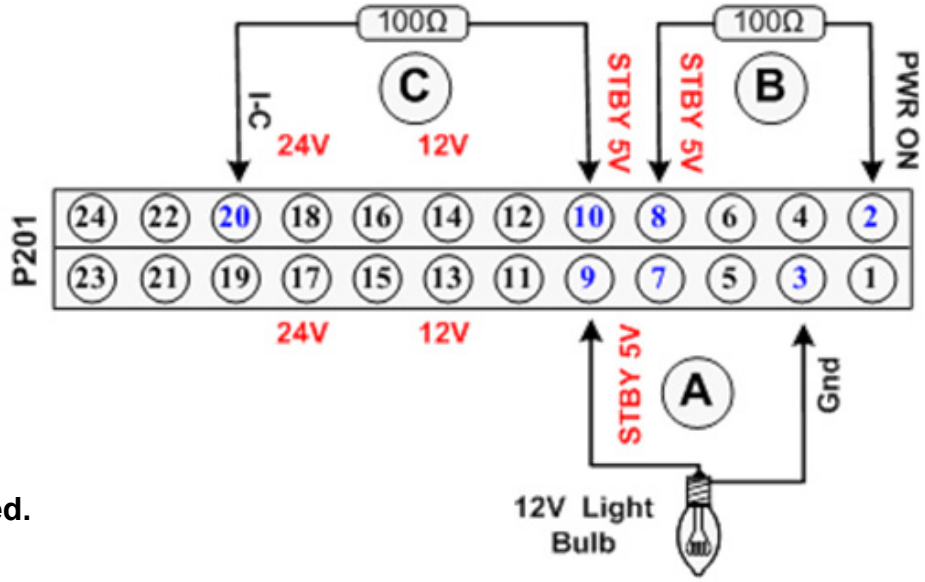
Step (A) Add a 12V Light Bulb (10W) between 5V_ST and Gnd. This Supplies a load on the 5V_ST line that will allow the supply to be powered up one section at a time.

Step (B) Add a 100Ω ¼ watt resistor from 5V_ST to PWR ON and the 12V and 24V Run Lines will become active.

Connector P201 Check pins 13 and 14 for 13.3V. Check pins 17 and 18 for 26.2V.
Connector P205 Check pins 1 through 5 for 26.2V.
Connector P204 Check pins 1 through 5 for 26.2V.

Remove AC power.

TEST 2 Power Supply Board Backlight Test



TEST 2: BACKLIGHT TEST:
Leave the Light Bulb and the resistor that was added in the previous steps A and B connected.

Step (C)
Pull the Connector CN3 from the T-CON board.
Add a 100Ω ¼ watt resistor from 5V Standby to I-C (Inverter On) pin 20.
Add AC Power, the Backlights should turn on.

Note: If they do not, confirm that the I-C line (Inverter On voltage) is sent out pin 12 of both P203 and P205 going to each Inverter. If 24V and I-C are present on both Inverters, see the Inverter Section of this book.

Remove AC power and return all connectors to the correct location.

Note: Using the test above, Inverter B can not be run Stand-Alone. Inverter A can be run by removing Inverter B CN201. But the Right side of the screen (as viewed from the front) will be brighter and the Backlights will blink. If CN203 is removed, then Inverter A will not run.

If 24V and I-C are present on both Inverters, see the Inverter Section of this book.

Power Supply Connector P201 Voltage and Diode Check

P201 "SMPS" to P400 "Main Board"

[2] P-DIM Pin 24 is not used.

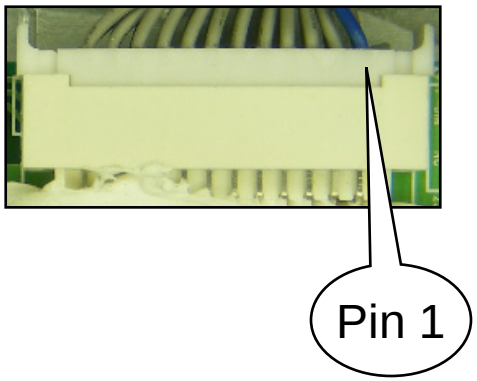
[1] A-DIM Pin 21 Fixed Voltage

I-C Same as Inverter Control On/Off

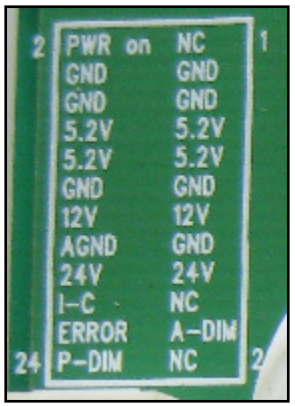
*** Stand By 5V**

Pin	Label	STBY	Run	Diode Check
24	[2]P-DIM	n/c	n/c	Open
23	nc	nc	nc	nc
22	Err Out	0V	0V	Open
21	[1]A-DIM	0V	1.67V	Open
20	I-C	0V	4.3V	Open
19	nc	nc	nc	nc
17-18	24V	0V	24.7V	0.42V
16	AGND	Gnd	Gnd	Gnd
15	Gnd	Gnd	Gnd	Gnd
13-14	12V	0V	11.9V	0.72V
11-12	Gnd	Gnd	Gnd	Gnd
7-10	*5.2V	5.14V	5.14V	Open
3-6	Gnd	Gnd	Gnd	Gnd
2	PWR on	0V	4.9V	1.6V
1	nc	nc	nc	Open

P201



P201 Label



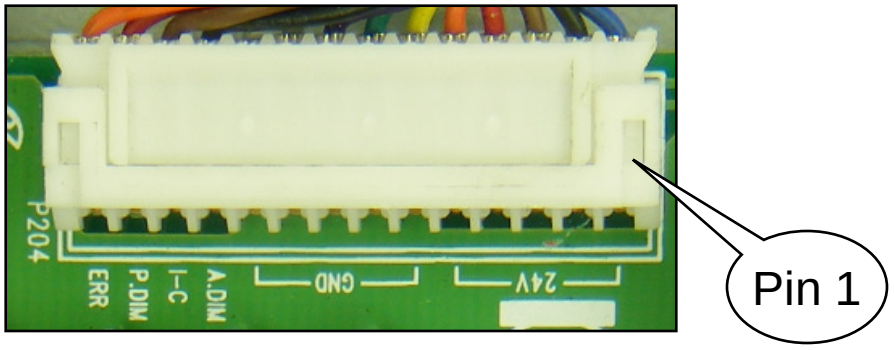
Diode Check taken with meter in Diode Mode with all Connectors Removed

Power Supply P204 to Inverter A CN1 Voltage and Diode Check

There are no Stand-By voltages.

P204 "SMPS" to CN1 "Inverter A"

Pin	Label	Run	Diode Check
1-5	24V	24.7V	0.42V
6-10	Gnd	Gnd	Gnd
11	A-DIM	1.6V	Open
12	I-C (INV On/Off)	4.3V	Open
13	PWM-DIM	3.40V	Open
14	Error	0V	Open



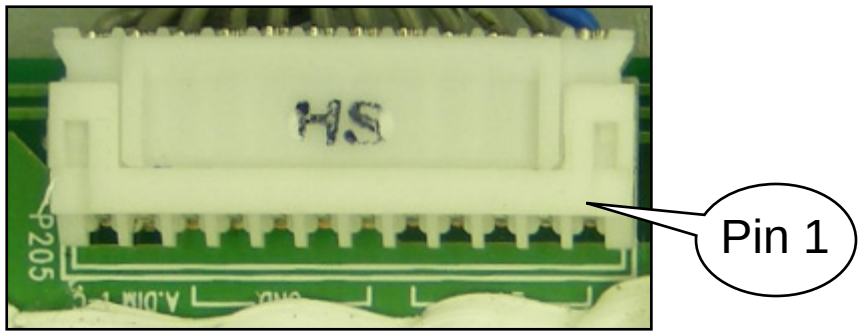
Diode Check taken with meter in Diode Mode with all Connectors Removed

Power Supply P205 to Inverter B CN201 Voltage and Diode Check

There are no Stand-By voltages.

P205 "SMPS" to CN201 "Inverter B"

Pin	Label	Run	Diode Check
1-5	24V	24.7V	0.42V
6-10	Gnd	Gnd	Gnd
11	A-DIM	1.6V	Open
12	I-C (INV On/Off)	3.45V	Open



Diode Check taken with meter in Diode Mode with all Connectors Removed

Power Supply Connector SK100 and P101 Voltage and Diode Check

Diode Check taken with meter in Diode Mode with all Connectors Removed

SK100 "SMPS" to AC IN

Pin	Label	STBY	Run	Diode Check
1	L	120Vac		OL
2	N			OL

AC Voltage Readings Across Pins 1 and 2 for STBY and RUN.

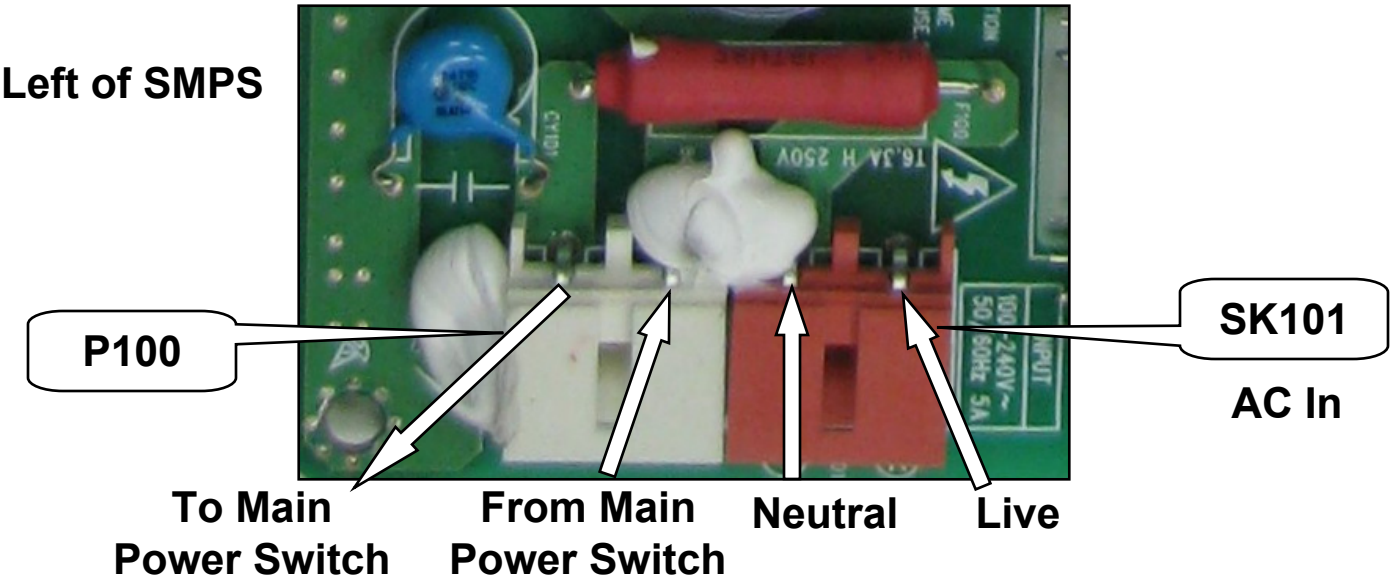
P101 "SMPS" to MAIN POWER SWITCH

Pin	Label	STBY	Run	Diode Check
1	n/a	120Vac		OL
2	n/a			OL

AC Voltage Readings for either pin 1 or pin 2 in STBY and RUN with one lead on Neutral of SK101.

With the Main Power Switch Closed (On) AC flows. When Open (Off) AC open and does not flow.

Bottom Left of SMPS



Inverter A and B Boards

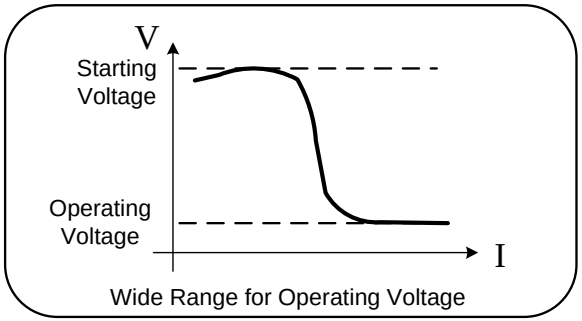
Each Inverter receives it B+ from the Switch Mode Power Supply. Inverter A CN1 Pins 1~5 and Inverter B CN201 Pins 1~5. 24V is delivered when the "Power On" command arrives at the SMPS.

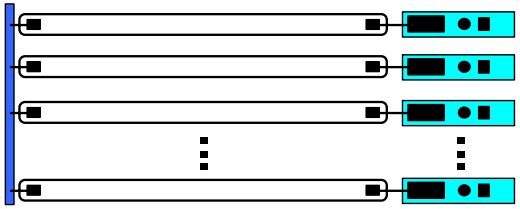
The Backlights are turned on when the "Inverter On" command arrives. INV-ON is sent from the Main board through the SMPS to Inverter A CN1 Pin 12. Then Inverter A sends the On/Off (Inverter On/Off) command to Inverter B via CN3 to CN203 pin 7.
The Backlights are manipulated by the control signal
"P-DIM (Digital Dimming)" coming from the T-CON board via CN2 pins 2 and 3 to Inverter A CN3. Then the controller chip on Inverter A sends Duty 1 and Duty 2 to Inverter B on CN205 pins 1 and 3.
The output of 1.2Kv is sent to three sections of the backlight behind the LCD panel. These three sections are broken up as follows: The Top and Bottom sections are tied together, each containing 6 bulbs (total 12). The Center section has 13 bulbs. All total 25 bulbs.

EEFL Compared to CCFL (This set uses EEFL Bulbs)

Complex structure, High price

CCFL (Cold Cathode Fluorescent Lamp)



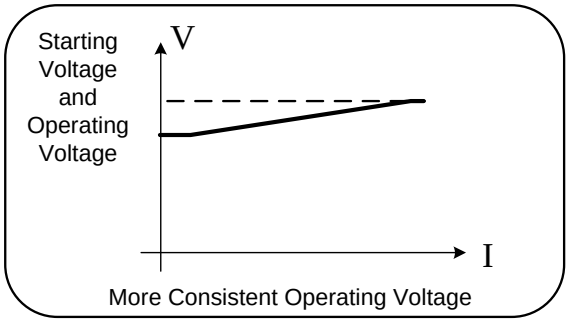


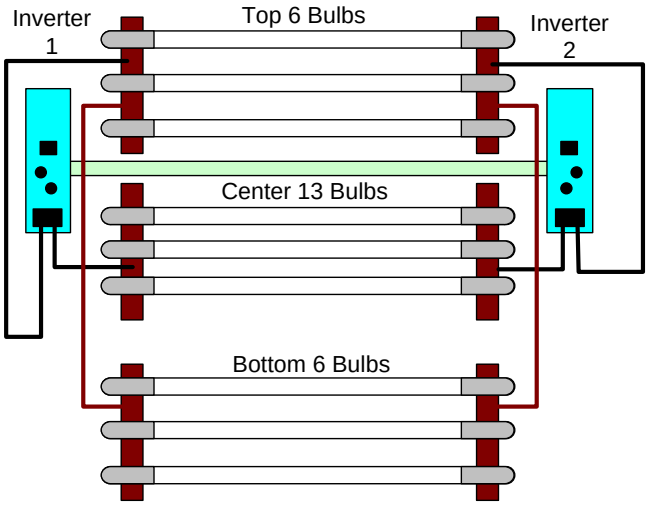
A Transformer for every bulb.

Complicated and more expensive structure

Simple structure, Low price

EEFL (External Electrode Fluorescent Lamp)





Simple structure

Lamp manufacturing process
Lamp assembly structure

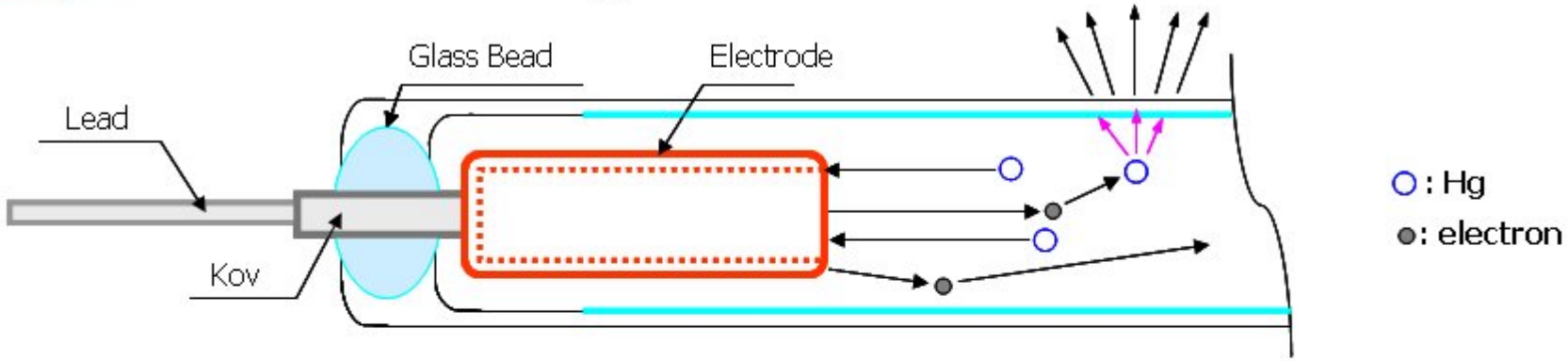
Low Cost

Large number of Lamp
Drive by single inverter

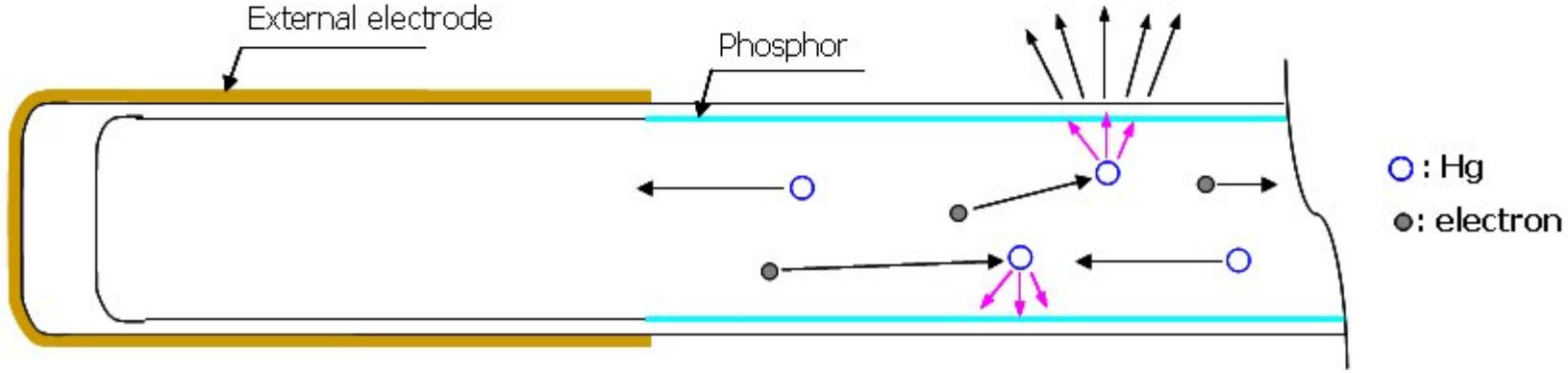
EEFL Compared to CCFL Electrodes

Key: Long Life Time

CCFL (Cold Cathode Fluorescent Lamp)

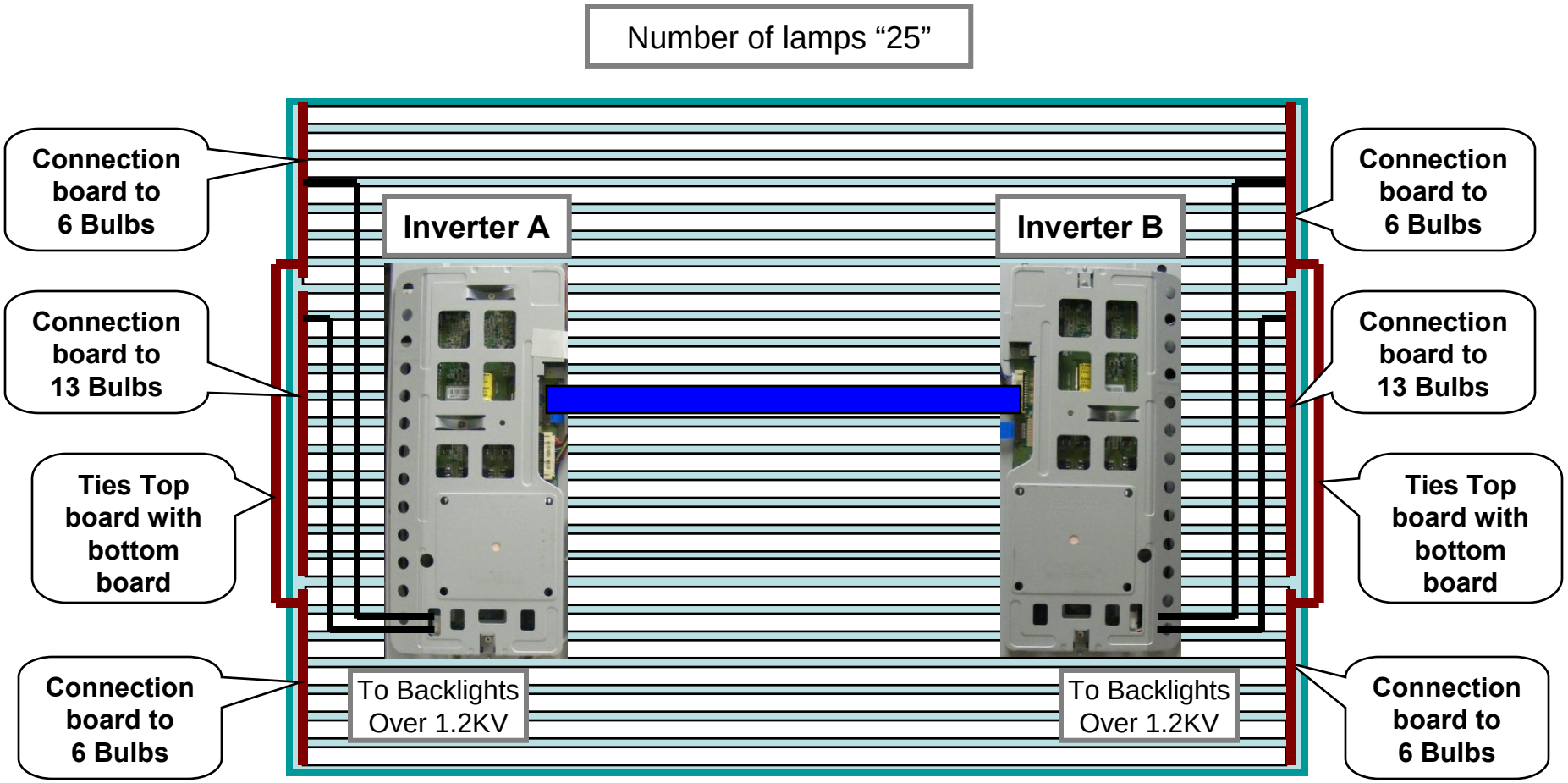


EEFL (External Electrode Fluorescent Lamp)



- **For CCFL, Hg gas is consumed mainly near the internal electrode**
- **For EEFL, longer life time is expected because there is no internal electrode consuming Hg gas**

General Backlight Information

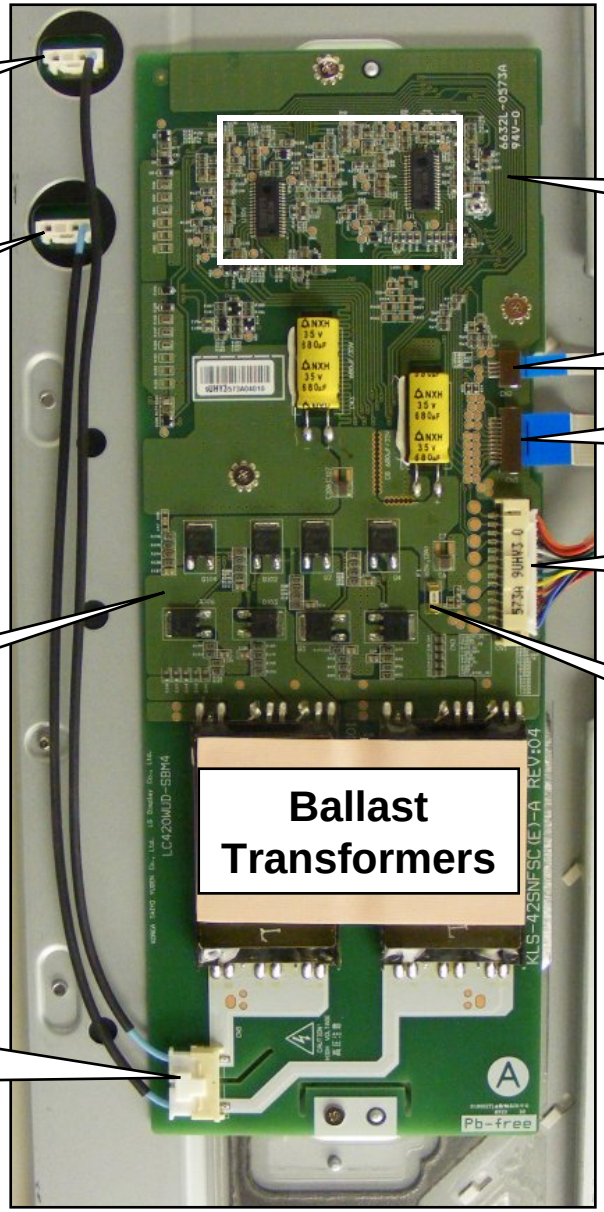


EEFL (External Electrode Fluorescent Lamp)

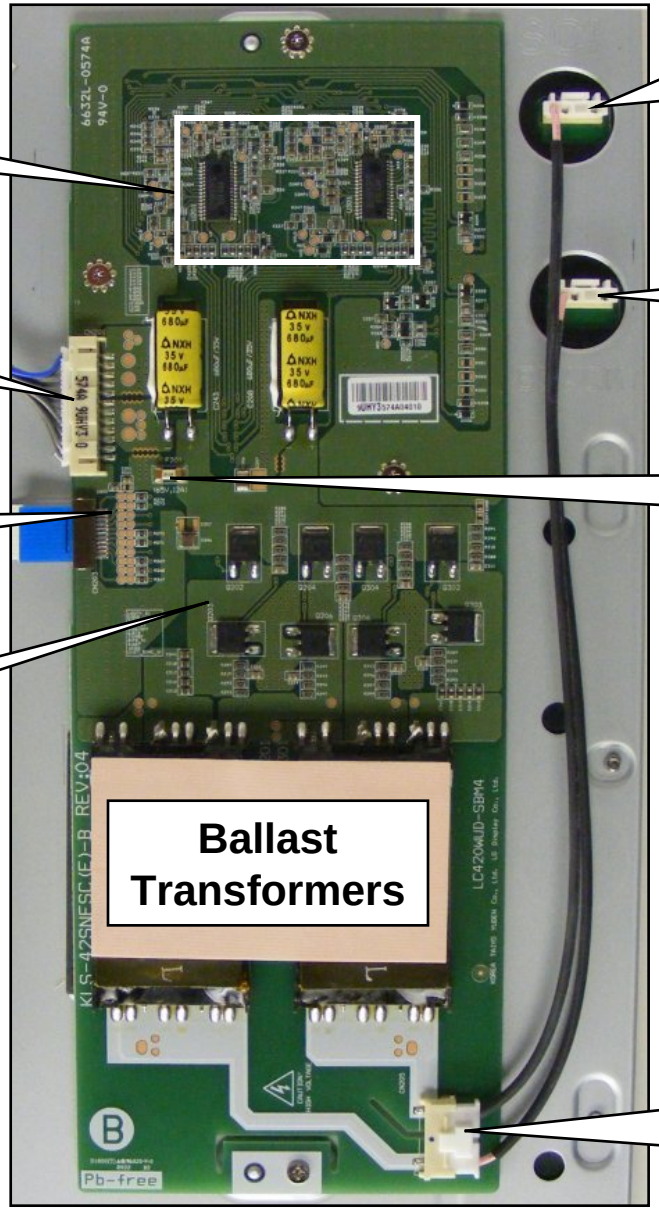
LOW COST Large number of lamps driven by a single inverter

Inverter A (Shield Removed) Layout

p/n EAY60750201
Includes both Inverters



Inverter B (Shield Removed) Layout



p/n EAY60750201
Includes both Inverters

42SL80 Inverter A & B Layout and Component Volatages

CN1 Connector "Inverter A" to P204 "SMPS"

Pin	Label	STBY	Run	Resistance
14	STATUS	0V	0V	OPEN
13	NC	0V	0V	OPEN
12	ON/OFF	0V	4.3V	OPEN
11	Vbr-A	0V	1.6V	OPEN
6-10	GND	GND	GND	GND
1-5	VIN	0V	24.7V	OPEN

CN3 Connector "Inverter A" to CN203 "Inverter B"

Pin	Label	STBY	Run	Resistance
11	DUTY_M1	0V	0.71V-2.4V	OPEN
10	GND	GND	GND	GND
9	DUTY_M2	0V	0.71V-2.4V	OPEN
8	FB_S1	0V	0.96V	2.9V
7	ON/OFF	0V	4.3V	OPEN
6	STB	0V	3.2V	OPEN
5	VREF	0V	1.0V	OPEN
4	FB_M1	0V	1.0V	2.9V
3	SRT	0V	1.4V	OPEN
2	SS	0V	2.9V	OPEN
1	CT_SYNC_IN	0V	1.5V	1.7V

CN2 Connector "Inverter A" to CN3 "T-CON"

Pin	Label	STBY	Run	Diode Check
4	GND	GND	GND	GND
3	SCAN 2	0V	0.67V-2.4V	OPEN
2	SCAN 1	0V	0.67V-2.4V	OPEN
1	NC	0V	3.3V	OPEN

Backlights at 100%

Q2/Q4		Q3/Q6	
G	24.1V	G	0.73V
D	24.6V	D	20.4V
S	20.3V	S	GND

Q104/Q102		Q106/Q103	
G	21.7V	G	0.6V
D	24.6V	D	21.6V
S	24.8V	S	Gnd

Backlights at 0%

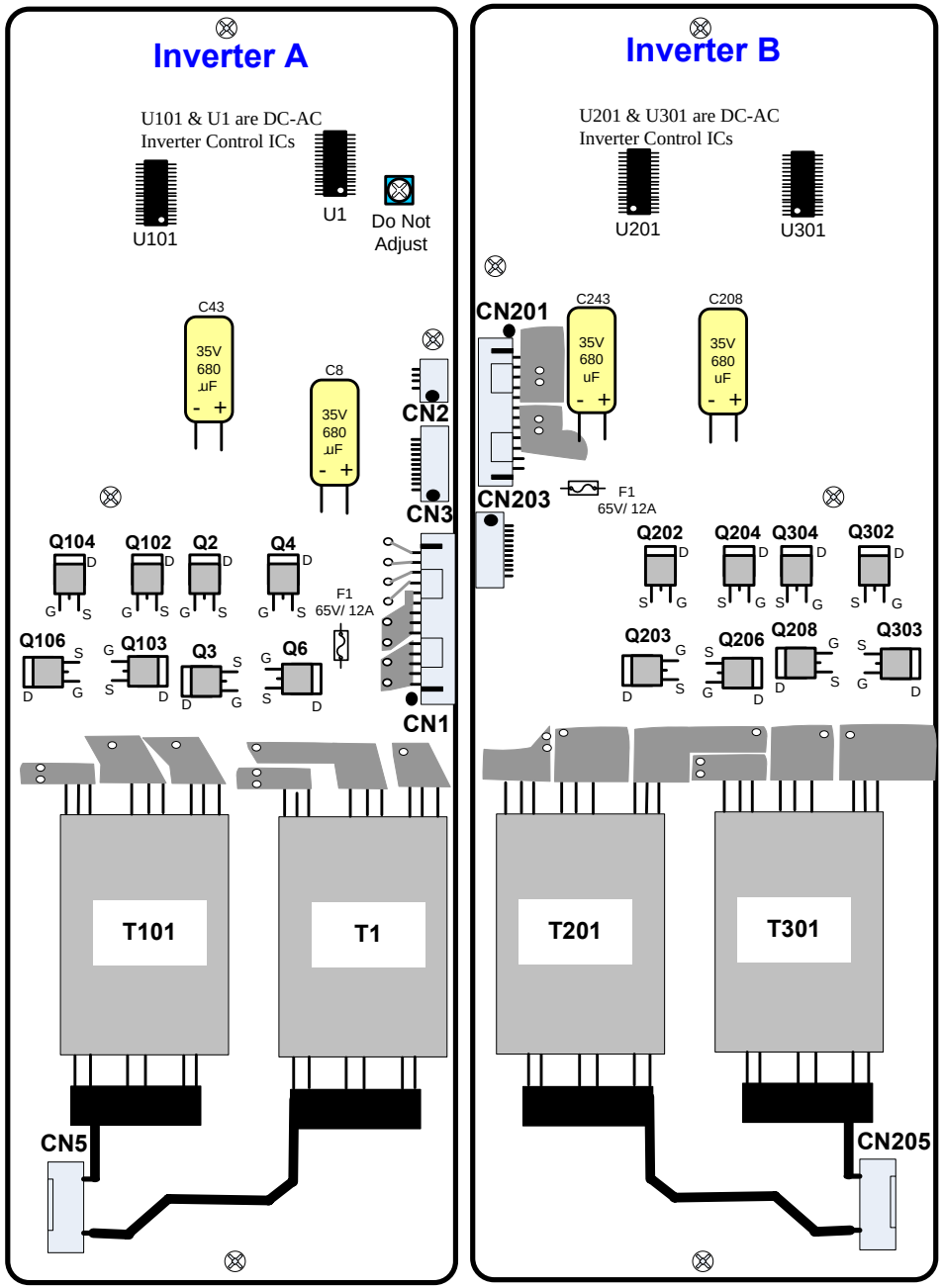
Q2/Q4		Q3/Q6	
G	26.9V	G	0.3V
D	24.6V	D	23.0V
S	23.1V	S	GND

Q104/Q102		Q106/Q103	
G	27.0V	G	0.28V
D	24.6V	D	23V
S	23.1V	S	Gnd

Backlights at 100%

CN5 Connector "Inverter A" TO MC1 and Black "LCD Panel"

Pin	Label	Run AC	Resistance
1	TO MC1	1.2Kv	72 Ohms
2	TO BLACK	1.2Kv	72 Ohms



CN201 Connector "Inverter B" to P205 "SMPS"

Pin	Label	STBY	Run	Resistance
1-5	VIN	0V	24.7V	OPEN
6-10	GND	GND	GND	GND
11	Vbr-A	0V	1.6V	OPEN
12	n/c	n/c	4.3V	OPEN

CN203 Connector "Inverter A" to CN3 "Inverter B"

Pin	Label	STBY	Run	Resistance
1	DUTY_S1	0V	0.71V-2.4V	OPEN
2	GND	GND	GND	GND
3	DUTY_S2	0V	0.71V-2.4V	OPEN
4	FB_S1	0V	0.96V	2.9V
5	ON/OFF	0V	4.3V	OPEN
6	STB	0V	3.2V	OPEN
7	VREF	0V	1.0V	OPEN
8	FB_M1	0V	1.0V	2.9V
9	SRT	0V	1.4V	OPEN
10	SS	0V	2.9V	OPEN
11	CT_SYNC_IN	0V	1.5V	1.7V

Backlights at 100%

Q202/Q204		Q203/Q206	
G	24.1V	G	0.73V
D	24.6V	D	20.4V
S	20.3V	S	GND

Q302/Q304		Q306/Q303	
G	21.7V	G	0.6V
D	24.6V	D	21.6V
S	24.8V	S	Gnd

Backlights at 0%

Q202/Q204		Q203/Q206	
G	26.9V	G	0.3V
D	24.6V	D	23.0V
S	23.1V	S	GND

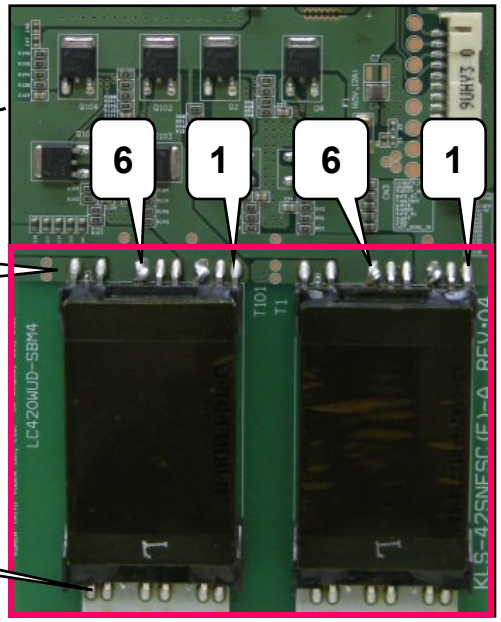
Q302/Q304		Q306/Q303	
G	27.0V	G	0.28V
D	24.6V	D	23V
S	23.1V	S	Gnd

Backlights at 100%

CN205 Connector "Inverter B" TO "LCD Panel"

Pin	Label	Run AC	Resistance
1	TO SC1	1.2Kv	72 Ohms
2	TO BLACK	1.2Kv	72 Ohms

Ballast Transformer Waveforms



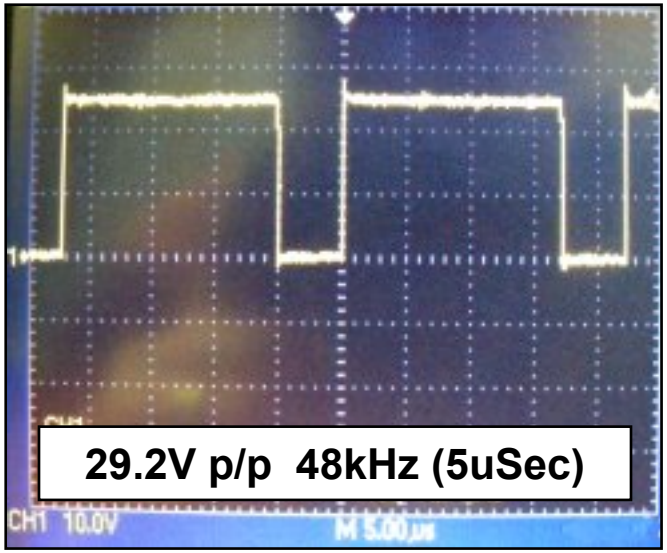
FET Drivers

Primary

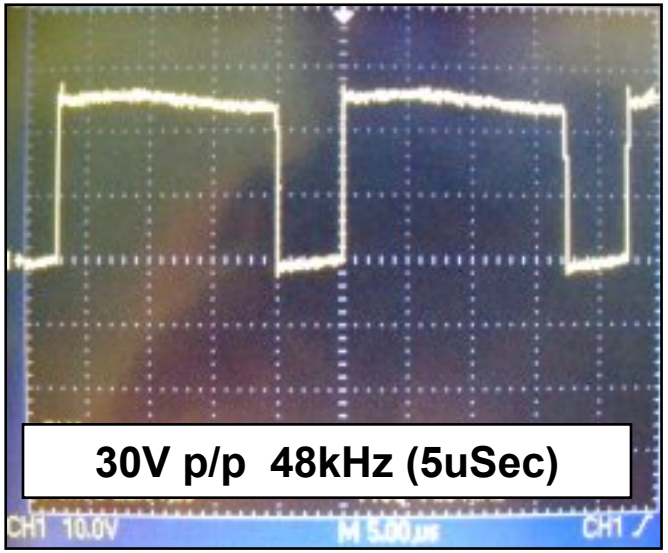
Secondary

Both Inverters have 2 Drive Transformers. They have the same configuration.

Warning, secondary is over 1.2Kv
Do Not Measure without proper equipment.



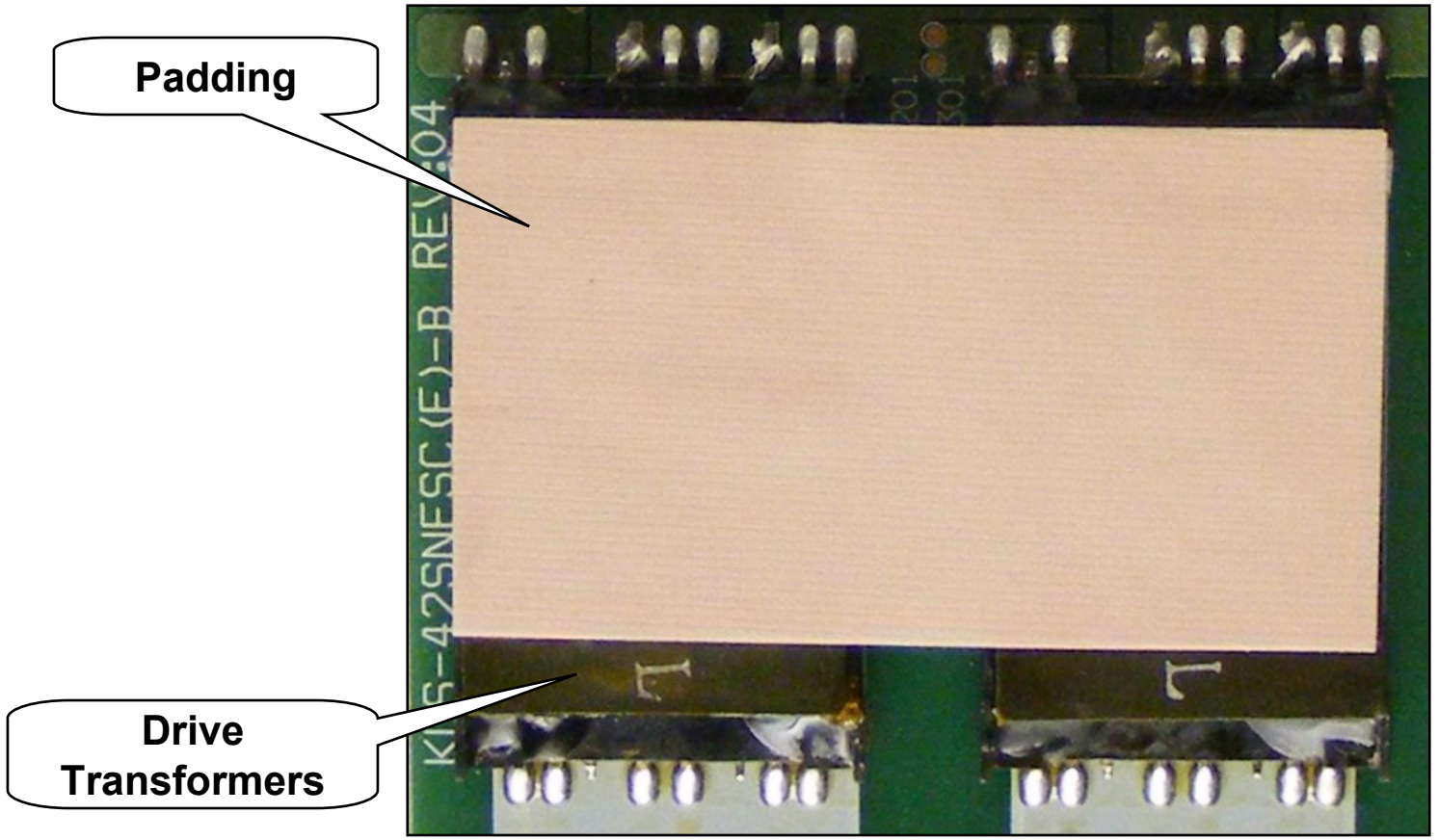
All Transformers Pin 1



All Transformers Pin 6

Ballast Transformer Noise Suppression Pads

Both Inverters have 2 Drive Transformers.
There is a rubber pad that covers both drive transformers on both A and B Inverters. These pads reduce the vibration noise being generated from these transformers, be sure to replace these.

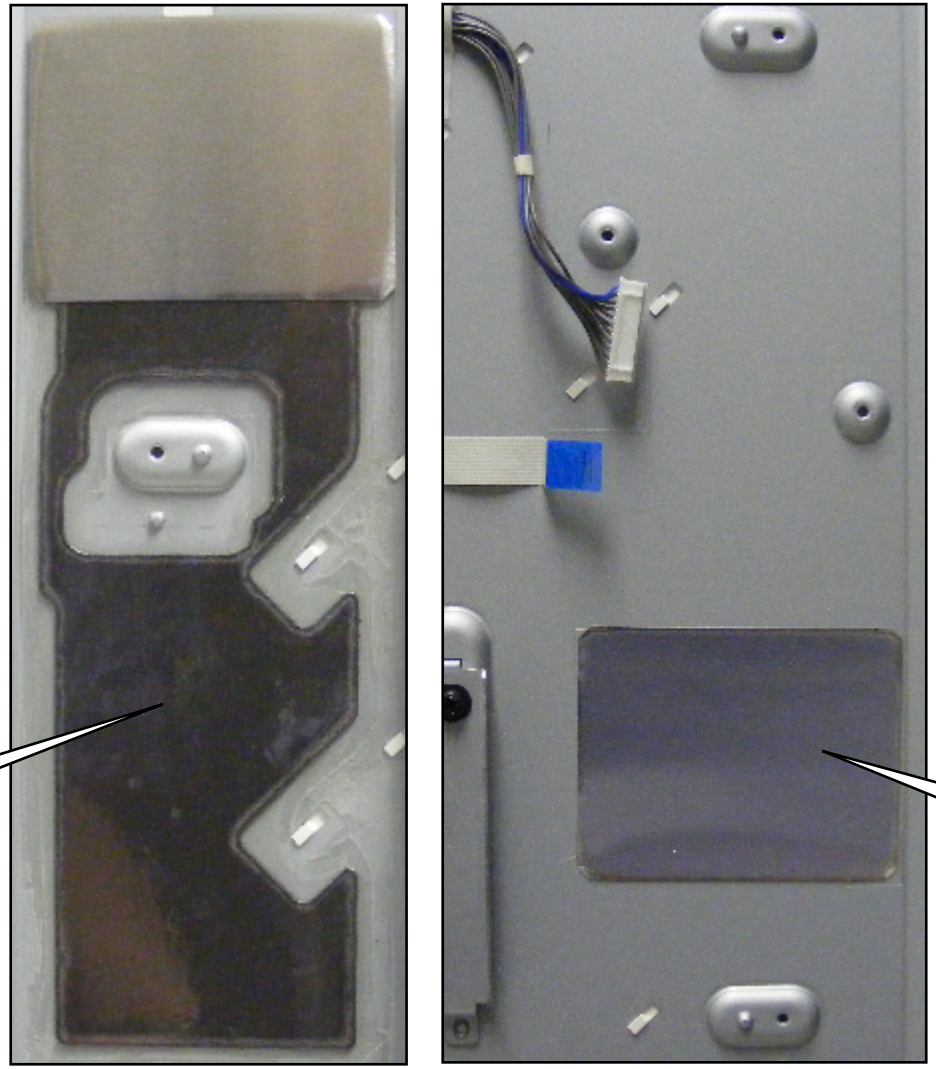


RF Prevention Shields behind the Inverters

Behind the Inverters are shields

Inverters A side

Inverters B side



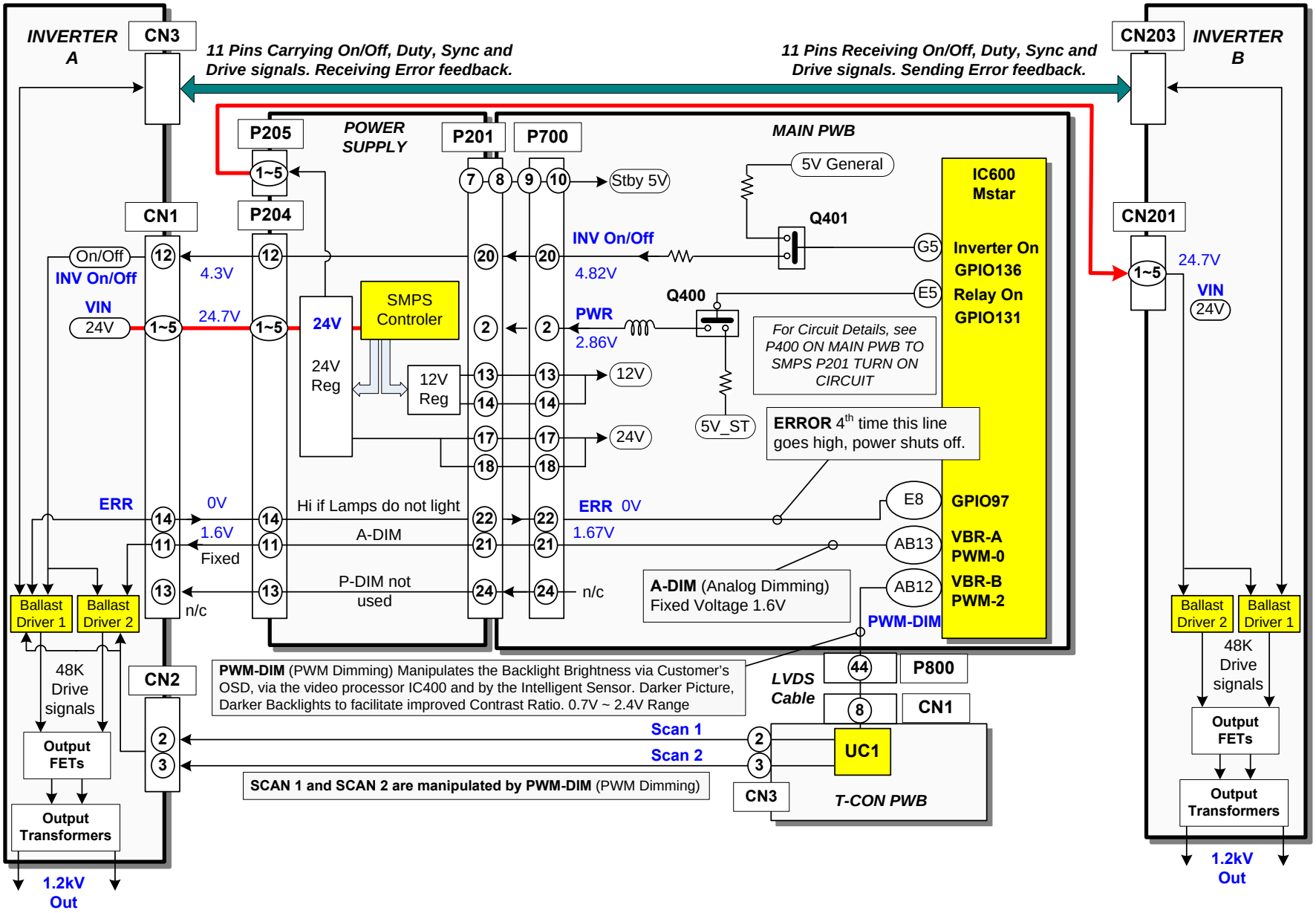
The Shield on Inverters A side is adhered to the panel.

The Shield on Inverters B side is adhered to the panel.

Shield

Shield

42LS80 Inverters Turn On Circuit P400 on Main Board To Power Supply P201



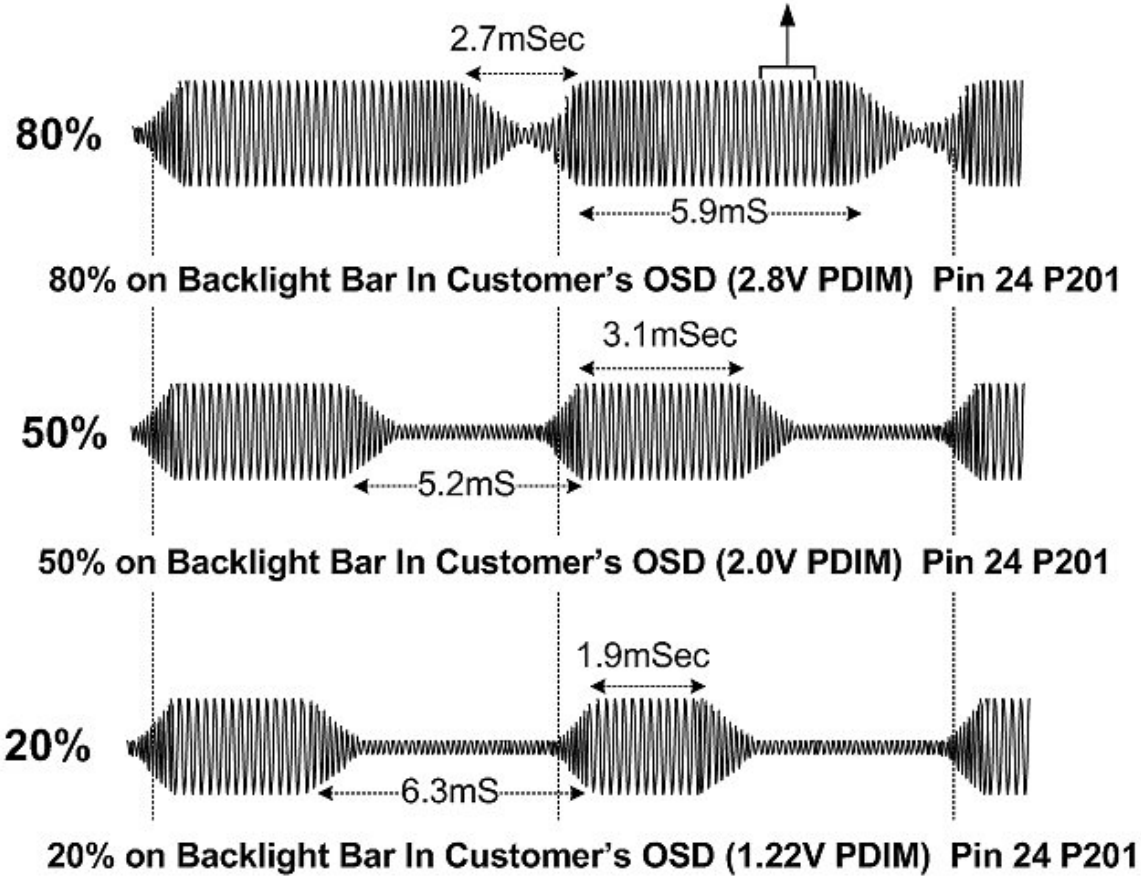
Power Supply Backlight Drive Signal Effects

Waveform taken from lose coupling.
Probe clamped on one of the Backlight Wires.
Use caution, 1.2Kv
Slow scope setting to 2.5mS to see PWM results.
The PWM amount can cause the frequency to be measured differently.

100% on Backlight Bar In Customer's OSD (3.32V PDIM) Pin 24 P201

PWM-DIM manipulates the Burst Triangle Oscillator in the ballast drive IC.

A-DIM also manipulates the Burst Triangle Oscillator But it is not used.



Note:
Backlights will attempt to fire 4 times. During these attempts, the Error line will change from 5V to 0V.

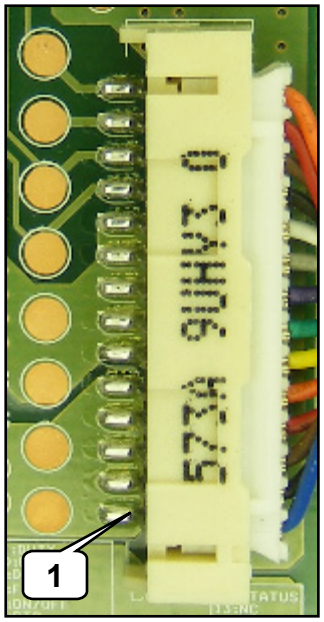
0V when lamp tries to fire or is lit.
5V when the lamps are not lit.

After 4 attempts, if the Error Out line returns to 5V, this tells the Micro to turn the set off.

Inverter A Connector CN1 and CN2 Voltage and Diode Check

There are no Stand-By voltages.

CN1



CN1 "Inverter A" to P203 "SMPS"

Pin	Label	Run	Diode Check
14	Status	0V	Open
13	n/c	0V	Open
12	On/Off	4.3V	Open
11	VRB-A	1.6V	Open
6-10	Gnd	Gnd	Gnd
1-5	VIN	24.7V	Open

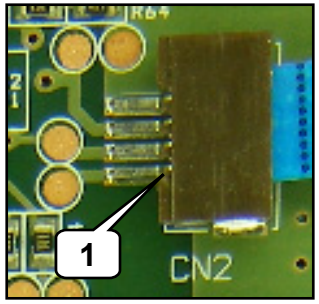
Pin 13 PDIM (Digital Dimming) This pin is not used.

Pins 2/3 (Digital Dimming) Can vary according to the brightness level of the video signal and the OSD Backlight setting. 0.67V 0% to 2.4V 100%. Output from the Video Processing chip IC100 (Mstar) through T-CON.

CN2 "Inverter A" to CN3 "T-CON"

Pin	Label	Run	Diode Check
1	Gnd	Gnd	Gnd
2	Scan 1	*0.67V~2.4V	Open
3	Scan 2	*0.67V~2.4V	Open
4	n/c	3.3V	Open

CN2

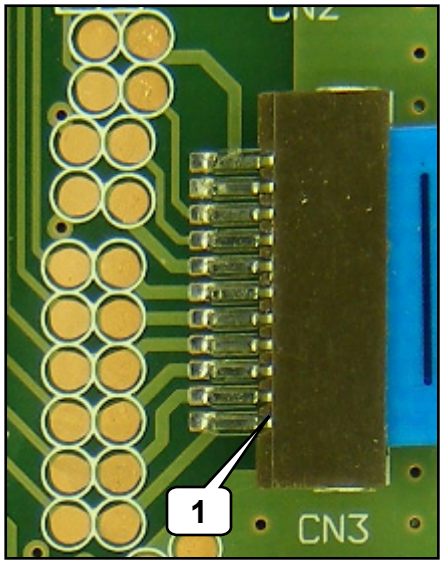


Diode Check taken with meter in Diode Mode with all Connectors Removed

Inverter A Connector CN3 Voltage and Diode Check

There are no Stand-By voltages.

CN3



CN3 "Inverter A" to P203 "Inverter B"

Pin	Label	Run	Diode Check
11	DUTY_M1	*0.71V~2.4V	Open
10	Gnd	Gnd	Gnd
9	DUTY_M2	*0.71V~2.4V	Open
8	FB_S1	0.96V	2.9V
7	ON/OFF	4.3	Open
6	STB	3.2V	Open
5	VREF	1.0V	Open
4	On/Off	1.0V	2.9V
3	SRT	1.4V	Open
2	SS	2.9V	Open
1	CT-SYNC-IN	1.5V	1.7V

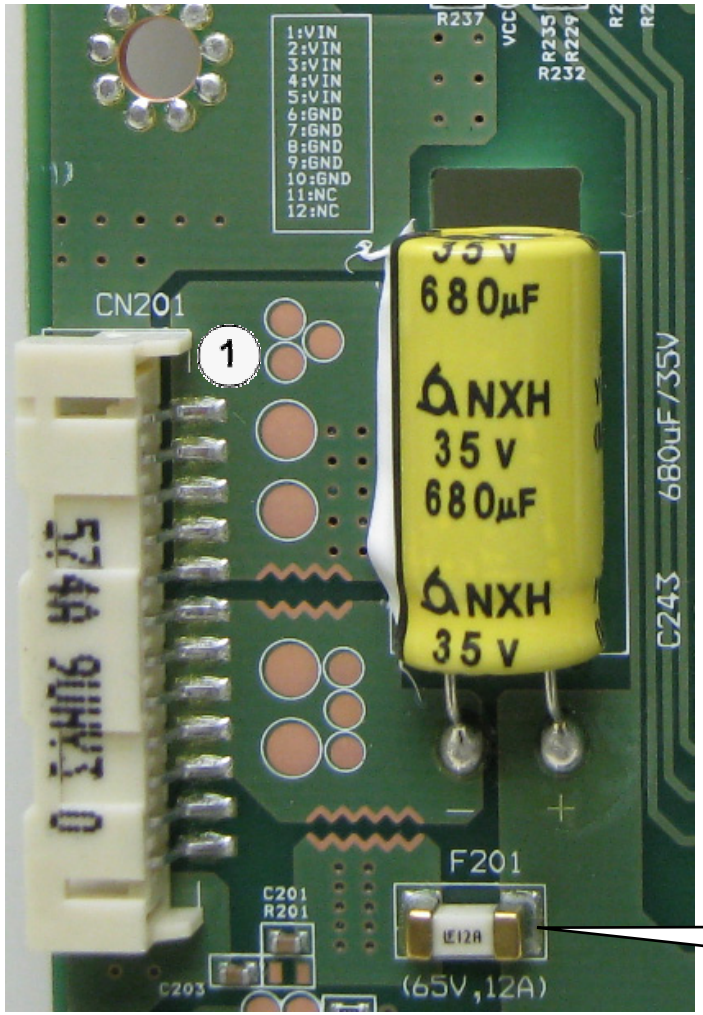
Varies with PDIM

Varies with PDIM

Diode Check taken with meter in Diode Mode with all Connectors Removed

Inverter B Connector CN201 Voltage and Diode Check

CN201



There are no Stand-By voltages.

CN201 "Inverter B" to P205 "SMPS"

Pin	Label	Run	Diode Check
1-5	VIN	24.7V	Open
6-10	Gnd	Gnd	Gnd
11-12	N/C	1.6V	Open

Pin 11 and 12 are not used.

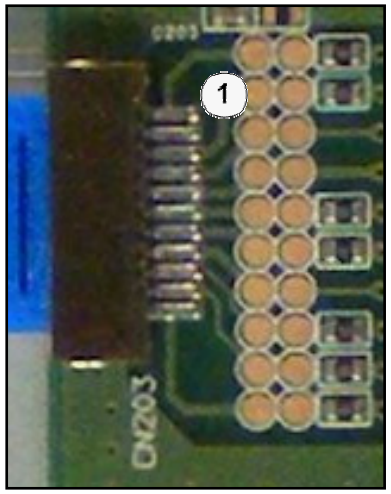
F201
24.7V Fuse

Diode Check taken with meter in Diode Mode with all Connectors Removed

Inverter B Connector CN203 Voltage and Diode Check

There are no Stand-By voltages.

CN203



CN203 "Inverter B" to CN3 "Inverter A"

Pin	Label	Run	Diode Check
1	DUTY_S1	*0.71V~2.4V	Open
2	Gnd	Gnd	Gnd
3	DUTY_S2	*0.71V~2.4V	Open
4	FB_S1	0.96V	2.9V
5	ON/OFF	4.3	Open
6	STB	3.2V	Open
7	VREF	1.0V	Open
8	FB_M1	1.0V	2.9V
9	SRT	1.4V	Open
10	SS	2.9V	Open
11	CT-SYNC-IN	1.5V	Open

Varies with PDIM

Varies with PDIM

Pins 1/3 Duty (Digital Dimming) Can vary according to the brightness level of the video signal and the OSD Backlight setting. 0.67V 0% to 2.4V 100%. Output from the Video Processing chip IC100 (Mstar) through T-CON.

Diode Check taken with meter in Diode Mode with all Connectors Removed

LCD Controller Board

The T-CON IC **UC1** receives from the Main Boards LVDS Video Signals at **CN1** and **CN2**. This is a Dual 12 Bit (24 pin) LVDS Video Signal which it processes into TFT Drive Signals which are delivered through connectors **CN4** and **CN5** to the LCD TFT Panel.

T-CON B+: 12V is supplied to the T-Con Board on connector **CN1** from the Main Board **P800** easily measured at fuse F1, (3A and 125V).

There is a DC to DC converter (**U5**) that creates;
(16V Measured at VDD). (26V Measured at pin 8 of U5).
(3.3V Measured at VCC). (-5V Measured at D9 top right leg).

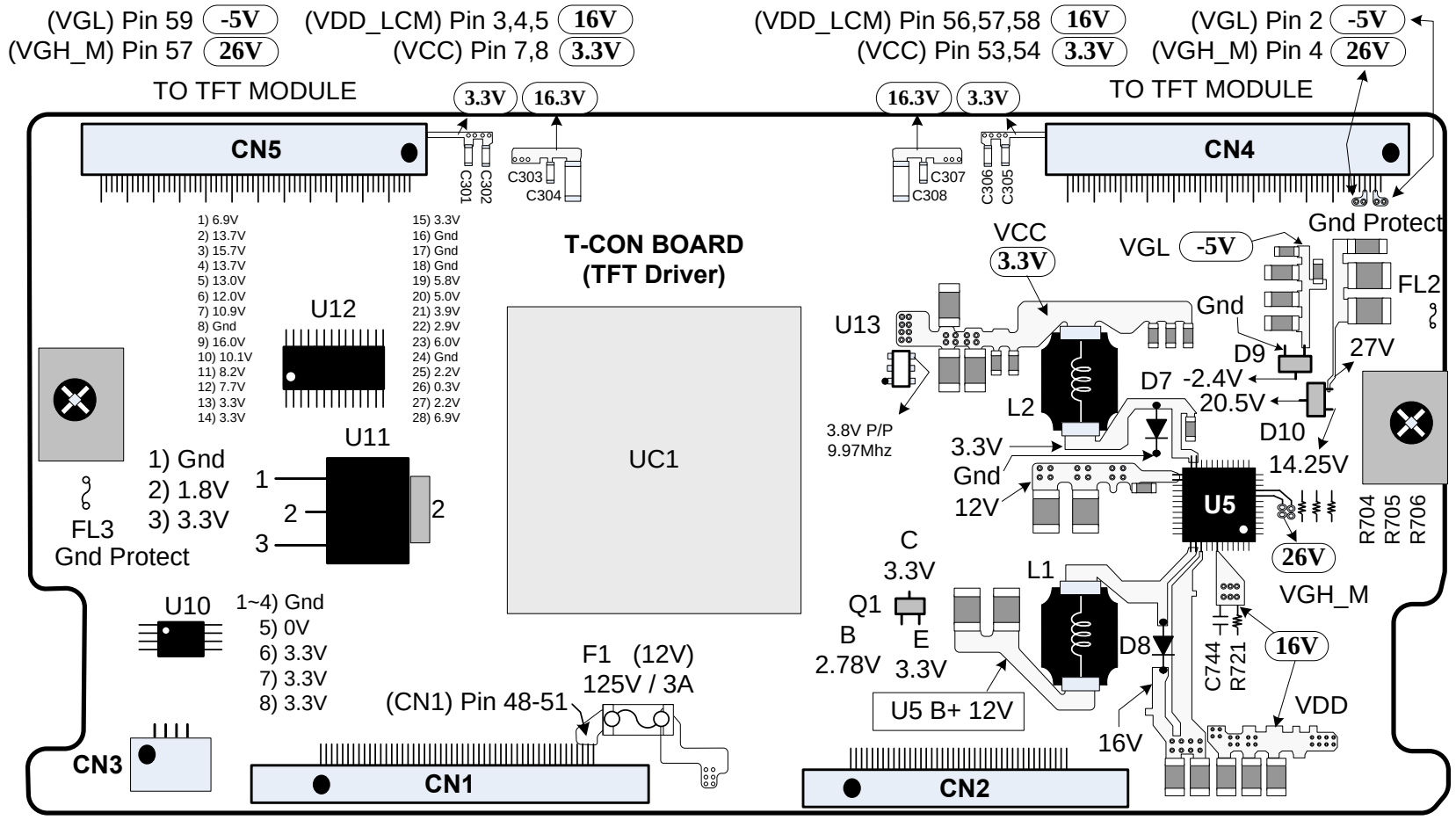
These Voltages can also be measured at the ribbon connectors delivering signals to the TFT panel
(**CN4** 26V pin 4, -5V pin 2, 3.3V pins 53, 54 and 16V pins 56, 57 and 58).
(**CN5** 26V pin 57, -5V pin 59, 3.3V pins 7, 8 and 16V pins 3,4 and 5).

See the 11X17 Foldout (Interconnect Diagram) for more details.

In the set the T-CON also receives the **P-DIM** voltage from the Main board on CN1 pin 8. Then the Controller **UC1** outputs **P-DIM** control signals now called Scan 1 and Scan 2 on the **CN3** connector, pins 2 and 3 to Inverter A **CN2**.

T-CON (TFT Drive) with (Shield Removed) Components Identified

p/n EAT60667401

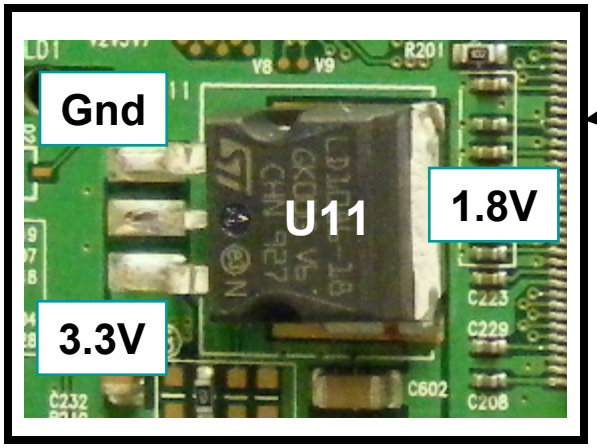


Warning:

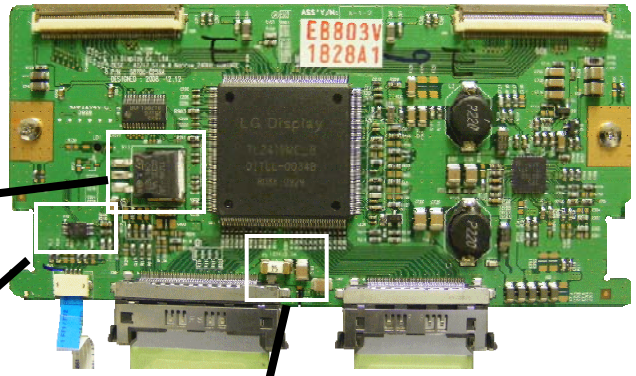
T-Con PWB under shield. Be sure to reinsert screws before operating set with shield removed.

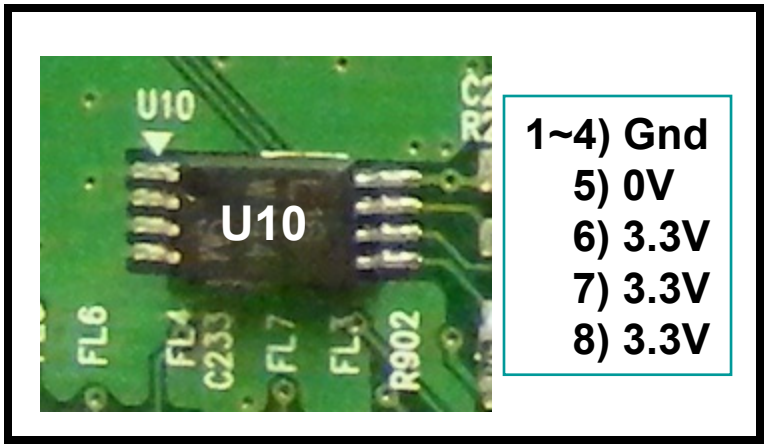
T-CON (TFT Drive) Board Checks

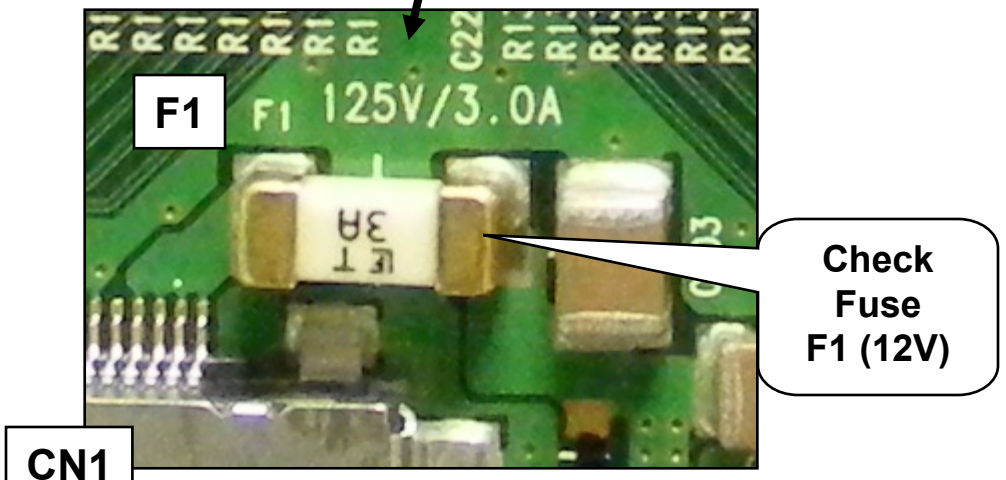
Check the Regulator for Correct Voltage



T-CON Board (Locations)

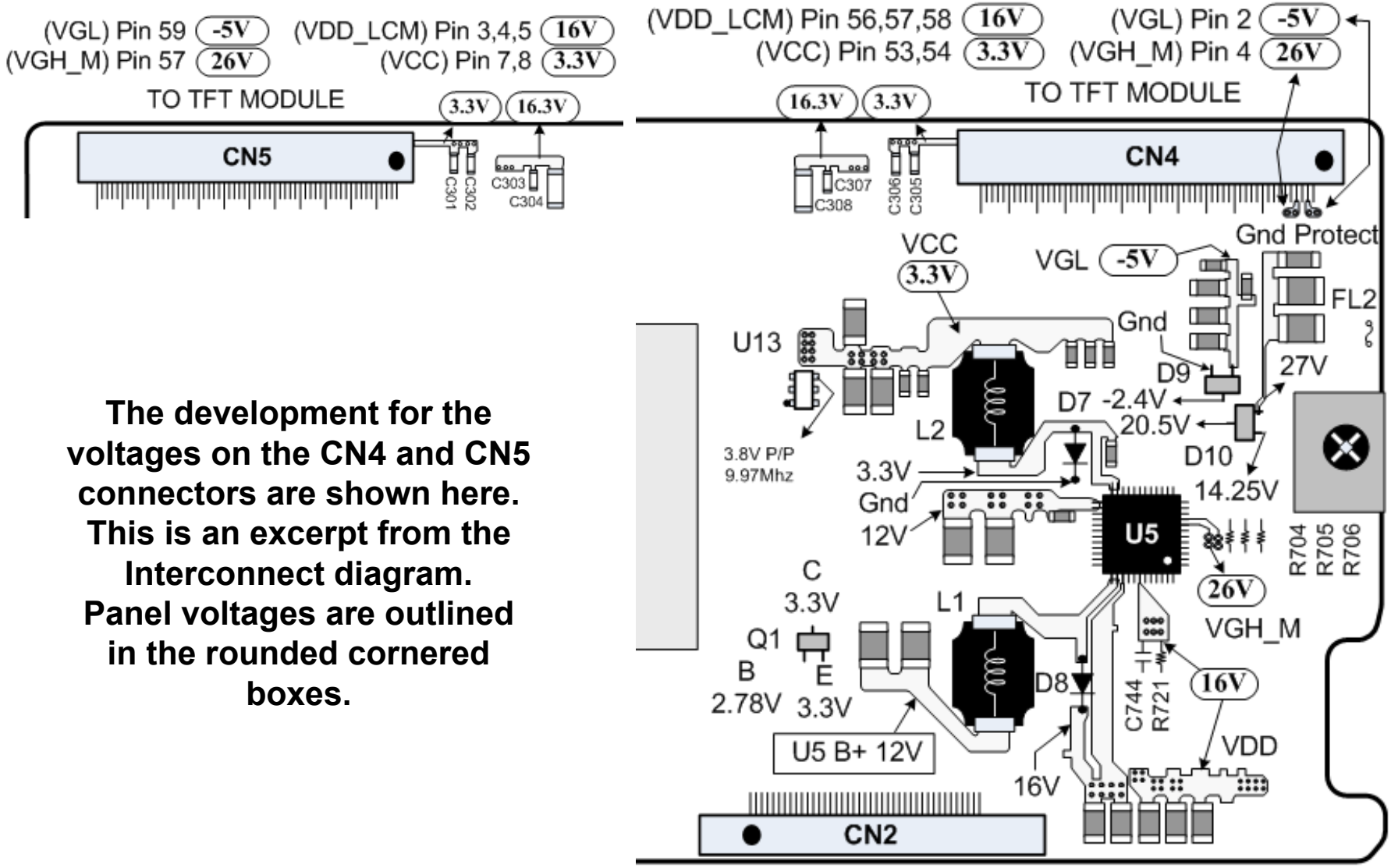






Check Fuse F1 for 12V
Voltage supplied from CN1
Pins 48, 49, 50, and 51.

T-CON (TFT Drive) Panel Voltage Development Checks



The development for the voltages on the CN4 and CN5 connectors are shown here. This is an excerpt from the Interconnect diagram. Panel voltages are outlined in the rounded cornered boxes.

T-CON Board Connector CN1 to Main Board Voltage and Diode Check

CN1 CONNECTOR "T-CON Board“ to P800 "Main"

Pin	Label	Run	Diode Check
48-51	12V T-CON	12.06V	3.18V
41	URSA_B-4	1.3V	1.1V
40	URSA_B+4	1.3V	1.1V
39	URSA_B-3	1.3V	1.1V
38	URSA_B+3	1.3V	1.1V
36	URSA_BCK-	1.1V	1.1V
35	URSA_BCK+	1.2V	1.1V
33	URSA_B-2	1.3V	1.1V
32	URSA_B+2	1.3V	1.1V
31	URSA_B-1	1.3V	1.1V
30	URSA_B+1	1.3V	1.1V
29	URSA_B-0	1.3V	1.1V
28	URSA_B+0	1.3V	1.1V
27	N/C	0V	Open
25	URSA_A-2	1.3V	1.1V
24	URSA_A+2	1.3V	1.1V

Pin	Label	Run	Diode Check
23	URSA_A-3	1.3V	1.1V
22	URSA_A+3	1.3V	1.1V
20	URSA_ACK-	1.2V	1.1V
19	URSA_ACK+	1.1V	1.1V
17	URSA_A-2	1.1V	1.1V
16	URSA_A+2	1.2V	1.1V
15	URSA_A-1	1.3V	1.1V
14	URSA_A+1	1.3V	1.1V
13	URSA_A-0	1.3V	1.1V
12	URSA_A+0	1.3V	1.1V
11	N/C	0V	Open
10	OPC_EN	0.6V	1.75V
9	N/C	0V	Open
8	PWM-DIM	*2.7V	1.3V
7	N/C	0V	Open

Pins 1, 18, 21, 26, 34, 37, 42, 43, 44, 45 and 46 are all ground.

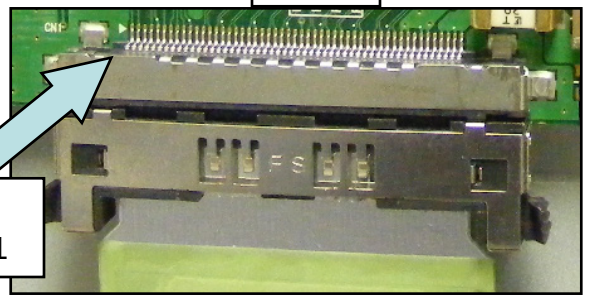
Pins 2, 3, 4, 5, 6 and 47 are all no connection.

Text in Blue are LVDS video signals.

*Pin 8 PWM-DIM 3.15V (Max 100%) to 0.6V (Min 0%) Customer’s Menu Backlight setting.

Diode Check taken with meter in Diode Mode with all Connectors Removed

CN1



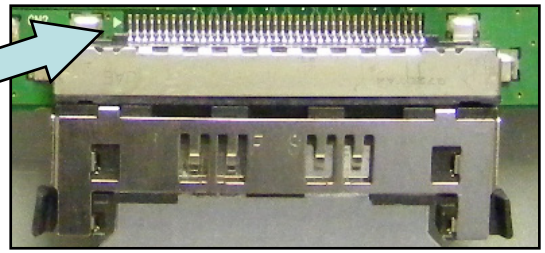
See arrow on the T-CON board CN1 indicating pin 1

T-CON Board Connector CN2 to the Main Board (Voltage and Diode Check)

CN2 "T-CON" to P801 CONNECTOR "Main"

Pin	Label	Run	Diode Test
1-9	n/c	n/c	n/c
10	URSA-C+0	1.28V	Open
11	URSA-C-O	1.2V	Open
12	URSA-C+1	1.3V	Open
13	URSA-C-1	1.2V	Open
14	URSA-C+2	1.3V	Open
15	URSA-C-2	1.2V	Open
16	Gnd	Gnd	Gnd
17	URSA-CCK+	1.23V	Open
18	URSA-CCK-	1.23V	Open
19	Gnd	Gnd	Gnd
20	URSA-C+3	1.3V	Open
21	URSA-C-3	1.2V	Open
22	URSA-C+4	1.13V	Open
23	URSA-C-4	1.18V	Open
24	Gnd	Gnd	Gnd
25	Gnd	Gnd	Gnd

See arrow on the T-CON board CN1 indicating pin 1



Pin	Label	Run	Diode Test
26	URSA-D+0	1.29V	Open
27	URSA-D-0	1.25V	Open
28	URSA-D+1	1.29V	Open
29	URSA-D-1	1.3V	Open
30	URSA-D+2	1.3V	Open
31	URSA-D-2	1.2V	Open
32	Gnd	Gnd	Gnd
33	URSA-DCK+	1.23V	Open
34	URSA-DCK-	1.29V	Open
35	Gnd	Gnd	Gnd
36	URSA-D+3	1.3V	Open
37	URSA-D-3	1.25V	Open
38	URSA-D+4	1.4V	Open
39	URSA-D-4	1.15V	Open
40-41	Gnd	Gnd	Gnd

CN2

Text in Blue are LVDS video signals.

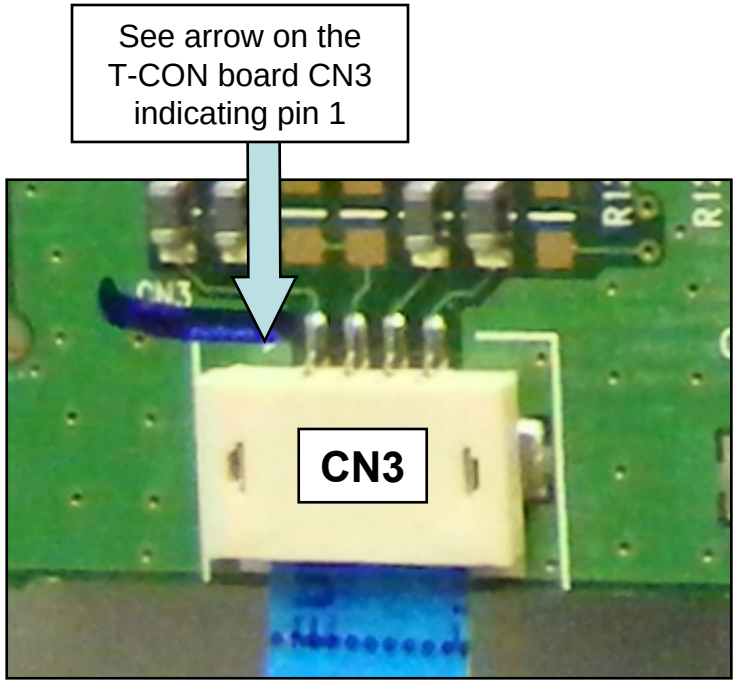
Diode Mode values taken with all Connectors Removed

T-CON Board Connector CN3 to Inverter A (Voltage and Diode Check)

CN3 "T-CON" to CN2 "Inverter A"

Pin	Label	Run	Diode Test
1	n/c	n/c	n/c
2	SCAN 1	0.67V~2.4V	Open
3	SCAN 2	0.67V~2.4V	Open
4	Gnd	Gnd	Gnd

Pins 2 SCAN 1 and 3 SCAN 2 (Digital Dimming)
Can vary according to the brightness level of the video signal and the OSD Backlight setting.
0.67V 0% to 2.4V 100%.
P-DIM Output from the Video Processing chip IC100 (Mstar) and input on CN1 pin 8 T-CON.



Diode Mode values taken with all Connectors Removed

MAIN BOARD SECTION

The Main board receives its operational B+ from the Power Supply via P400.
There are two LVDS cable feeds that go to the T-CON (TFT Driver) section. These carry the Dual 12 bit LVDS Video signals and the TruMotion 60Hz Dual 12 bit LVDS. These signals have already been prepared for the T-CON board. The Main board also includes the Tuner, Audio and Audio/Video inputs and selection circuits.

Input Voltages from SMPS.

STAND-BY

- **STBY 5V pins 7~10** Stand By
  For all other regulators except 12V/24V and output to Ft. IR

RUN

- **12V pins 13 and 14** For Tuner Voltage (Dropped to 5V) and output (Switched) for T-CON
- **24V pins 17 and 18.** For Audio Amplification (Converted to 24V_Amp)

The Main board also develops several B+ sources on the board.

STAND-BY VOLTAGES

- **3.3V_ST** Voltage_Stand By
  For Microprocessor and output to Ft. IR

LVDS

- **LVDS 12V** Not generated, but switched from the 12V arriving from the SMPS.

TUNER and VSB CIRCUIT

- **9V** For Tuner B+ Developed from 12V Input
- **5V TU** Tuner Developed from 9V above
- **3.3V_DVDD_PVSB** Digital Video Demodulator/Decoder
- **1.2V_DVDD_PVSB** Progressive Vestal Side Band
- **3.3V_DVDD_PVSB** (Dif + / Dif -) IF_P / IF_N

GENERAL

- **5V_General** For Video Processing / DDRs
- **5V_EXT** For Tuner Demodulator Low Voltage Development

AUDIO

- **3.3V**
- **1.8V_AMP** Amplifier (Audio)

Mstar IC600 Video and Micro Processors

- **1.2V**

IC3502 Tru-Motion IC.

- **1.26V_MEMC, 1.8V_MEMC, 1.8V_DDR, and 3.3V** Double Data Rate-Synchronous RAM Memory

Motion Estimation Motion Compensation

Input Signal Processing

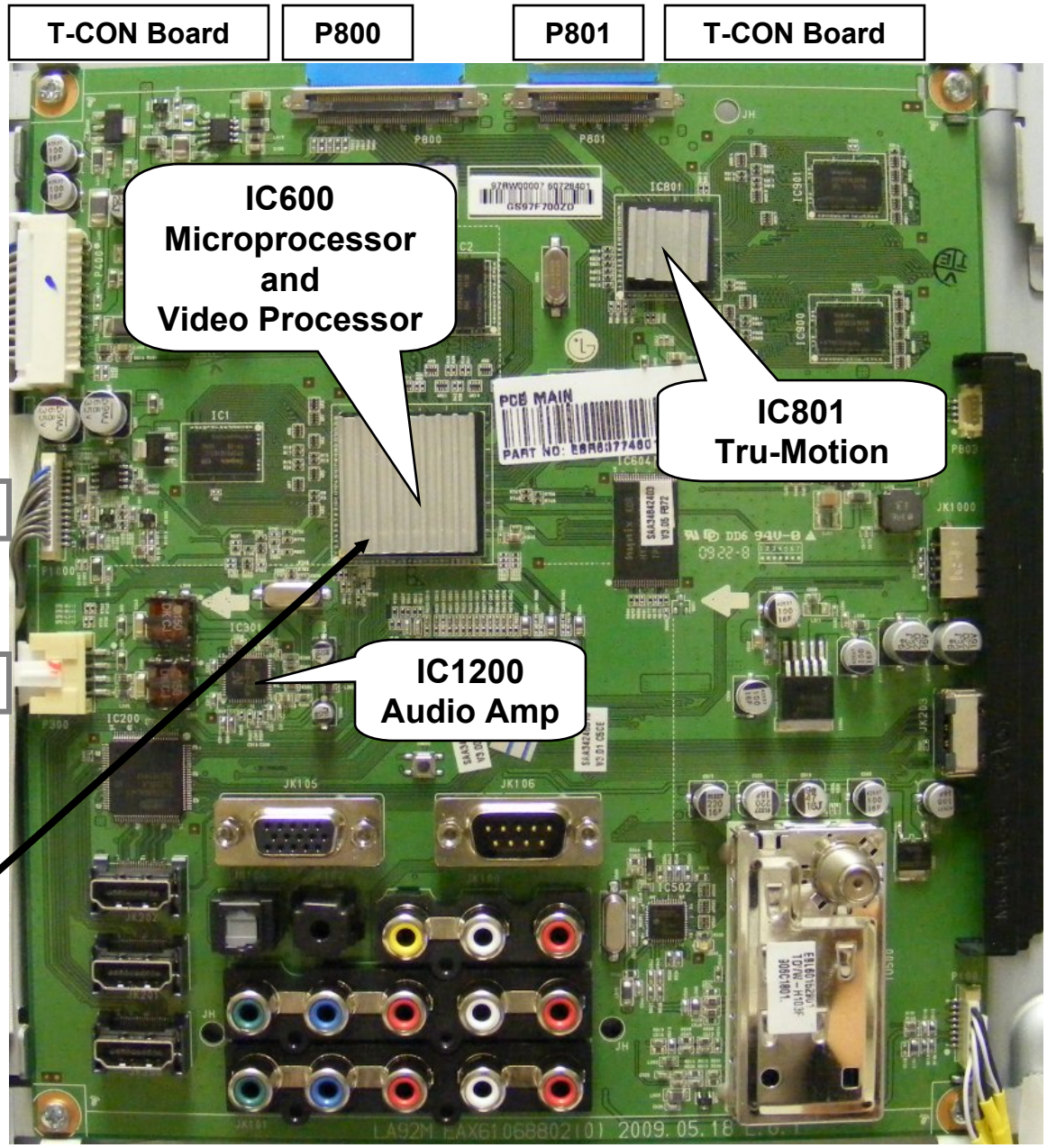
IC600 is the main Microprocessor and the main Signal Processor.
The Main board is responsible for :

- ATSC, NTSC, and QAM reception and processing
- RS 232 service only Port (software upgrades and home theater environment).
- Wired Remote Port
- (2) Component Input Y, Pr, Pb and Audio L R
- (3) HDMI Inputs (back) (1) HDMI (Side Input)
- RGB PC and (PC Audio)
- USB (software upgrades using flash drive). USB located on the Side.
- AV Composite (1 Rear and 1 Side Input)
- SIF and SAP

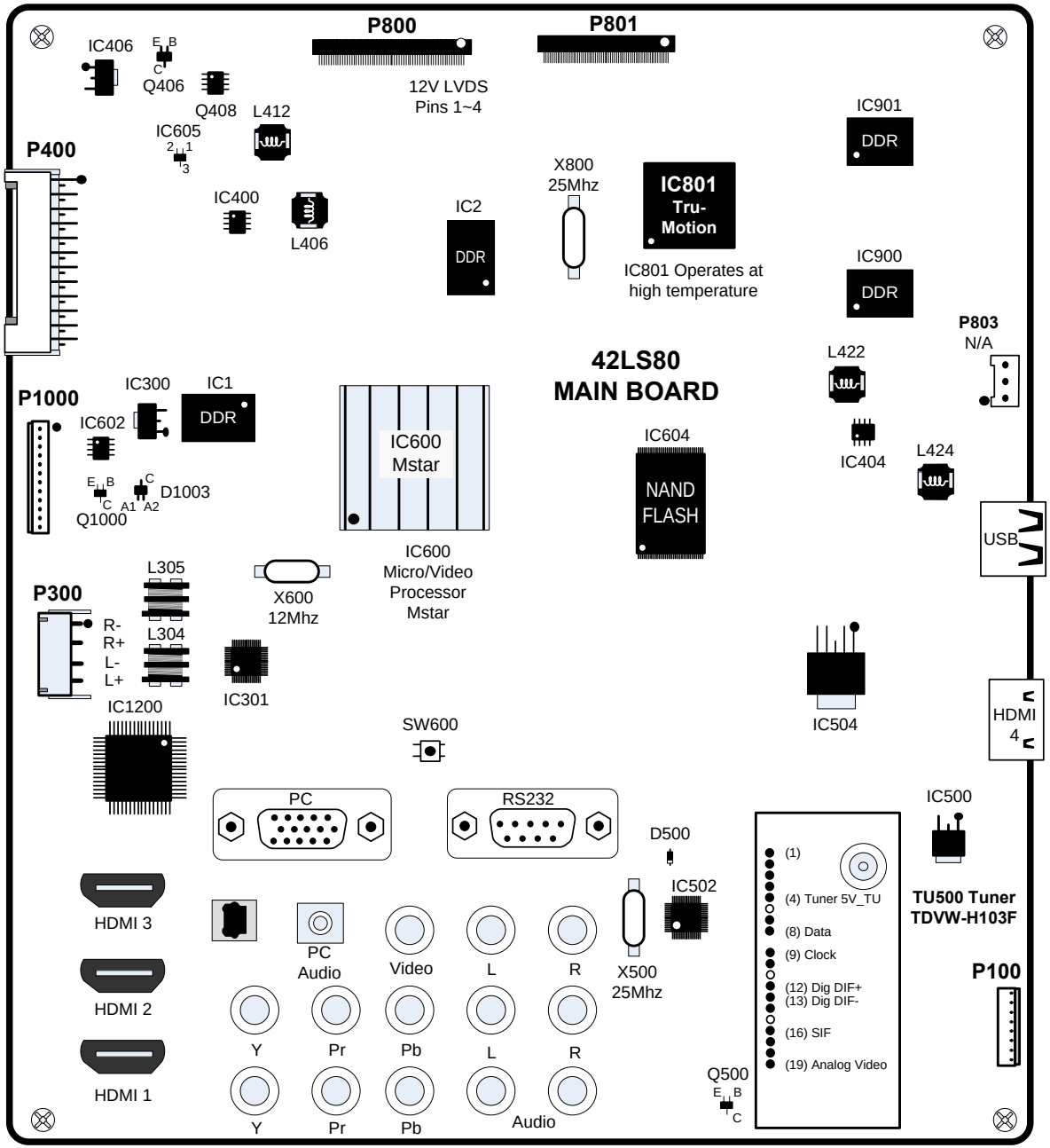
Output Signals

- Dual 12 Bit (24 pin) LVDS to the T-CON Board via **P800** and **P801**.
- Including 12V T-CON.
- Audio output signals to the Speakers **P300**.
- Digital Audio Output Coaxial and Optical Always active, (Note: HDMI converts to Stereo)
- ON OFF Controls to the SMPS turning on low voltage generation and Backlights.
- Backlight intensity control signal (Digital Dimming) **P-DIM** sent to the T-CON board.

Main Board Layout

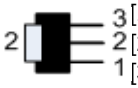


42SL80 Main Board (Front Side) Component Layout



42SL80 Main (Front Side) Component Voltages

IC300 +1.8V AMP Regulator



Pin	
[1]	Gnd
[2]	1.8V
[3]	3.3V

IC400 +1.8V_DDR Regulator

Pin	
[1]	n/c
[2]	3.2V
[3]	3.2V
[4]	n/c
[5]	n/c
[6]	1.8V
[7]	0.8V
[8]	Gnd

IC404 +1.8V_MEMC Regulator

Pin	
[1]	0.8V
[2]	Gnd
[3]	4.92V
[4]	6.5V
[5]	4.8V
[6]	1.8V
[7]	1.8V
[8]	4.8V

IC406 +3.3V_ST Regulator

Pin	
[1]	0V
[2]	3.3V
[3]	5.0V

IC500 9V Reg to IC501 Tuner 5V

Pin	
[1]	12V
[2]	Gnd
[3]	8.9V

IC504 +3.3V_PVSB Regulator

Pin	
[1]	4.94V
[2]	4.94V
[3]	Gnd
[4]	3.4V
[5]	1.25V

IC602 HDCP EEPROM

Pin	
[1]	Gnd
[2]	Gnd
[3]	5.0V
[4]	Gnd
[5]	3.3V
[6]	3.3V
[7]	5.0V
[8]	5.0V

IC605 Reset Gen for Power_Det

Pin	
[1]	Gnd
[2]	3.5V
[3]	3.3V

Q406 5V Switch Control

Pin	
B	0.6V
C	0V
E	Gnd

Q408 +5V/12VLVDS Switch

Pin	
[1]	5.1V
[2]	0.29V
[3]	11.9V
[4]	5.99V
[5]	11.98V
[6]	11.98V
[7]	5.06V
[8]	5.06V

Q500 Tuner Video Buffer

Pin	
B	1.7V
C	0V
E	2.3V

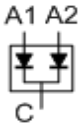
Q1000 Moving LED Inverter

Pin	
B	0V
C	3.3V
E	Gnd

D500 Speed Up Reset IC502

Pin	
C	3.4V
A	3.38V

D1003 Moving LED Routing

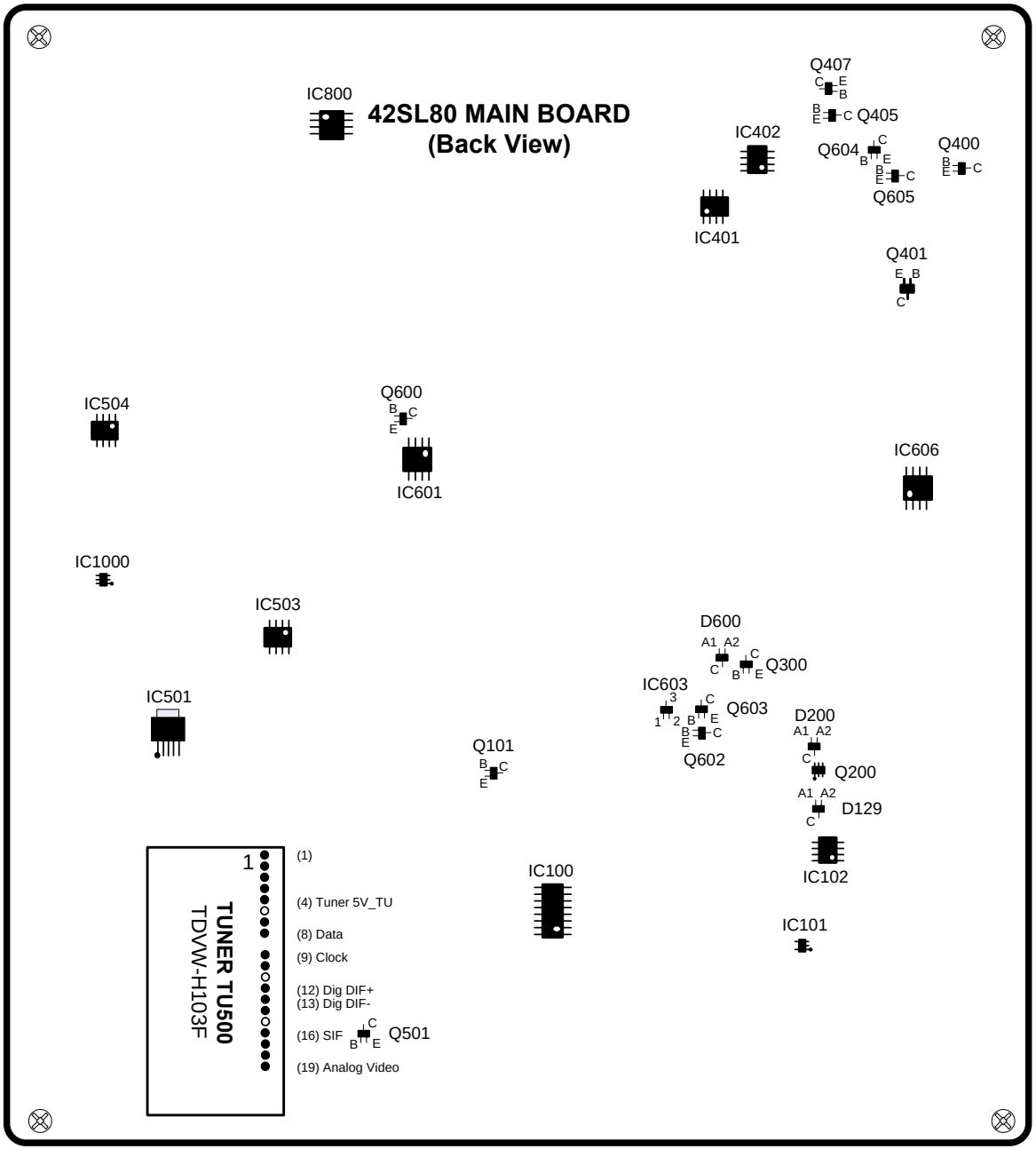


Pin	
A1	0V
C	0.1V
A2	0V

IC403 +1.6V_MEMC Regulator

Pin	
[1]	0V
[2]	0.8V
[3]	1.2V
[4]	1.2V
[5]	1.8V
[6]	5.0V
[7]	1.2V
[8]	5.0V

42SL80
Main Board
(Back Side)
Component Layout



42SL80 Main (Back Side) Component Voltages

IC100 — RS232 Rx/Tx

Pin	
[1]	3.3V
[2]	5.56V
[3]	0.02V
[4]	0.03V
[5]	5.5V
[6]	5.5V
[7]	5.5V
[8]	0V
[9]	3.29V
[10]	3.24V
[11]	n/c
[12]	3.31V
[13]	0V
[14]	5.5V
[15]	Gnd
[16]	3.29V

IC101 — SPIF Optical Audio

Pin	
[1]	0.03V
[2]	0V
[3]	0V
[4]	0V
[5]	0V

IC102 — RGB EEPROM

Pin	
[1]	Gnd
[2]	Gnd
[3]	Gnd
[4]	Gnd
[5]	3.3V
[6]	3.3V
[7]	3.18V
[8]	0V

IC401 — +1.26V_VDDC Regulator

Pin	
[1]	
[2]	Gnd
[3]	5.0V
[4]	6.0V
[5]	4.9V
[6]	0V
[7]	0V
[8]	3.2V

WARNING Measure Pin 1 with O-scope ONLY

IC402 — +3.3V_MEMC Regulator

Pin	
[1]	
[2]	Gnd
[3]	4.98V
[4]	7.6V
[5]	4.9V
[6]	3.3V
[7]	3.3V
[8]	0V

WARNING Measure Pin 1 with O-scope ONLY

IC405 — +5V EXT Regulator

Pin	
[1]	0.8V
[2]	Gnd
[3]	12V
[4]	9.6V
[5]	5V
[6]	4.97V
[7]	4.97V
[8]	1.9V

IC501 — +5V_TU for Tuner

Pin	
[1]	8.92V
[2]	1.88V
[3]	5.04V
[4]	0V
[5]	Gnd

IC503 — +1.2V_PVSB Regulator

Pin	
[1]	0V
[2]	3.3V
[3]	3.4V
[4]	0V
[5]	0V
[6]	1.2V
[7]	0.8V
[8]	0V

IC504 — +1.26V_PVSB Regulator

Pin	
[1]	0.8V
[2]	0V
[3]	11.8V
[4]	9.6V
[5]	5.0V
[6]	5.0V
[7]	5.0V
[8]	0.9V

IC601 — Serial Flash for Boot

Pin	
[1]	0.04V
[2]	3.2V
[3]	2.5V
[4]	0V
[5]	0V
[6]	0V
[7]	3.2V
[8]	3.2V

IC606 — Micro IC600 EEPROM

Pin	
[1]	Gnd
[2]	Gnd
[3]	Gnd
[4]	Gnd
[5]	3.24V
[6]	3.24V
[7]	0V
[8]	3.24V

IC800 — SPI Flash IC801 Memory

Pin	
[1]	0V
[2]	0.8V
[3]	3.2V
[4]	0V
[5]	0V
[6]	0.09V
[7]	3.2V
[8]	3.2V

IC1000 — USB +5V Switch

Pin	
[1]	4.95V
[2]	Gnd
[3]	3.21V
[4]	4.95V
[5]	0V
[6]	4.95V

IC603 — Reset Gen for IC600

Pin	
[1]	0V
[2]	0V
[3]	3.3V

Q101 — IR RS232 Buffer

Pin	
B	0.634V
C	0V
E	0V

Q200 — HDMI CEC

Pin	
[1]	3.2V
[2]	3.2V
[3]	0V
[4]	0V
[5]	0V
[6]	3.16V

Q300 — Audio Mute Switch

Pin	
B	0.62V
C	0.01V
E	Gnd

Q400 — PWR On/Off Switch

Pin	
B	2.9V
C	5V
E	5V

Q401 — INV_ON Inverter

Pin	
B	0.05V
C	4.35V
E	Gnd

Q405 — 12V LVDS Switch Control

Pin	
B	0.05V
C	0.65V
E	Gnd

Q407 — 12V LVDS Source

Pin	
B	0.65V
C	0.0V
E	Gnd

Q501 — Tuner SIF Buffer

Pin	
B	2.4V
C	0V
E	3.0V

Q600 — Write Protect for IC601

Pin	
B	0V
C	2.5V
E	Gnd

Q602 — S5/S6 Reset Switch for Mstar

Pin	
B	0V
C	3.28V
E	0V

Q603 — Power_On_ Delay Switch

Pin	
B	0V
C	0.04V
E	Gnd

Q604 — Power_Det Switch

Pin	
B	0V
C	3.3V
E	Gnd

Q605 — Power_Det +12V Side

Pin	
B	0.65V
C	0.0V
E	Gnd

D129 — 5V Routing for IC1200

Pin	
A1	0.03V
C	4.5V
A2	5.1V

D200 — Shunt for Q200

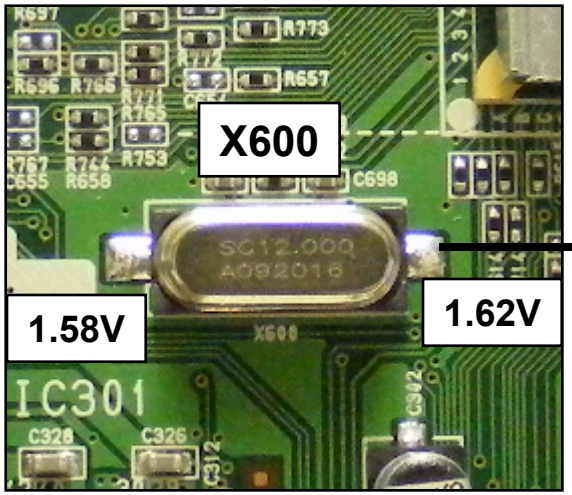
Pin	
A1	0V
C	3.1V
A2	3.2V

D600 — Audio Mute Routing

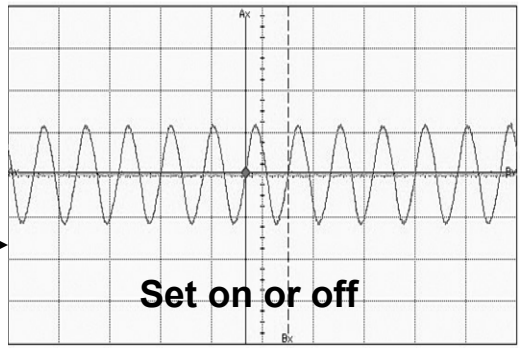
Pin	
A1	0.01V
C	2.7V
A2	3.29V

Main Board X600 and X800 Check

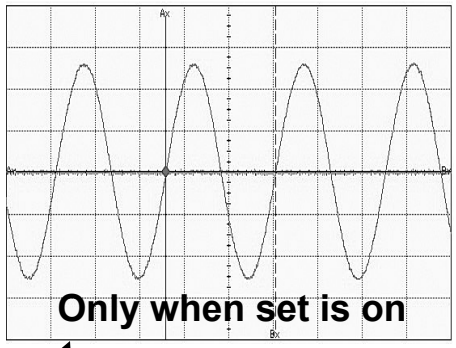
IC600 Microprocessor Crystal

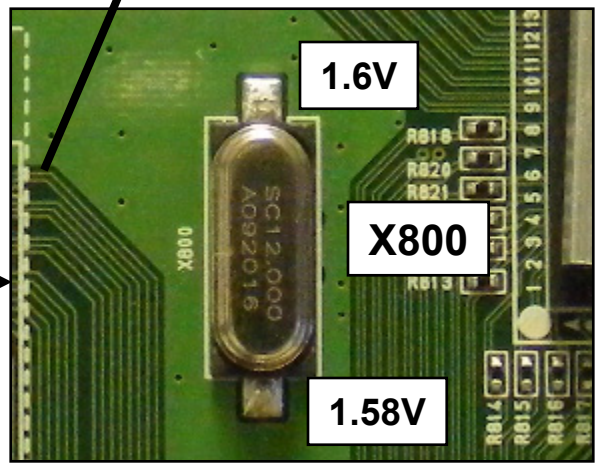


2.28Vp/p
12Mhz



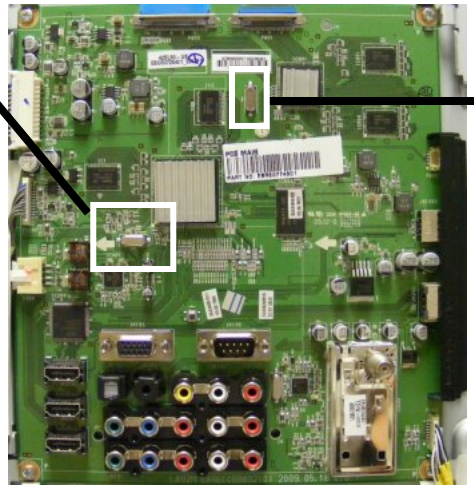
2.8Vp/p
12Mhz





Crystal for TruMotion IC801

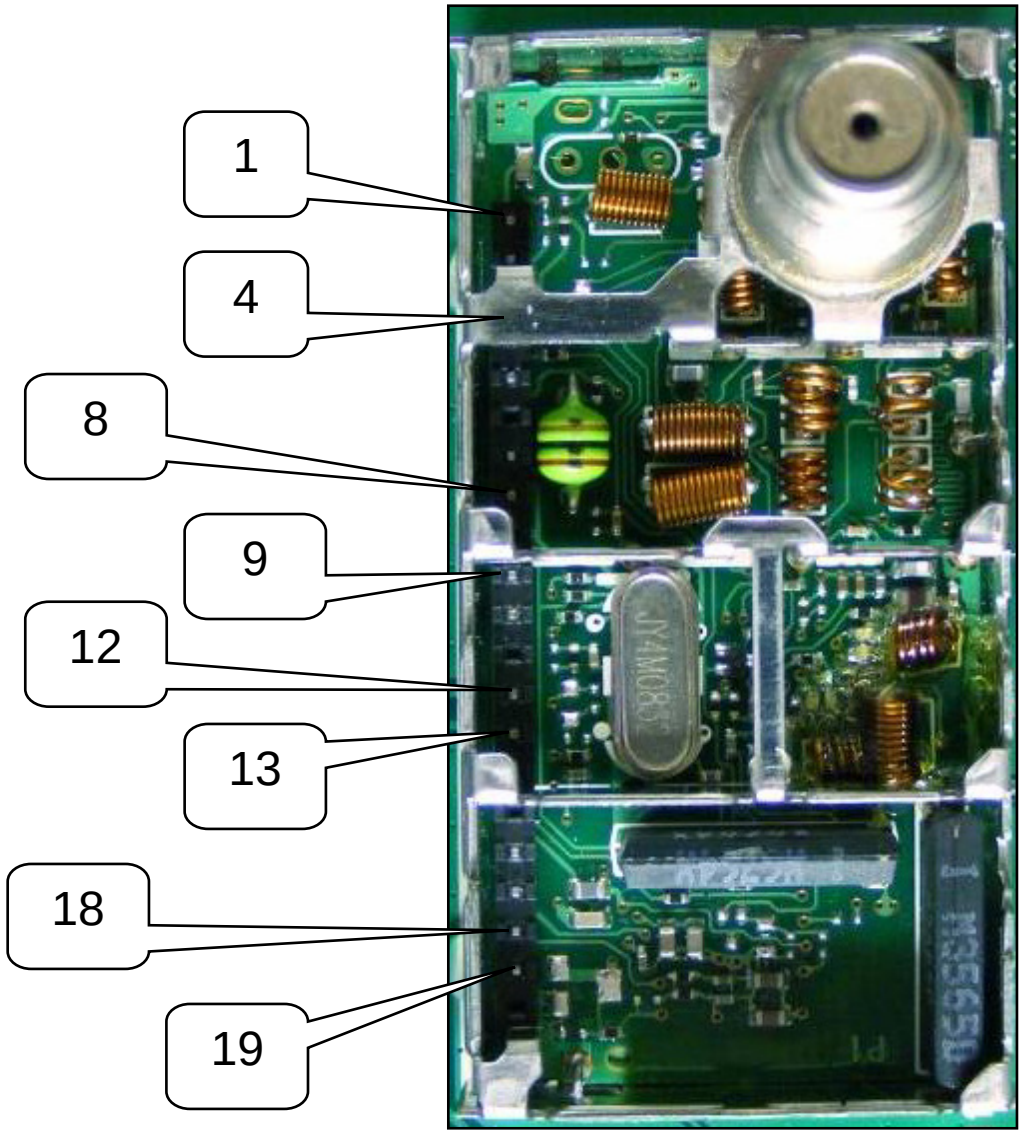
X600
Location

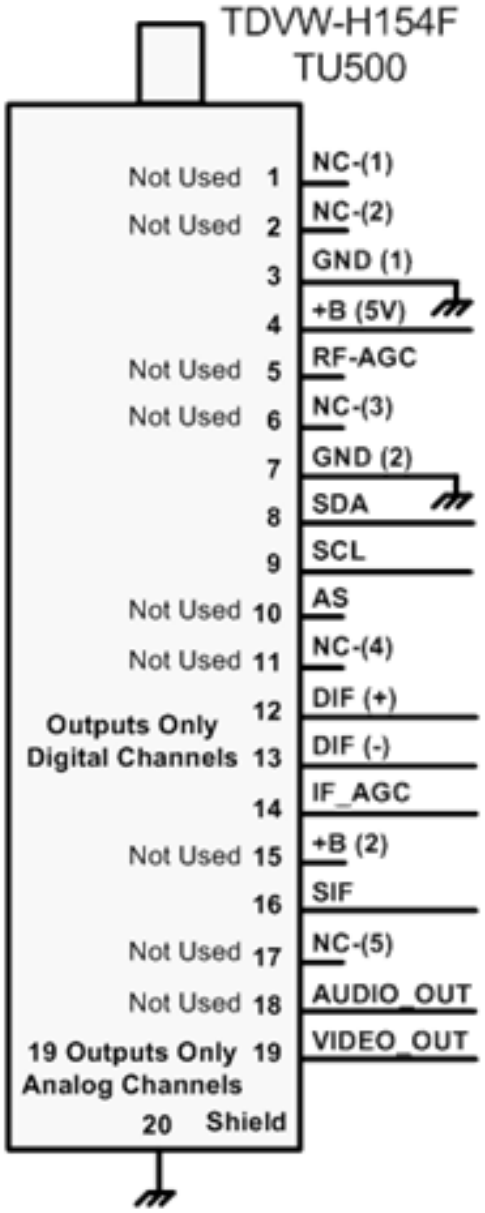


X800
Location

MAIN Board

Main Board Tuner with Shield Off (Pin ID)





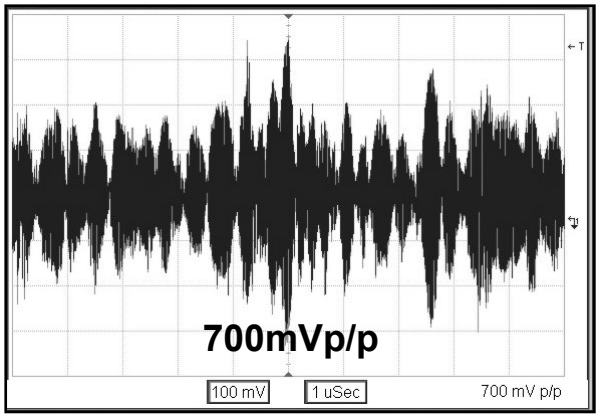
Main Board Tuner Video and SIF Output Check

MAIN Board Tuner Location

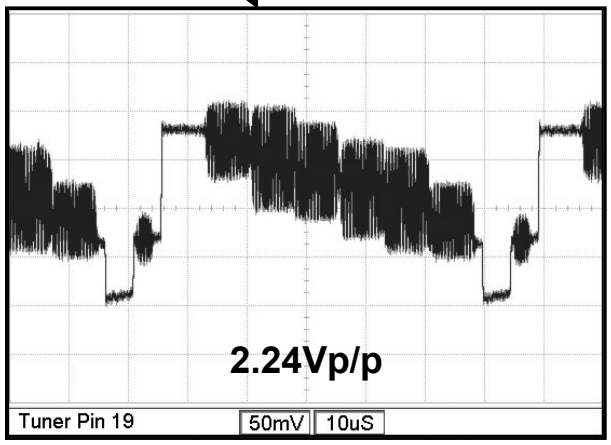
USING COLOR BAR SIGNAL INPUT

Note: "Dig IF" Signal only when receiving a Digital Channel.

Pin 12 and Pin 13 "Dig IF" Signal

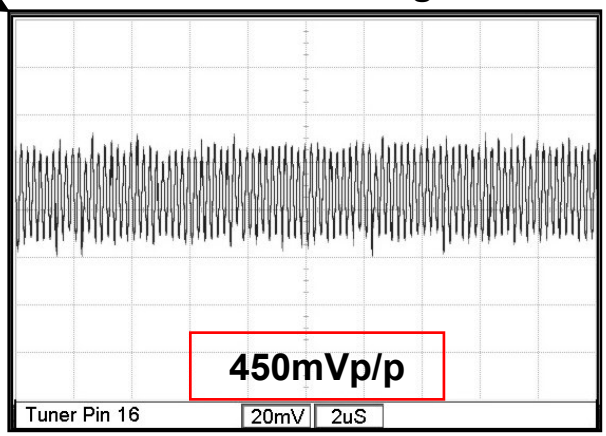


Pin 19 "Video" Signal

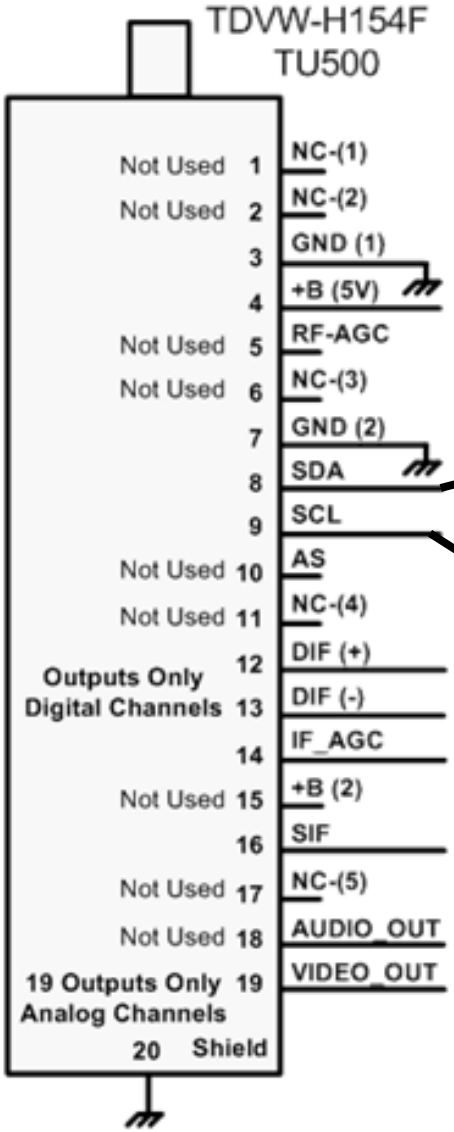


Note: "Video Out" Signal only when receiving an analog Channel.

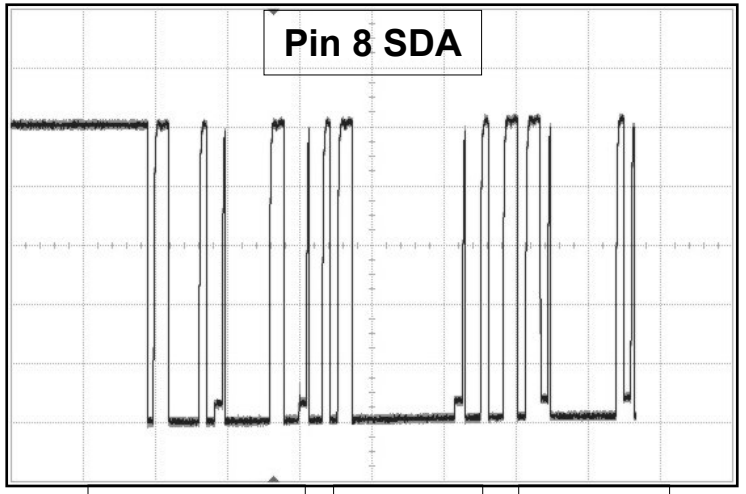
Pin 16 "SIF" Signal



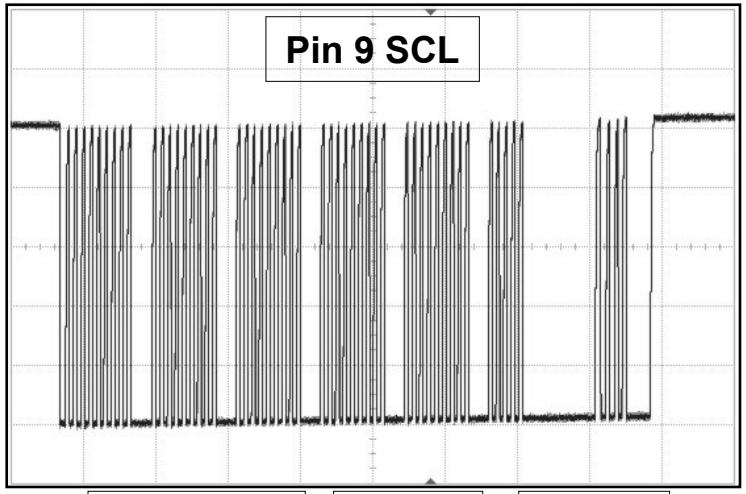
Main Board Tuner Clock and Data Lines



Note:
SCL and SDA only active during an actual Channel Change.



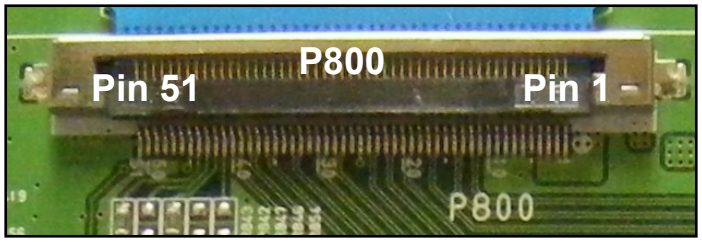
1V per/div **100uS** **5V p/p**



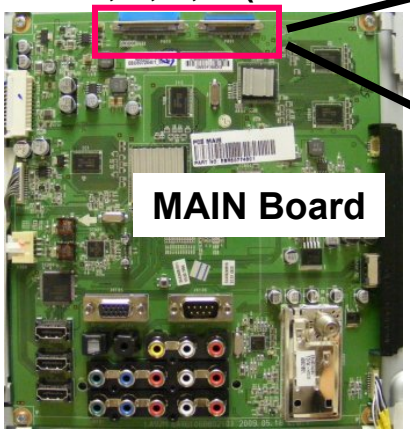
1V per/div **100uS** **5V p/p**

Main Board LVDS P800 Video Output Check

To confirm that the Main Board is outputting Picture Content signals, check P800 (LVDS) cable for output. Check pins 11-14,16-17, 19-24, 27-30, 32-33 and 35-40. Pins 35-36 carry the clock for TA and 19-20 carry the clock for TB. These signals vary from each other, but looking for signals like the ones shown below on any of these pins will confirm the output of video content. This signal is using standard SMTE Color Bar output from a generator as the input source.

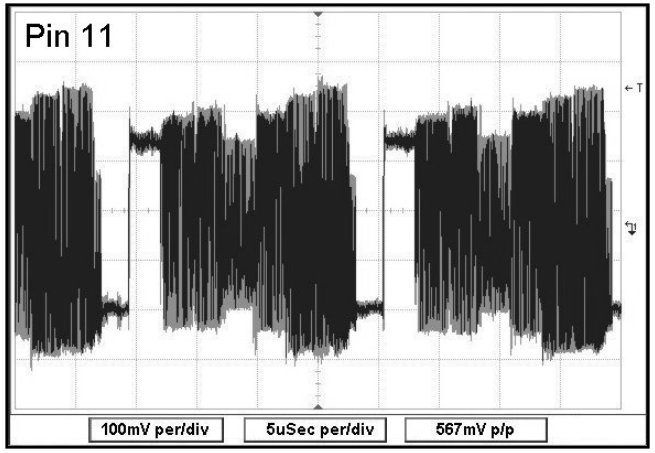


Pin 1, 2, 3, 4 (LVDS 12V)



P800 Location

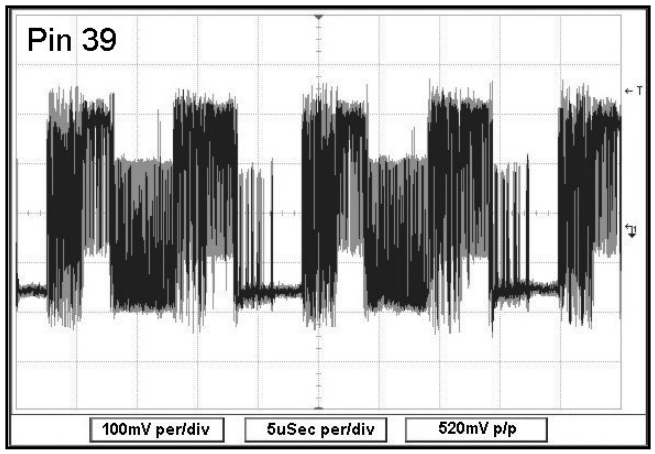
Pin 11



2uS

500nS

Pin 39



2uS

500nS

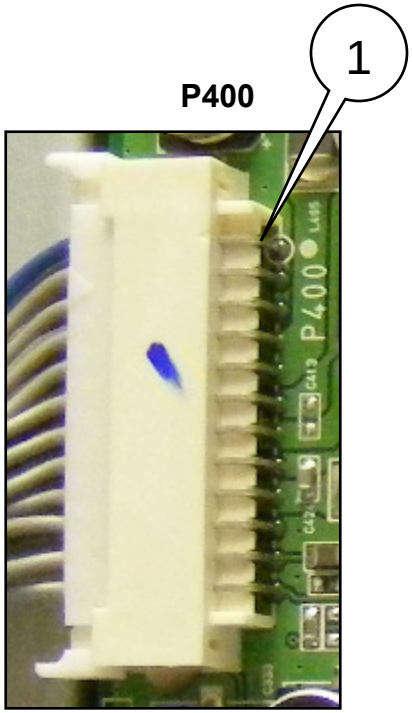
This is just a sample of two pins on the LVDS. There are 20 pins on P801 carrying video.

Main Board Connector P400 to Power Supply Voltage and Diode Check

P400 "Main" to P201 "SMPS"

Pin	Label	STBY	Run	Diode Check
1	nc	nc	nc	nc
2	PWR on	0V	4.9V	2.7V
3-6	Gnd	Gnd	Gnd	Gnd
7-10	5.2V	5.14V	5.14V	1.1V
11-12	Gnd	Gnd	Gnd	Gnd
13-14	12V	0V	11.9V	2.1V
15-16	Gnd	Gnd	Gnd	Gnd
17-18	24V	0V	24.7V	Open
19	nc	nc	nc	nc
20	INV.ON	0V	4.3V	Open
21	[1]A-DIM	0V	1.8V	Open
22	ERROR	0V	0V	Open
23	nc	nc	nc	nc
24	[2]PDIM	0V	0V	Open

Stand By 5V

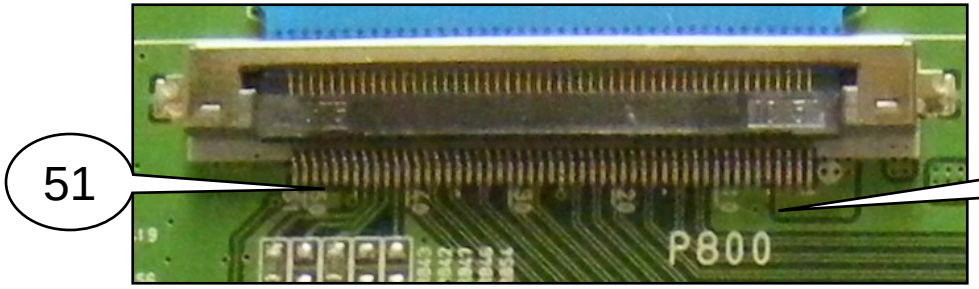


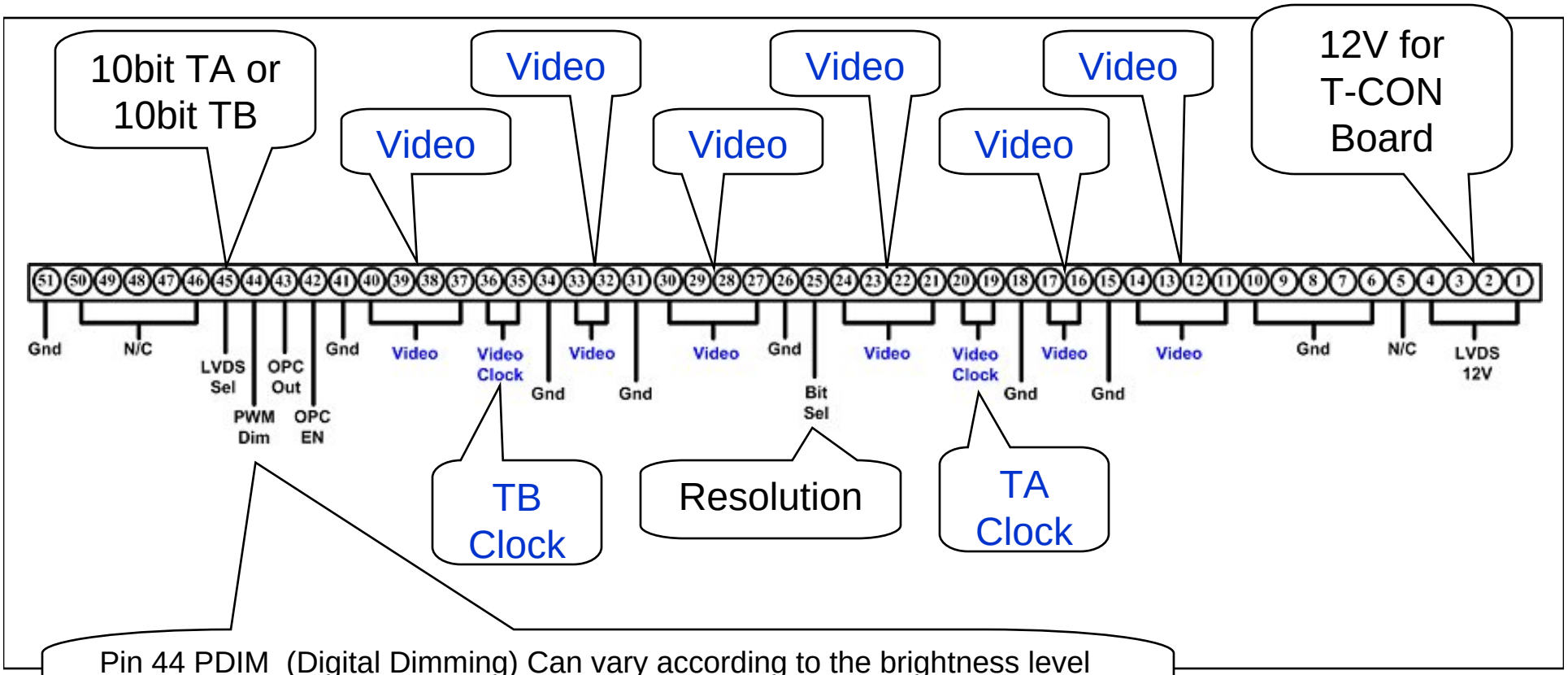
[1](A-DIM) Pin 21 Fixed and not used

[2] PDIM Pin 24 is open on the Main Board

Diode Check taken with meter in Diode Mode with all Connectors Removed

Main Board LVDS Connector P800 Pin Identification





Pin 44 PDIM (Digital Dimming) Can vary according to the brightness level of the video signal and the OSD Backlight setting. 0.6V 0% to 3.3V 100%. Output from the Video Processing chip IC100 (Mstar).

Main Board Connector P800 to T-CON Voltage and Diode Check

Diode Check taken with meter in Diode Mode with all Connectors Removed

P800 "Main" CONNECTOR to CN1 "T-CON Board“

Pin	Label	Run	Diode Check
1~4	12V T-CON	12.06V	3.18V
11	URSA_B-4	1.3V	1.1V
12	URSA_B+4	1.3V	1.1V
13	URSA_B-3	1.3V	1.1V
14	URSA_B+3	1.3V	1.1V
16	URSA_BCK-	1.1V	1.1V
17	URSA_BCK+	1.2V	1.1V
19	URSA_B-2	1.3V	1.1V
20	URSA_B+2	1.3V	1.1V
21	URSA_B-1	1.3V	1.1V
22	URSA_B+1	1.3V	1.1V
23	URSA_B-0	1.3V	1.1V
24	URSA_B+0	1.3V	1.1V
25	N/C	N/C	N/C
27	URSA_A-2	1.3V	1.1V

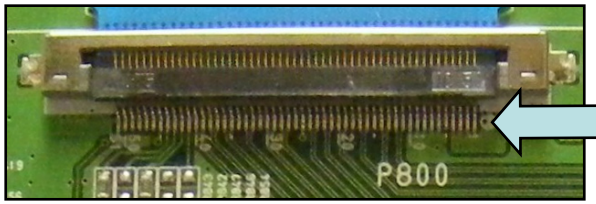
Pin	Label	Run	Diode Check
28	URSA_A+2	1.3V	1.1V
29	URSA_A-3	1.3V	1.1V
30	URSA_A+3	1.3V	1.1V
32	URSA_ACK-	1.2V	1.1V
33	URSA_ACK+	1.1V	1.1V
35	URSA_A-2	1.1V	1.1V
36	URSA_A+2	1.2V	1.1V
37	URSA_A-1	1.3V	1.1V
38	URSA_A+1	1.3V	1.1V
39	URSA_A-0	1.3V	1.1V
40	URSA_A+0	1.3V	1.1V
41	N/C	N/C	N/C
42	OPC_EN	0.6V	1.75V
43	N/C	N/C	N/C
44	PWM-DIM	*3.2V	1.3V
45	N/C	N/C	N/C

Pins 5, 41, 43, 46, 47, 48, 49 and 50 are all no connection.

Pins 6,7,8,9,10, 15, 18, 26, 31, 34, and 51 are all ground.

Text in Blue are LVDS video signals.

*Pin 44 PWM-DIM 3.2V (Max 100%) to 0.6V (Min 0%) Customer’s Menu Backlight setting. The T-CON then routes P-DIM to the Ballast.



(Pin 1) is on the right

Main Board Connector P801 to the T-CON Board Voltage and Diode Check

P801 CONNECTOR "Main" to CN2 "T-CON"

Pin	Label	Run	Diode Test
1-2	Gnd	Gnd	Gnd
3	URSA-D-4	1.15V	Open
4	URSA-D+4	1.4V	Open
5	URSA-D-3	1.25V	Open
6	URSA-D+3	1.3V	Open
7	Gnd	Gnd	Gnd
8	URSA-DCK-	1.29V	Open
9	URSA-DCK+	1.23V	Open
10	Gnd	Gnd	Gnd
11	URSA-D-2	1.2V	Open
12	URSA-D+2	1.3V	Open
13	URSA-D-1	1.3V	Open
14	URSA-D+1	1.29V	Open
15	URSA-D-0	1.25V	Open
16	URSA-D+0	1.29V	Open
17	Gnd	Gnd	Gnd
18	Gnd	Gnd	Gnd

Pin	Label	Run	Diode Test
19	URSA-C-4	1.18V	Open
20	URSA-C+4	1.13V	Open
21	URSA-C-3	1.2V	Open
22	URSA-C+3	1.3V	Open
23	Gnd	Gnd	Gnd
24	URSA-CCK-	1.23V	Open
25	URSA-CCK+	1.23V	Open
26	Gnd	Gnd	Gnd
27	URSA-C-2	1.2V	Open
28	URSA-C+2	1.3V	Open
29	URSA-C-1	1.2V	Open
30	URSA-C+1	1.3V	Open
31	URSA-C-O	1.2V	Open
32	URSA-C+0	1.28V	Open
33	n/c	n/c	n/c
34-41	n/c	n/c	n/c

Text in Blue are LVDS video signals.

Diode Mode values taken with all Connectors Removed

(Pin 1) is on the right

Main Board Connector P1000 to (Ft. IR/LED Control) Voltage and Diode Check

P1000

P1000 CONNECTOR "MAIN Board" to P100 "Front IR / LED Board Assy"

Pin	Label	STBY	Run	Diode Check
1	SCL	0V	3.2V	1.6V
2	SDA	0V	3.2V	1.6V
3	Gnd	Gnd	Gnd	Gnd
4	Key1	3.26V	3.26V	1.0V
5	Key2	3.26V	3.26V	1.3V
6	5V ST	5.1V	5.1V	1.1V
7	Gnd	Gnd	Gnd	Gnd
8	Warm_ST	Gnd	Gnd	Gnd
9	IR	4.18V	4.18V	Open
10	Gnd	Gnd	Gnd	Gnd
11	3.3V_ST	3.31V	3.31V	0.67V
12	PWR_ON	0V	3.29V	Open

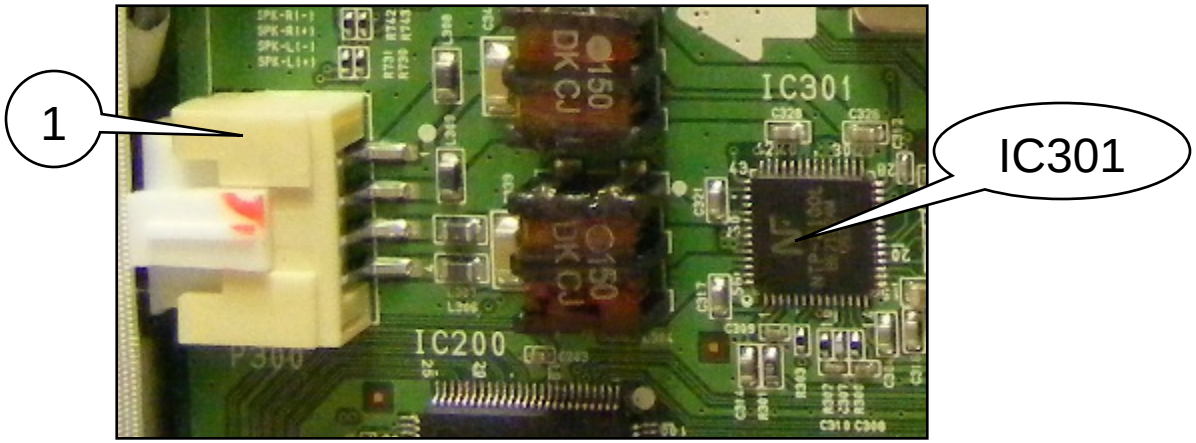
Diode Check taken with meter in Diode Mode with all Connectors Removed

Main Board Connector P300 to Speakers Voltage and Diode Check

P300 CONNECTOR "Main" to "Speakers"

Pin	LABEL	SBY	Run	Diode Check
1	SPK-R(-)	0V	12.0V	2.63V
2	SPK-R(+)	0V	12.0V	2.63V
3	SPK-L(-)	0V	12.0V	2.63V
4	SPK-L(+)	0V	12.0V	2.63V

Use speaker out to test for defective Audio Amp IC301



Diode Check taken with meter in Diode Mode with all Connectors Removed

Side A/V Board Connector P100 to Main P101 Voltage and Diode Check

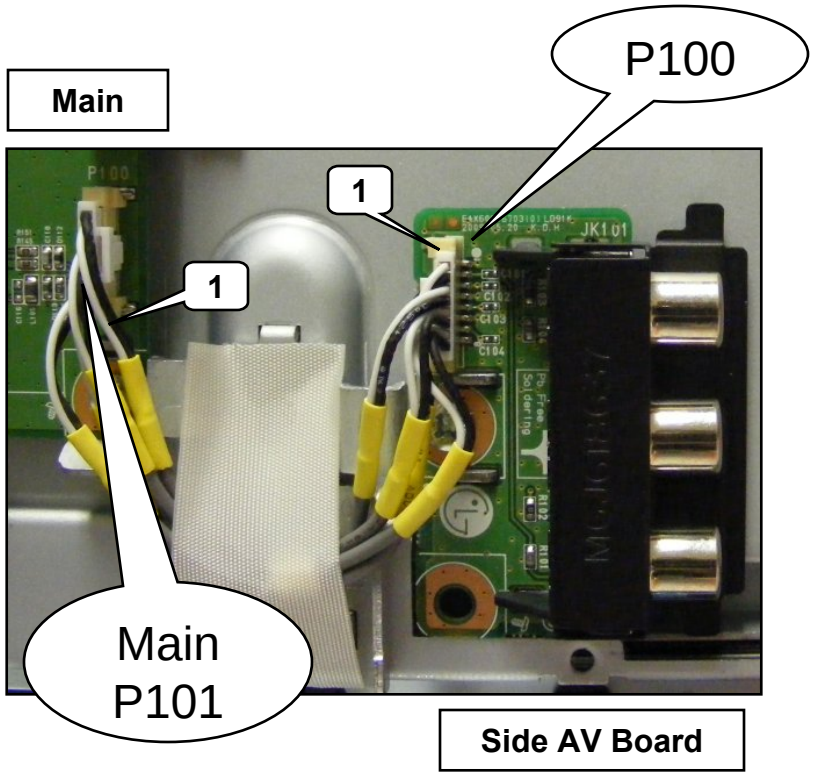
P101 Connector "Side A/V IN Board" to P100 "Main"

Pin	Label	STBY	Run	Diode Check
1	Gnd	Gnd	Gnd	Gnd
2	CVBS_IN	0V	0V	Open
3	AV_DET	0V	0V	Open
4	Gnd	Gnd	Gnd	Gnd
5	AV_L_IN	0V	0V	Open
6	Gnd	Gnd	Gnd	Gnd
7	AV_R_IN	0V	0V	Open
8	Gnd	Gnd	Gnd	Gnd

P100 Connector "Main" to P100 " Side A/V IN Board"

Pin	Label	STBY	Run	Diode Check
8	Gnd	Gnd	Gnd	Gnd
7	AV_R_IN	0V	0V	Open
6	Gnd	Gnd	Gnd	Gnd
5	AV_L_IN	0V	0V	Open
4	Gnd	Gnd	Gnd	Gnd
3	AV_DET	0V	0V	Open
2	CVBS_IN	0V	0V	0.07V
1	Gnd	Gnd	Gnd	Gnd

Diode Check taken with meter in Diode Mode with all Connectors Removed



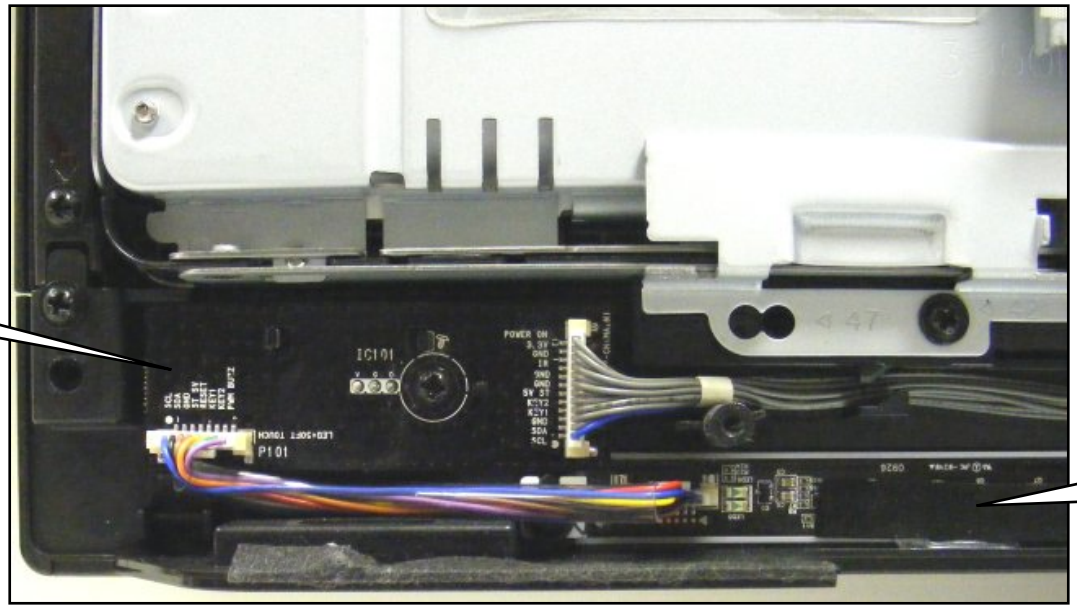
FRONT IR SECTION

The Front IR board contains the Infrared receiver and the Intelligent Sensor.

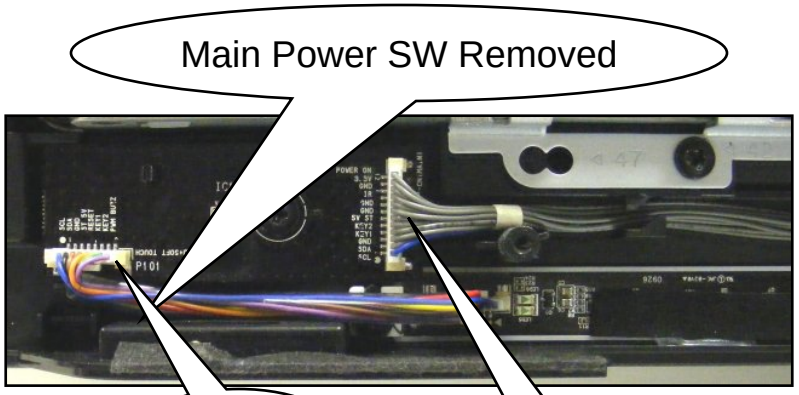
This board receives its B+ (STBY5V) from the Main Board. It also has connections to the side Key board. The 3.3V pull up for the Soft Touch Keys is routed from the Main board through the Front IR board to the Soft Touch Key board.

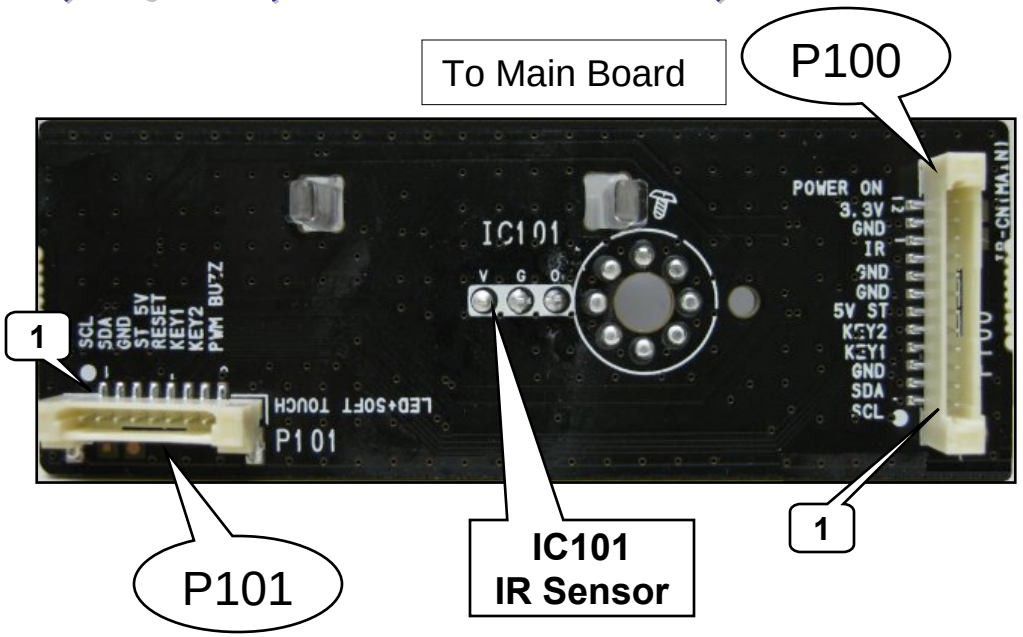
The Front Power LEDs are now on the Soft Touch Key Board section and pulsate incrementally as the set turns on and decrease as the set turns off. This is accomplished using an LED driver IC which communicates with the Main board via Clock and Data lines.

There are several Zener diodes on the board as well and since it receives STAND-BY 5V (STBY 5V) it could make the Power Supply or the Main board appear to be defective if a short was introduced to the stand by line.



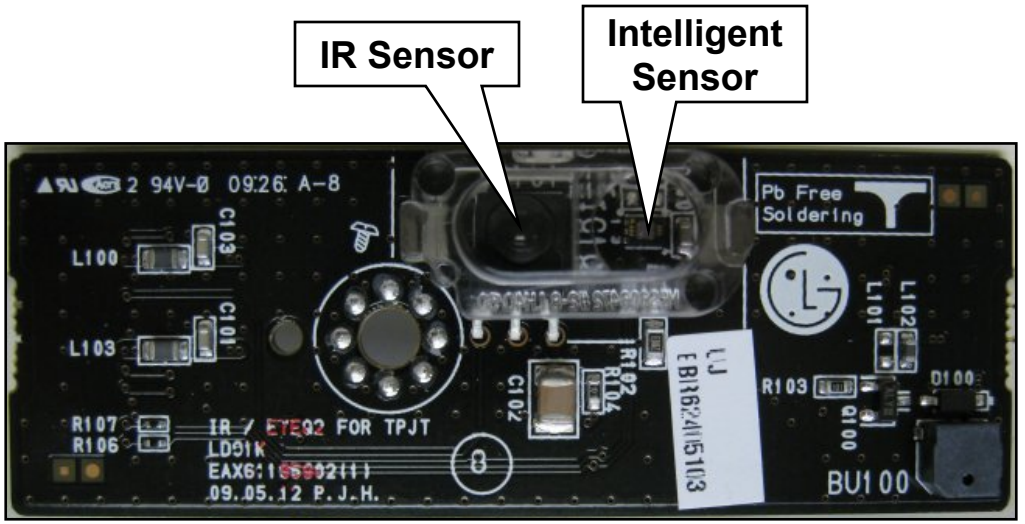
Front Board Assembly (IR and Power LED) Layout (Front and Back View)



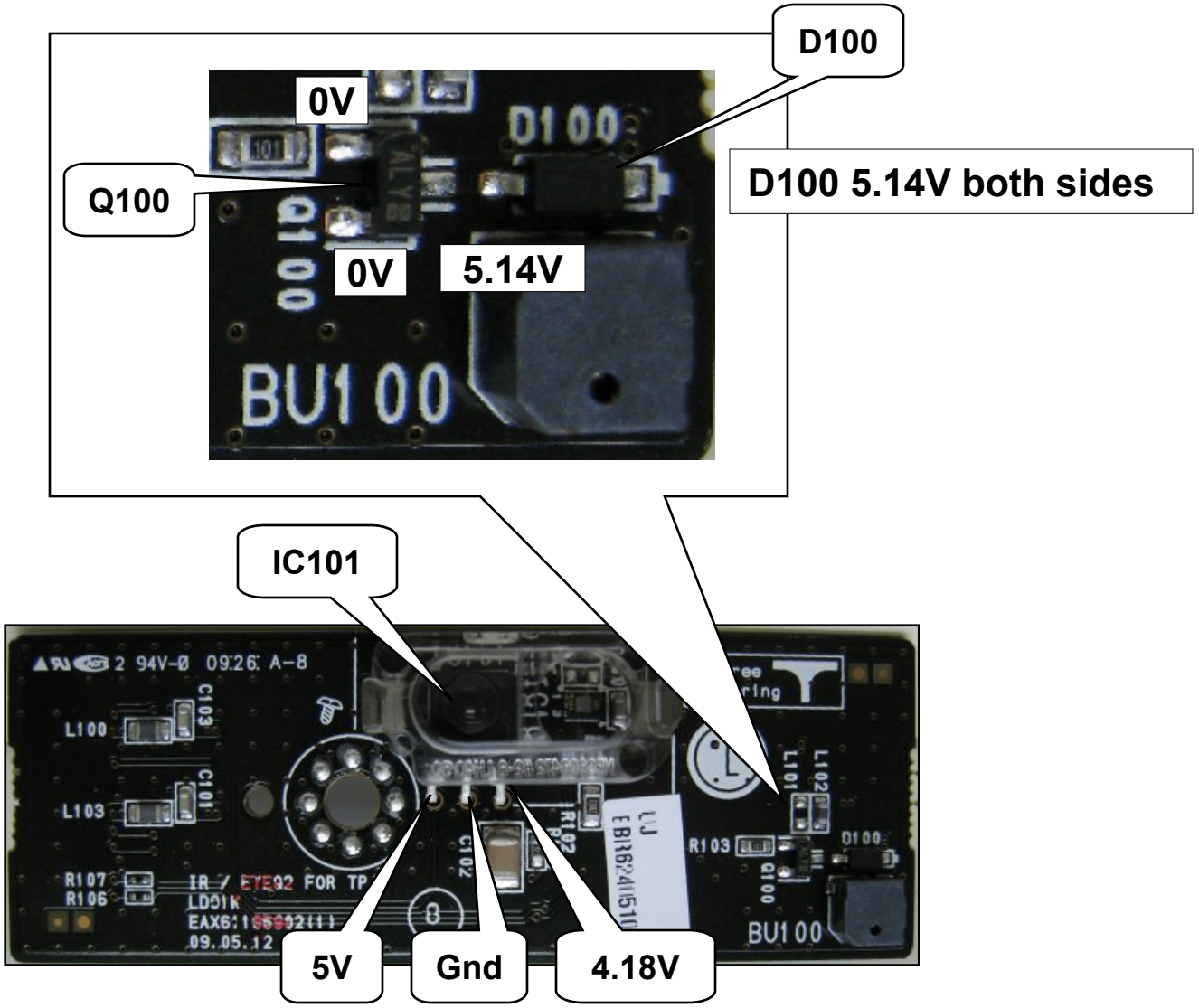


Note: STBY5V is routed to this board. Be aware of a possibility for a short.

p/n: EBR63322103



Front Board Assembly Component Check

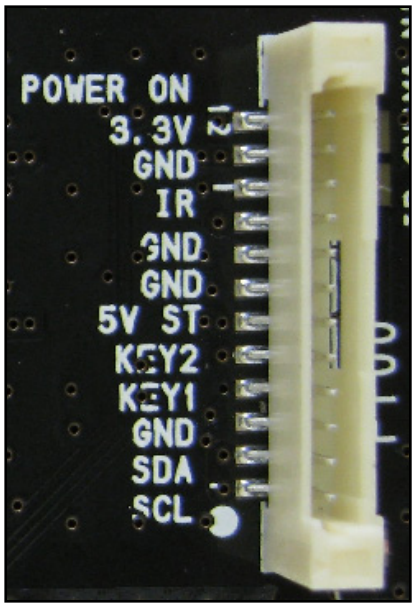


Front Connector P100 to Main Voltage and Diode Check

P100 Connector "IR Board"
to "MAIN Board" P1000

Pin	Label	STBY	Run	Diode Check
12	POWER_ON	0V	3.29V	Open
11	3.3V_ST	3.31V	3.31V	Open
10	Gnd	Gnd	Gnd	Gnd
9	IR	4.18V	4.18V	2.6V
8	Gnd	Gnd	Gnd	Gnd
7	Gnd	Gnd	Gnd	Gnd
6	5V ST	5.1V	5.1V	2.6V
5	Key2	3.26V	3.26V	Open
4	Key1	3.26V	3.26V	Open
3	Gnd	Gnd	Gnd	Gnd
2	SDA	0V	3.2V	Open
1	SCL	0V	3.2V	Open

P100

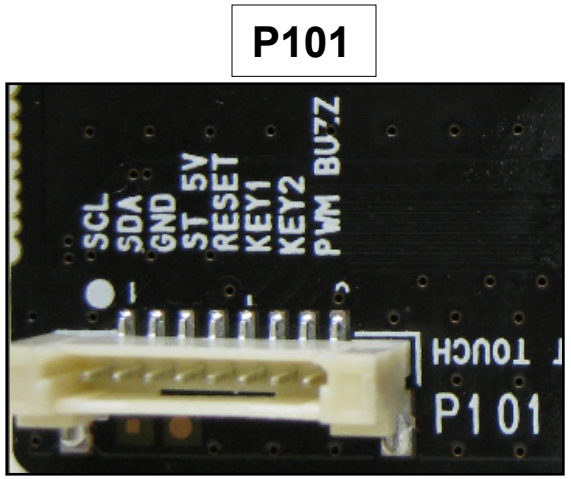


Diode Check taken with meter in Diode Mode with all Connectors Removed

Front Connector P101 to Soft Key Board Voltage and Diode Check

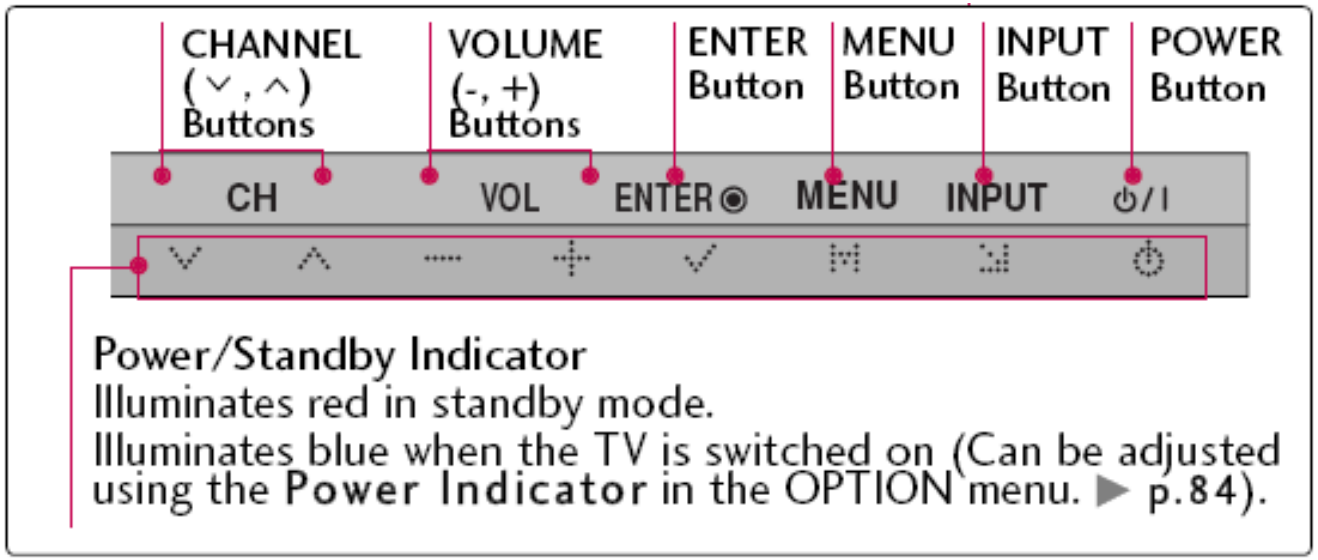
P101 Connector "IR Board" to "Soft Touch Key Board" J2

Pin	Label	STBY	Run	Diode Check
1	SCL	0V	3.29V	Open
2	SDA	3.31V	3.31V	Open
3	Gnd	Gnd	Gnd	Gnd
4	5V ST	5.1V	5.1V	Open
5	Reset	0V	0V	Open
6	Key1	3.26V	3.26V	Open
7	Key2	3.26V	3.26V	Open
8	PWM BUZZ	0V	0V	0.8V



Diode Check taken with meter in Diode Mode with all Connectors Removed

SOFT TOUCH KEY BOARD SECTION



To Ft. IR

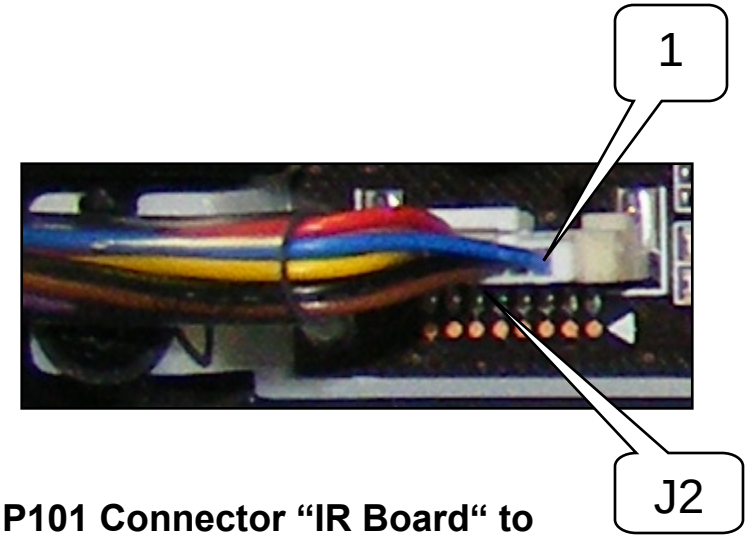
p/n: EBR63609903

J2

Note: The Soft Touch Key Board is Glued into place.

Glue

Soft Touch Key Assembly J2 Information



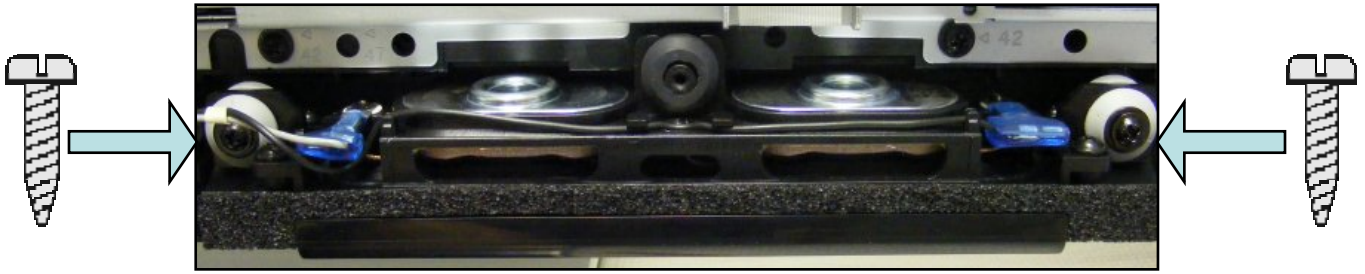
P101 Connector “IR Board“ to “Soft Touch Key Board" J2

Pin	Label	STBY	Run	Diode Check
1	**SCL**	0V	3.29V	1.5V
2	**SDA**	3.31V	3.31V	1.5V
3	**Gnd**	Gnd	Gnd	Gnd
4	**5V ST**	5.1V	5.1V	1.6V
5	**Reset**	0V	0V	Open
6	**Key1**	3.26V	3.26V	1.5V
7	**Key2**	3.26V	3.26V	1.5V
8	**PWM BUZZ**	0V	0V	1.3V

INVISIBLE SPEAKER SYSTEM SECTION

Invisible Speaker System Overview (Full Range Speakers)

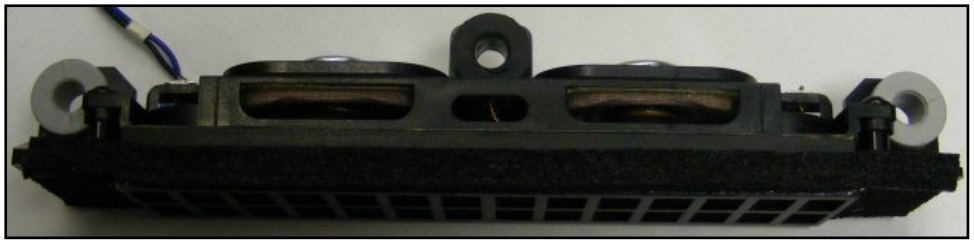
The 42SL80 contains the Invisible Speaker system.
The Full Range Speakers point downward, so there are no front viewable speaker grills or air ports.



Top View

Reading across speaker wires, 8.2 ohm.

Side View



p/n: EAB60866701

INTERCONNECT DIAGRAM (11 X 17 Foldout) SECTION

This section shows the Interconnect Diagram called the 11X17 foldout that's available in the Paper and Adobe version of the Training Manual.

Use the Adobe version to zoom in for easier reading.

When Printing the Interconnect diagram, print from the Adobe version and print onto 11X17 size paper for best results.

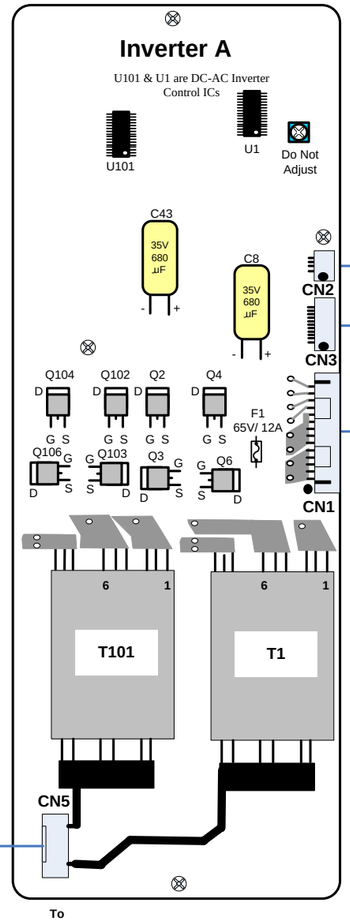
42SL80 INTERCONNECT DIAGRAM

MC1 To Top 6 and Bottom 6 bulbs

PANEL BACKLIGHT CONNECTIONS

Black To Center 13 bulbs

*I-C is Inverter On
*P-DIM is not used on this pin.



To Backlights 1.2K

P204 "SMPS" to CN1 "Inverter A"

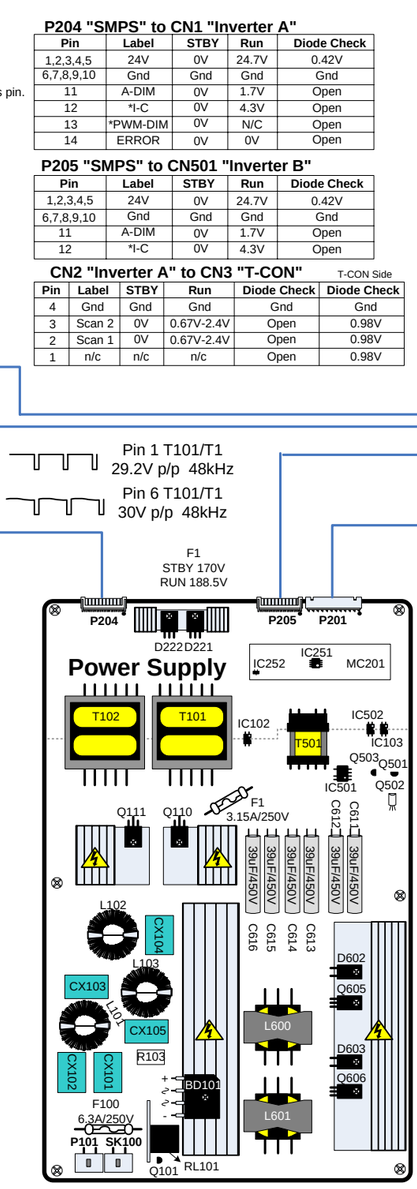
Pin	Label	STBY	Run	Diode Check
1,2,3,4,5	24V	0V	24.7V	0.42V
6,7,8,9,10	Gnd	Gnd	Gnd	Gnd
11	A-DIM	0V	1.7V	Open
12	*I-C	0V	4.3V	Open
13	*PWM-DIM	0V	N/C	Open
14	ERROR	0V	0V	Open

P205 "SMPS" to CN501 "Inverter B"

Pin	Label	STBY	Run	Diode Check
1,2,3,4,5	24V	0V	24.7V	0.42V
6,7,8,9,10	Gnd	Gnd	Gnd	Gnd
11	A-DIM	0V	1.7V	Open
12	*I-C	0V	4.3V	Open

CN2 "Inverter A" to CN3 "T-CON" T-CON Side

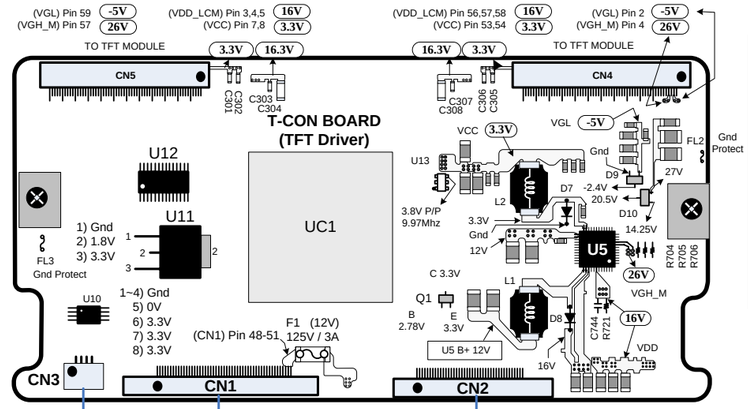
Pin	Label	STBY	Run	Diode Check	Diode Check
4	Gnd	Gnd	Gnd	Gnd	Gnd
3	Scan 2	0V	0.67V-2.4V	Open	0.98V
2	Scan 1	0V	0.67V-2.4V	Open	0.98V
1	n/c	n/c	n/c	Open	0.98V



F1
STBY 170V
RUN 188.5V

Pin 1 T101/T1
29.2V p/p 48kHz

Pin 6 T101/T1
30V p/p 48kHz



U12

1) 6.9V	15) 3.3V
2) 13.7V	16) Gnd
3) 15.7V	17) Gnd
4) 13.7V	18) Gnd
5) 13.0V	19) 5.8V
6) 12.0V	20) 5.0V
7) 10.9V	21) 3.9V
8) Gnd	22) 2.9V
9) 16.0V	23) 6.0V
10) 10.1V	24) Gnd
11) 8.2V	25) 2.2V
12) 7.7V	26) 0.3V
13) 3.3V	27) 2.2V
14) 3.3V	28) 6.9V

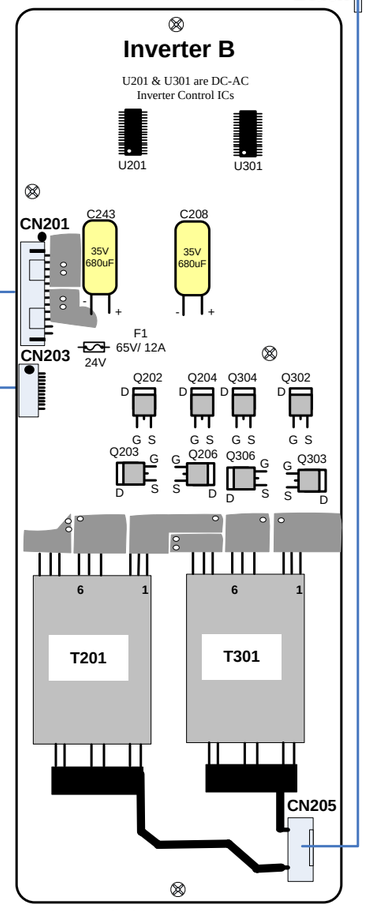
CN3 "Inverter A" To CN203 "Inverter B" "A" "B"

Pin	Label	STBY	Run	Diode Check	Diode Check
11	DUTY_M1	0V	0.71V-2.4V	OPEN	OPEN
10	GND	GND	GND	GND	GND
9	DUTY_M2	0V	0.71V-2.4V	OPEN	OPEN
8	FB_S1	0V	0.96V	2.9V	2.9V
7	ON/OFF	0V	4.3V	OPEN	OPEN
6	STB	0V	3.2V	OPEN	OPEN
5	VREF	0V	1.0V	OPEN	OPEN
4	FB_M1	0V	1.0V	2.9V	2.9V
3	SRT	0V	1.4V	OPEN	OPEN
2	SS	0V	2.9V	OPEN	OPEN
1	CT_SYNC_IN	0V	1.5V	1.7V	1.7V

To Top 6 and Bottom 6 bulbs SC1

PANEL BACKLIGHT CONNECTIONS

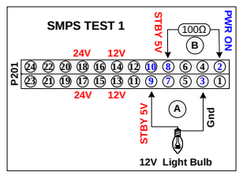
To Center 13 bulbs Black

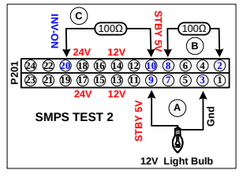


Pin 1 T201/T301
29.2V p/p 48kHz

Pin 6 T201/T301
30V p/p 48kHz

To Backlights 1.2K





SMPS TEST 1: To Force Power Supply On.
Disconnect P800 on Main board.
Load the 5V line using a 12V light bulb.
Jump pins 7,8,9 or 10 (5V) to pin 2 using a 100Ω resistor. (Test Voltage Outputs 12V, 24V to Main and 24V to both Inverters).

SMPS TEST 2: Jump pins 7,8,9 or 10 (5V) to pin 20 (INV-ON). The Backlights should turn on.

Indicates Hot Ground

P201 "SMPS" to P400 "Main"

Pin	Label	STBY	Run	Diode Check
1	N/C	N/C	N/C	Open
2	PWR-ON	0V	4.9V	1.6V
3-6	Gnd	Gnd	Gnd	Gnd
7-10	5.2V	5.14V	5.14V	Open
11-12	Gnd	Gnd	Gnd	Gnd
13-14	12V	0V	11.9V	0.27V
15	Gnd	Gnd	Gnd	Gnd
16	A-Gnd	Gnd	Gnd	Gnd
17-18	24V	0V	24.7V	0.42V
19	N/C	N/C	N/C	Open
20	I-C	0V	4.3V	Open
21	*A-DIM	0V	1.6V	Open
22	ERR OUT	0V	0V	Open
23	N/C	N/C	N/C	Open
24	*P-DIM	N/C	N/C	Open

*PWM-DIM (P-DIM) is open on the Main board, n/c.

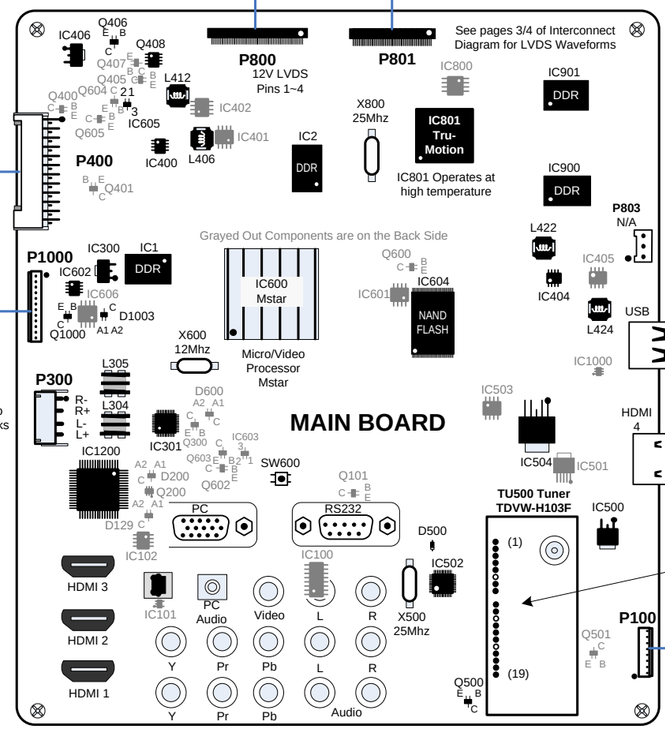
*A-DIM is fixed and does not move.

12V to T-CON Pin 48~51.

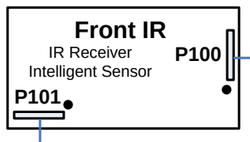
LVDS

See second page of Interconnect Diagram for Main board DC Voltages

See pages 3/4 of Interconnect Diagram for LVDS Waveforms



(4) Tuner 5V_TU
(8) Data
(9) Clock
(12) Dig DIF+
(13) Dig DIF-
(16) SIF
(19) Analog Video



J2 Front "Soft Switch" Keys

P1000 "Main" to P100 "Front IR"

	Pin	Label	STBY	Run	Diode Check
Intelligent Sensor	1	SCL	0V	3.2V	1.6V
Intelligent Sensor	2	SDA	0V	3.2V	1.6V
	3	Gnd	Gnd	Gnd	Gnd
	4	Key1	3.26V	3.26V	1.0V
	5	Key2	3.26V	3.26V	1.3V
Stand-by 5V	6	5V_ST	5.1V	5.1V	1.1V
	7	Gnd	Gnd	Gnd	Gnd
	8	Warm_ST	Gnd	Gnd	Gnd

P1000 "Main" to P100 "Front IR"

	Pin	Label	STBY	Run	Diode Check
Remote	9	IR	4.18V	4.18V	Open
	10	Gnd	Gnd	Gnd	Gnd
	11	3.3V_ST	3.31V	3.31V	0.67V
	12	PWR_ON	0V	3.29V	Open

P100 "Main" to P101 "Side A/V"

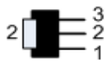
Pin	Label	STBY	Run	Diode Check
8	Gnd	Gnd	Gnd	Gnd
7	AV_R_IN	0V	0V	Open
6	Gnd	Gnd	Gnd	Gnd
5	AV_L_IN	0V	0V	Open
4	Gnd	Gnd	Gnd	Gnd
3	AV_DET	0V	0V	Open
2	CVBS_IN	0V	0V	0.07V
1	Gnd	Gnd	Gnd	Gnd

P101 "Side A/V" to P100 "Main"

Pin	Label	STBY	Run	Diode Check
1	Gnd	Gnd	Gnd	Gnd
2	AV_R_IN	0V	0V	Open
3	Gnd	Gnd	Gnd	Gnd
4	AV_L_IN	0V	0V	Open
5	Gnd	Gnd	Gnd	Gnd
6	AV_DET	0V	0V	Open
7	CVBS_IN	0V	0V	Open
8	Gnd	Gnd	Gnd	Gnd

42SL80 MAIN (FRONT SIDE) SIMICONDUCTORS

IC300



Pin	+1.8V AMP Regulator
[1]	Gnd
[2]	1.8V
[3]	3.3V

IC400

Pin	+1.8V_DDR Regulator
[1]	n/c
[2]	3.2V
[3]	3.2V
[4]	n/c
[5]	n/c
[6]	1.8V
[7]	0.8V
[8]	Gnd

IC404

Pin	+1.8V_MEMC Regulator
[1]	0.8V
[2]	Gnd
[3]	4.92V
[4]	6.5V
[5]	4.8V
[6]	1.8V
[7]	1.8V
[8]	4.8V

IC406

Pin	+3.3V_ST Regulator
[1]	0V
[2]	3.3V
[3]	5.0V

IC500

Pin	9V Reg to IC501 Tuner 5V
[1]	12V
[2]	Gnd
[3]	8.9V

IC504

Pin	+3.3V_PVSB Regulator
[1]	4.94V
[2]	4.94V
[3]	Gnd
[4]	3.4V
[5]	1.25V

IC602

Pin	HDCP EEPROM
[1]	Gnd
[2]	Gnd
[3]	5.0V
[4]	Gnd
[5]	3.3V
[6]	3.3V
[7]	5.0V
[8]	5.0V

IC605

Pin	Reset Gen for Power_Det
[1]	Gnd
[2]	3.5V
[3]	3.3V

Q406

Pin	5V Switch Control
B	0.6V
C	0V
E	Gnd

Q408

Pin	+5V/12VLVDS Switch
[1]	5.1V
[2]	0.29V
[3]	11.9V
[4]	5.99V
[5]	11.98V
[6]	11.98V
[7]	5.06V
[8]	5.06V

Q500

Pin	Tuner Video Buffer
B	1.7V
C	0V
E	2.3V

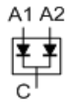
Q1000

Pin	Moving LED Inverter
B	0V
C	3.3V
E	Gnd

D500

Pin	Speed Up Reset IC502
C	3.4V
A	3.38V

D1003



Pin	Moving LED Routing
A1	0V
C	0.1V
A2	0V

IC403

Pin	+1.6V_MEMC Regulator
[1]	0V
[2]	0.8V
[3]	1.2V
[4]	1.2V
[5]	1.8V
[6]	5.0V
[7]	1.2V
[8]	5.0V

42SL80 MAIN (BACK SIDE) SIMICONDUCTORS

IC100

Pin	RS232 Rx/Tx
[1]	3.3V
[2]	5.56V
[3]	0.02V
[4]	0.03V
[5]	5.5V
[6]	5.5V
[7]	5.5V
[8]	0V
[9]	3.29V
[10]	3.24V
[11]	n/c
[12]	3.31V
[13]	0V
[14]	5.5V
[15]	Gnd
[16]	3.29V

IC101

Pin	SPIF Optical Audio
[1]	0.03V
[2]	0V
[3]	0V
[4]	0V
[5]	0V

IC102

Pin	RGB EEPROM
[1]	Gnd
[2]	Gnd
[3]	Gnd
[4]	Gnd
[5]	3.3V
[6]	3.3V
[7]	3.18V
[8]	0V

IC401

Pin	+1.26V_VDDC Regulator
[1]	8.0V **Oscilloscope ONLY**
[2]	Gnd
[3]	5.0V
[4]	6.0V
[5]	4.9V
[6]	0V
[7]	0V
[8]	3.2V

WARNING Measure Pin 1 with O-scope ONLY

IC402

Pin	+3.3V_MEMC Regulator
[1]	8.0V **Oscilloscope ONLY**
[2]	Gnd
[3]	4.98V
[4]	7.6V
[5]	4.9V
[6]	3.3V
[7]	3.3V
[8]	0V

WARNING Measure Pin 1 with O-scope ONLY

IC405

Pin	+5V EXT Regulator
[1]	0.8V
[2]	Gnd
[3]	12V
[4]	9.6V
[5]	5V
[6]	4.97V
[7]	4.97V
[8]	1.9V

IC501

Pin	+5V_TU for Tuner
[1]	8.92V
[2]	1.88V
[3]	5.04V
[4]	0V
[5]	Gnd

IC503

Pin	+1.2V_PVSB Regulator
[1]	0V
[2]	3.3V
[3]	3.4V
[4]	0V
[5]	0V
[6]	1.2V
[7]	0.8V
[8]	0V

IC504

Pin	+1.26V_PVSB Regulator
[1]	0.8V
[2]	0V
[3]	11.8V
[4]	9.6V
[5]	5.0V
[6]	5.0V
[7]	5.0V
[8]	0.9V

IC601

Pin	Serial Flash for Boot
[1]	0.04V
[2]	3.2V
[3]	2.5V
[4]	0V
[5]	0V
[6]	0V
[7]	3.2V
[8]	3.2V

IC606

Pin	Micro IC600 EEPROM
[1]	Gnd
[2]	Gnd
[3]	Gnd
[4]	Gnd
[5]	3.24V
[6]	3.24V
[7]	0V
[8]	3.24V

IC800

Pin	SPI Flash IC801 Memory
[1]	0V
[2]	0.8V
[3]	3.2V
[4]	0V
[5]	0V
[6]	0.09V
[7]	3.2V
[8]	3.2V

IC1000

Pin	USB +5V Switch
[1]	4.95V
[2]	Gnd
[3]	3.21V
[4]	4.95V
[5]	0V
[6]	4.95V

IC603

Pin	Reset Gen for IC600
[1]	0V
[2]	0V
[3]	3.3V

Q101

Pin	IR RS232 Buffer
B	0.634V
C	0V
E	0V

Q200

Pin	HDMI CEC
[1]	3.2V
[2]	3.2V
[3]	0V
[4]	0V
[5]	0V
[6]	3.16V

Q300

Pin	Audio Mute Switch
B	0.62V
C	0.01V
E	Gnd

Q400

Pin	PWR On/Off Switch
B	2.9V
C	5V
E	5V

Q401

Pin	INV_ON Inverter
B	0.05V
C	4.35V
E	Gnd

Q405

Pin	12V LVDS Switch Control
B	0.05V
C	0.65V
E	Gnd

Q407

Pin	12V LVDS Source
B	0.65V
C	0.0V
E	Gnd

Q501

Pin	Tuner SIF Buffer
B	2.4V
C	0V
E	3.0V

Q600

Pin	Write Protect for IC601
B	0V
C	2.5V
E	Gnd

Q602

Pin	S5/S6 Reset Switch for Mstar
B	0V
C	3.28V
E	0V

Q603

Pin	Power_On_ Delay Switch
B	0V
C	0.04V
E	Gnd

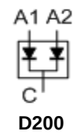
Q604

Pin	Power_Det Switch
B	0V
C	3.3V
E	Gnd

Q605

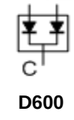
Pin	Power_Det +12V Side
B	0.65V
C	0.0V
E	Gnd

D129



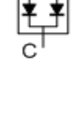
Pin	5V Routing for IC1200
A1	0.03V
C	4.5V
A2	5.1V

D200



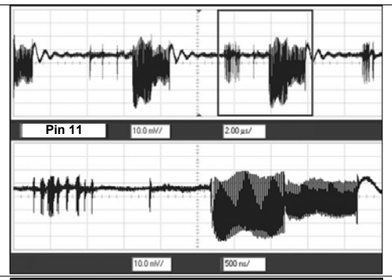
Pin	Shunt for Q200
A1	0V
C	3.1V
A2	3.2V

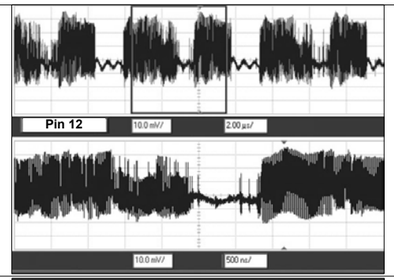
D600

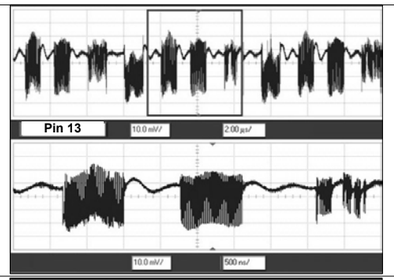


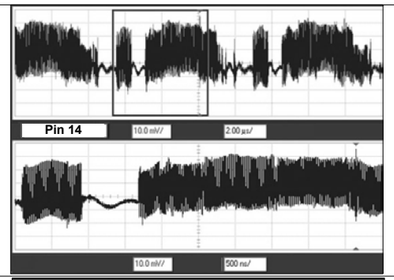
Pin	Audio Mute Routing
A1	0.01V
C	2.7V
A2	3.29V

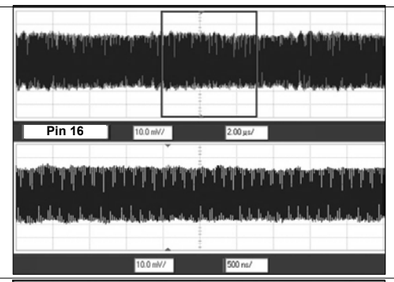
42SL80 LVDS P800 WAVEFORMS

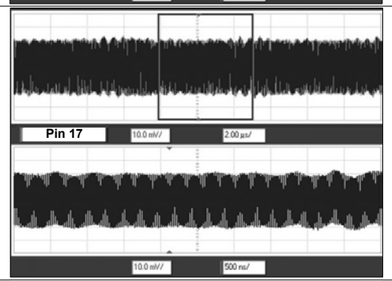


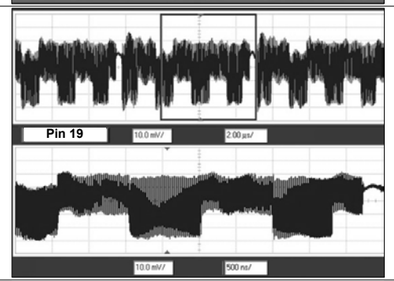


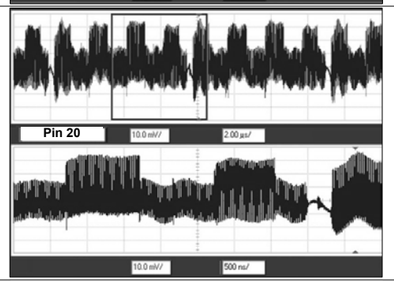


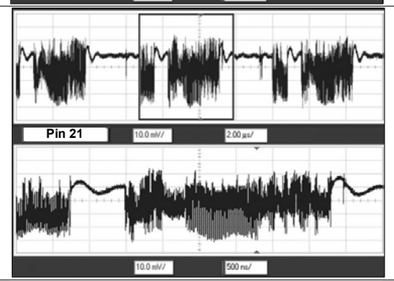


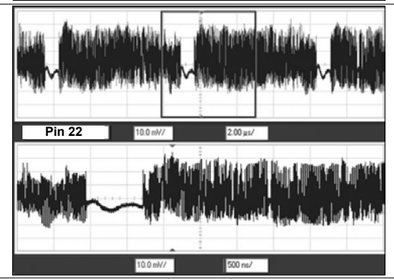


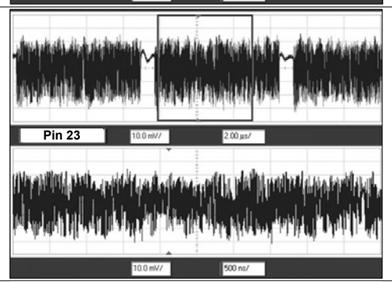


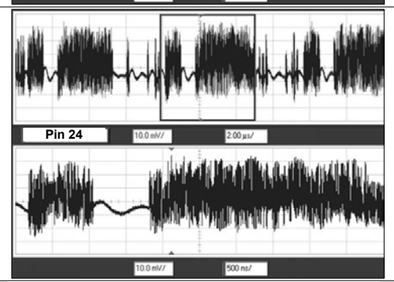


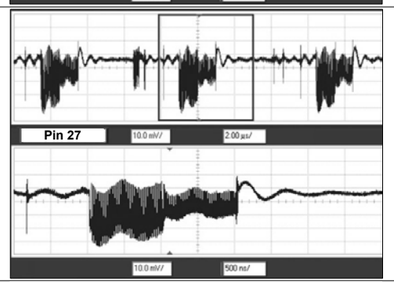


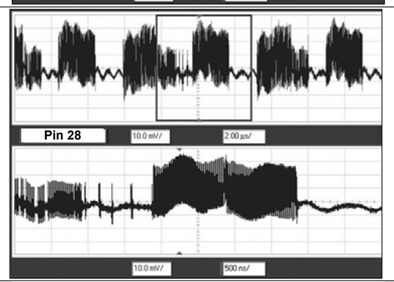


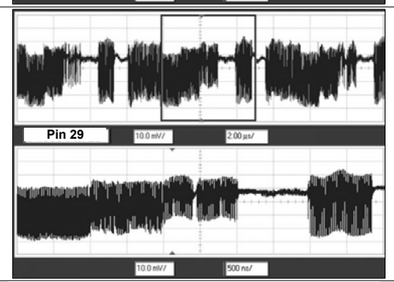


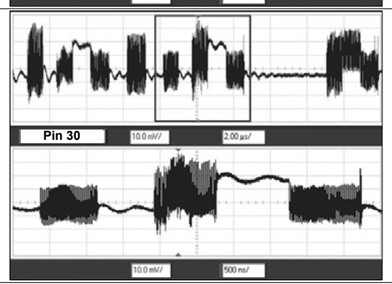


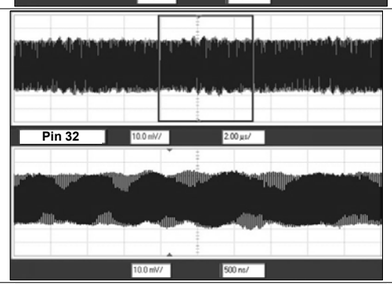


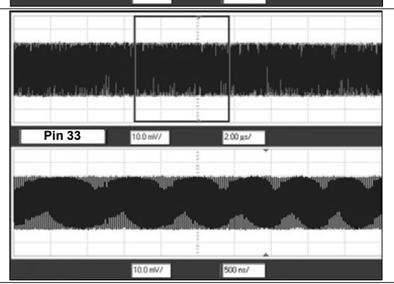


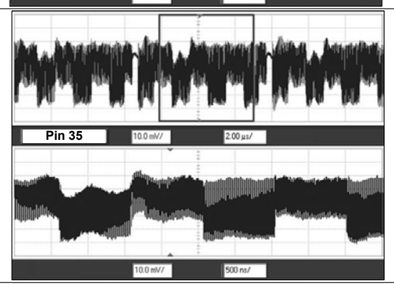


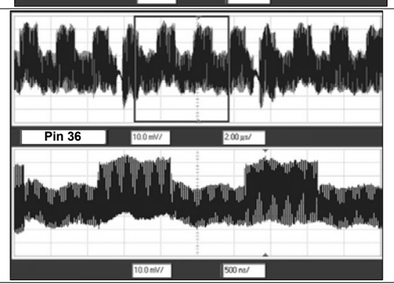


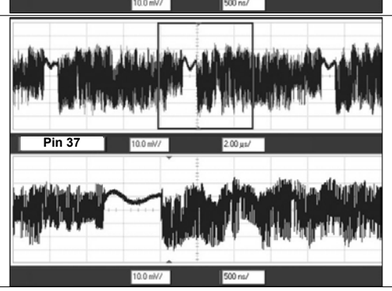


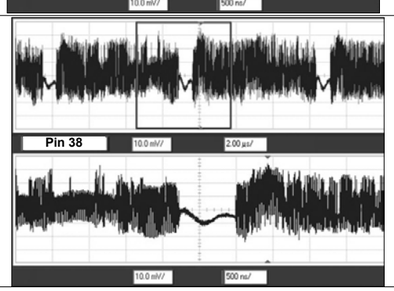


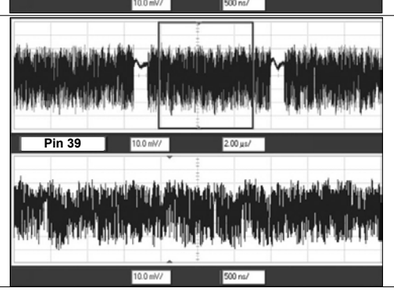


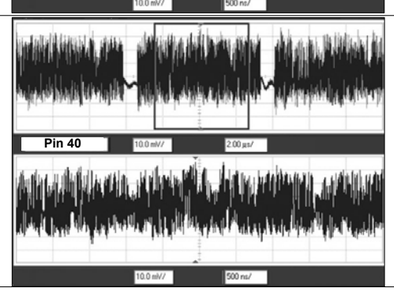






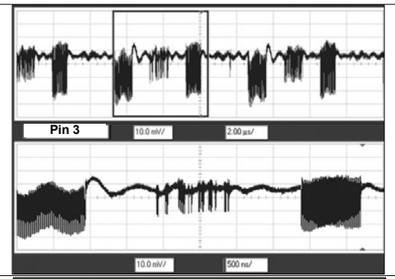


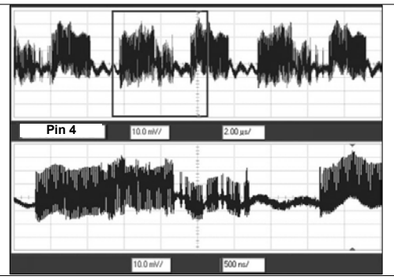


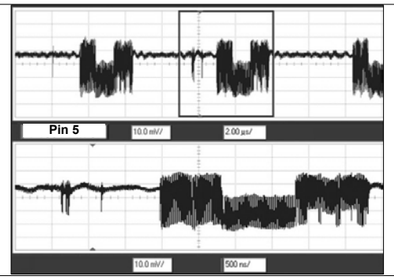


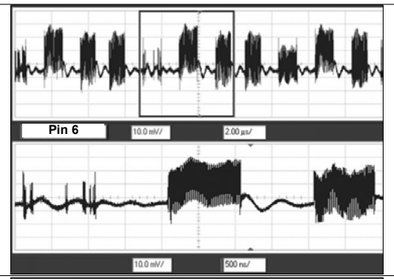
42SL80 P800 LVDS CABLE WAVEFORMS:
Waveforms taken using SMTP Color Bar input.
All readings give the Scale 10mV and Time Base related to scope settings.
Top waveform in each image gives a slower rate, 2us per division. Outlined area is shown in the bottom waveform at 500ns per division time base.

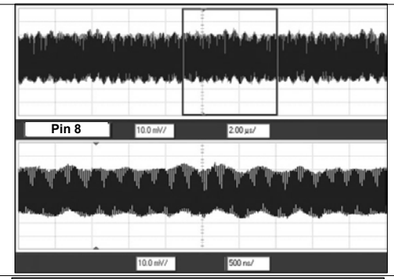
42SL80 LVDS P801 WAVEFORMS

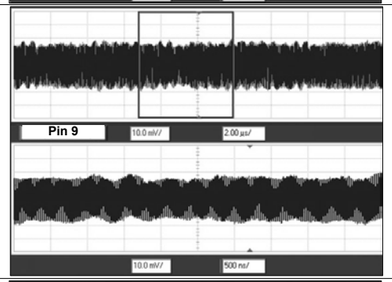


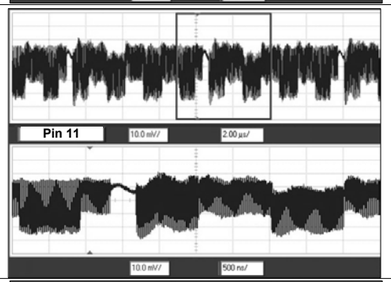


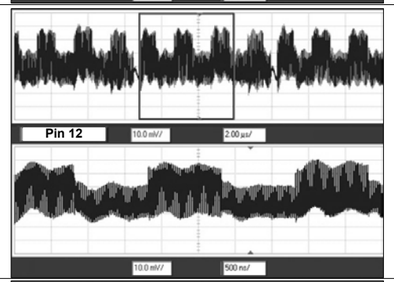


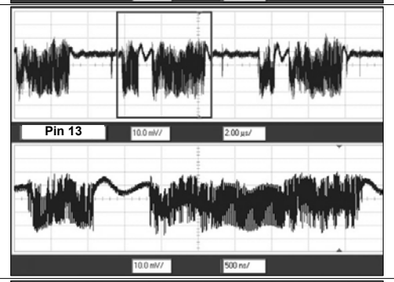


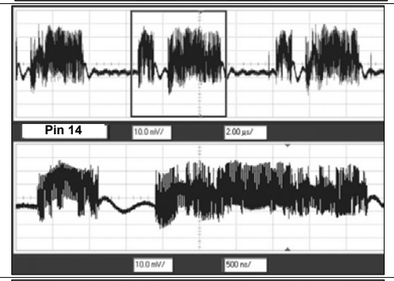


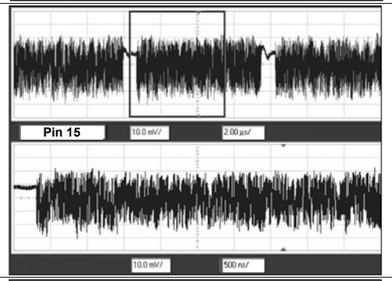


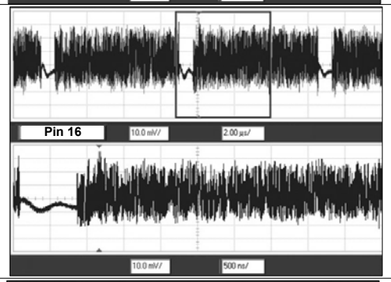


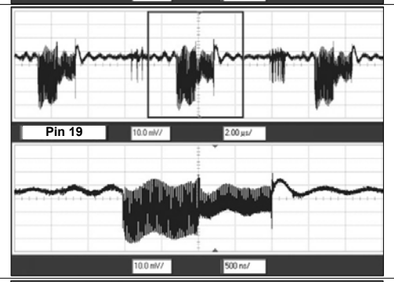


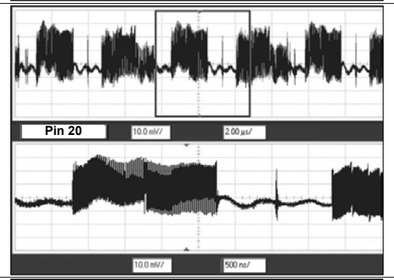


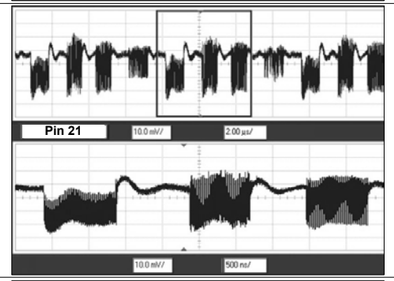


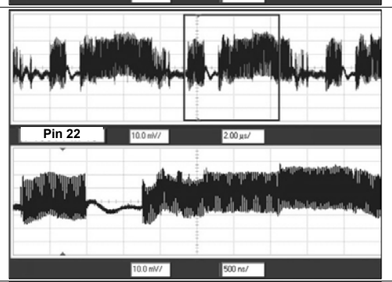


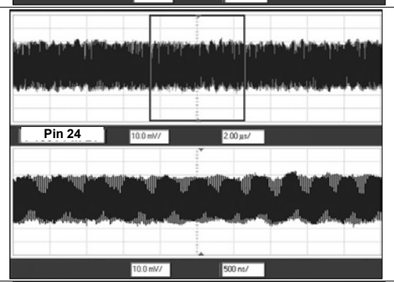


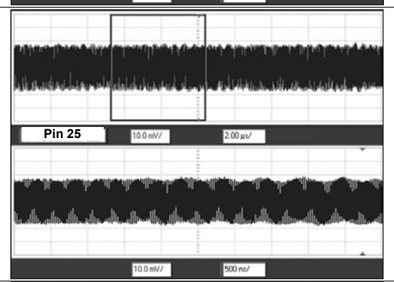


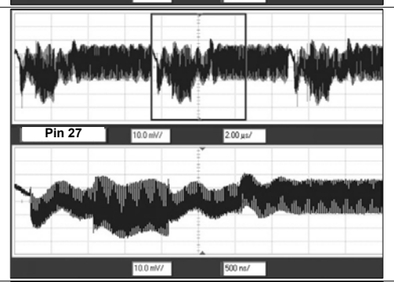


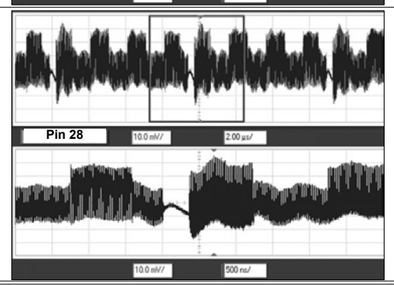


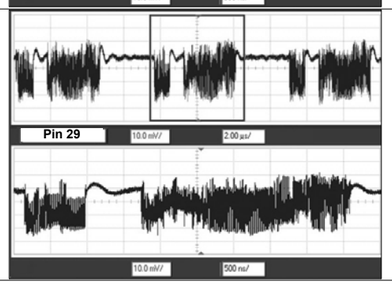


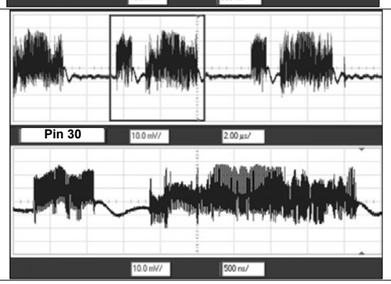


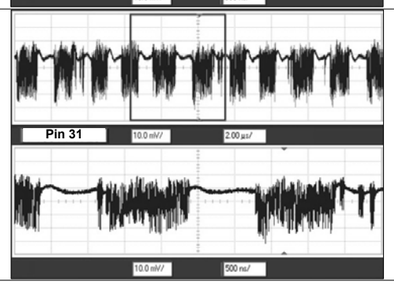


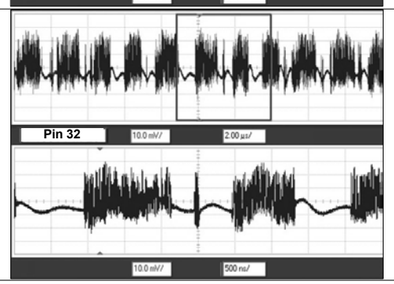












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LG TRAINING CENTER

42SL80

Direct View LCD

This concludes the 42SL80 training session.

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