B&W Group
CLASSÉ

CT/SSP-800
SERVICE MANUAL V1.0
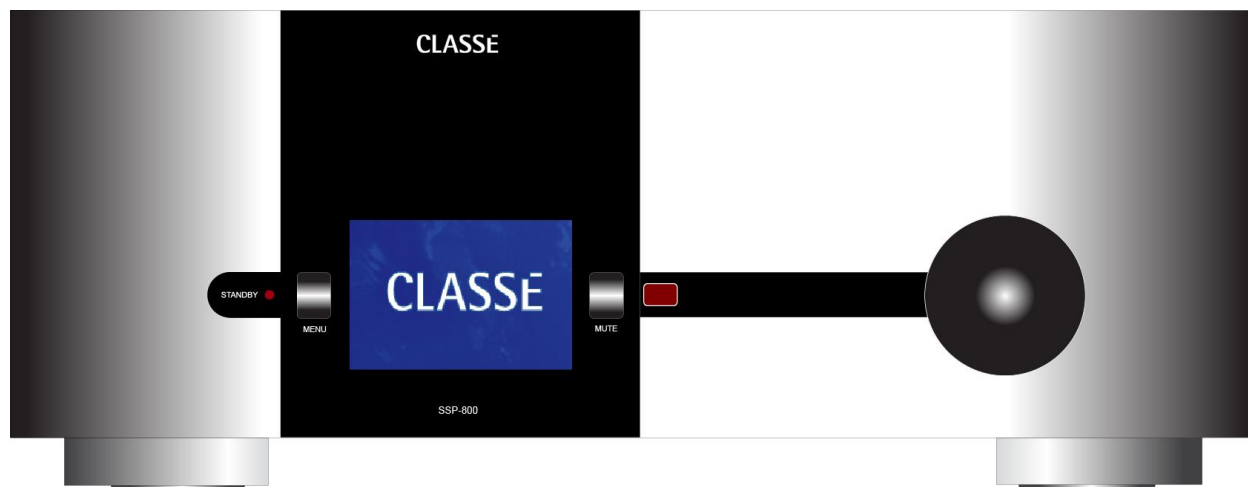
Table of Contents

Introduction

Please read this manual carefully before commencing servicing!
Only qualified and authorized personnel should attempt to service this product.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of un-insulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions.

Delta Series products contain NO USER SERVICABLE PARTS.

The preferred method of servicing Delta Series products is as follows:
1. Identify the source of the problem using the block diagram, troubleshooting guide and/or Service Notices.
2. Replace the defective module or PCBA.
3. Return defective modules and PCBAs for failure analysis as appropriate.

This method of servicing offers:
1. Quickest turnaround for the customer.
2. Ease of repair and shortest 'touch time' for the service technician.
3. Continuous quality improvement for Classé through analyses of failures and implementation of corrective actions.

Please report any omissions or inaccuracies in this Service Manual to cservice@classeaudio.com

Service Assistance

Classé has a global product support network. For product assistance or to order replacement parts please contact your nearest service center always quoting the unit serial number and software version.

Asia
Phone: (852) 2790 8903 E-mail: classe@bwgroup.hk

Europe
Phone: 44 (0) 1903 221 700 E-mail: classe@bwgroup.com

North America & Rest of the World
Phone: (514) 636 6384 E-mail: cservice@classeaudio.com

Important Notes on Servicing

1. ALWAYS observe ESD precautions when handling electronic modules or PCBAs.
   Refer to IPC excerpt _ Handling Electronics Assemblies and ANSI_ESD_S20_20_1999
2. NEVER unnecessarily exchange boards between two units. All Delta Series PCBAs are bar-coded. Each unique bar code ties important trace-ability information to the unit serial number.

3. All PCBAs are RoHS compliant 'lead free' and therefore only lead free solder should be used if soldering is required.
4. ALWAYS use Classé original replacement parts. The use of generic parts may void the warranty of the unit.

Ordering Replacement Parts

Complete and email the form CLASSÉ PARTS REQUEST to cservice@classeaudio.com.

Please be sure to include all required information as there may be a delay in processing incomplete requests.

Returning parts for credit
Email cservice@classeaudio.com with your part number and Classe order number in order to get a return authorization number.
Parts returned without an authorization number will not be credited.

Normal power up sequence

The CT/SSP-800 upon plugging the AC chord will have a blue LED blinking on the front standby switch. This is an indication that the unit is initializing its firmware. This will typically take 2 minutes and stabilize itself to a solid red color upon completion. Once in this state, it will be in standby mode and ready to be powered on.
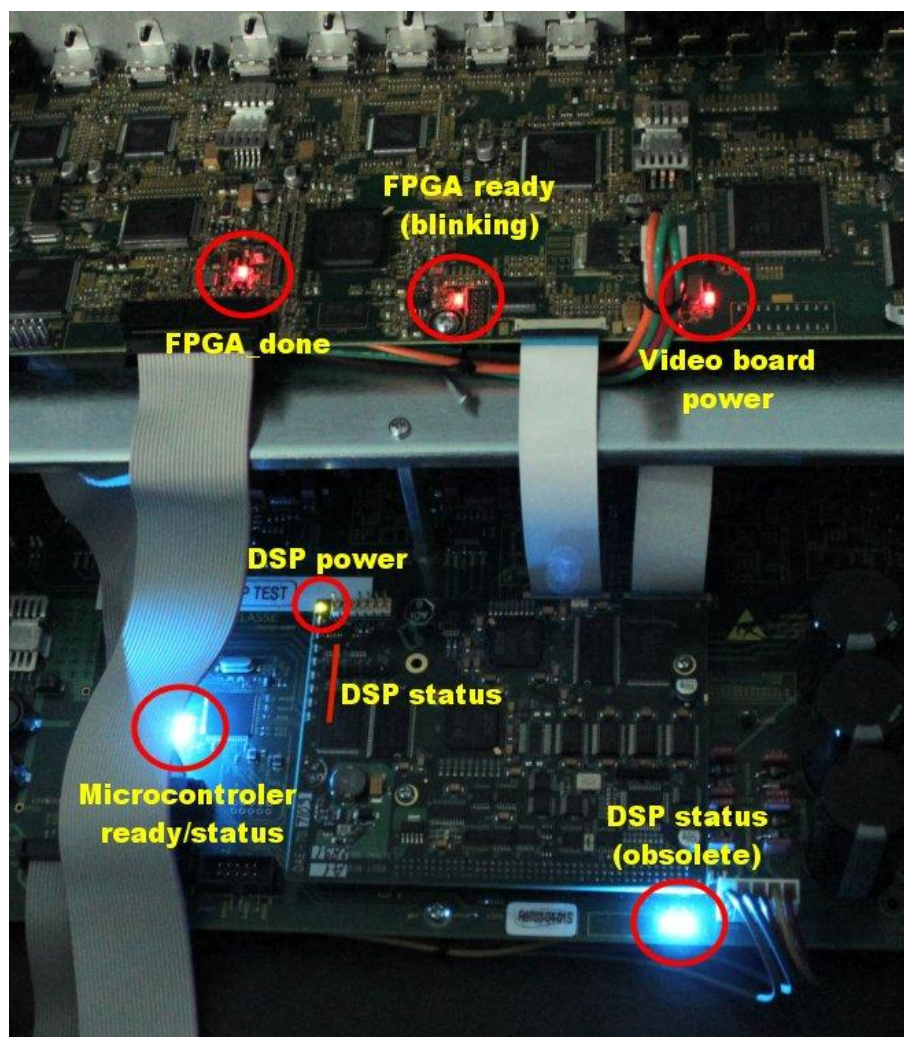
The CT-SSP-800 once powered on and initialized will have LED's lit up. The following illustration shows the correct indicators once a complete initialization has been achieved. Any indication of LED's missing will signify that a problem has been encountered and a potential hardware failure has occurred. In such an instance, the blue Front Panel LED will blink continuously. Troubleshooting will be necessary in order to restore proper functionality.

For more details, consult "Does not initialize" at P9

Understanding the front LED status

Red = Standby
Blue = On
Blinking Blue

- Over voltage AC limits attained. A message will be displayed on the front screen and unit will shut down.
- Under voltage AC limits attained. No change in operation of the unit.

Protection modes and indicators

The SSP-800/CT-SSP Surround Sound Processor contains protection features that prevent the processor from operating at dangerously high or low voltages. These features are incorporated to help protect the processor from dangerous power surges and other power irregularities that could cause extensive damage to the processor. This circuitry guards against the following irregular supplied power conditions.

Startup Voltage: If the AC mains voltage is NOT within a range of approximately −15% to +10% of its nominal value, the SSP does not turn on. For example, a 120V AC service generally requires the AC mains voltage to be no lower than 95V and no higher than 135V in order for the processor to turn on and operate normally.

Over-voltage Condition during Operation: If the AC mains voltage surges by roughly 10% or more during operation, the Surround Sound Processor enters a protection mode and shuts down. The Standby LED flashes to indicate that the protection mode has been engaged. An error message also displays on the LCD touch screen.

Under-voltage Condition during Operation: If the AC mains voltage sags by 15% or more, the Surround Sound Processor does continue to play since the voltage irregularity won't harm the processor, but the sound quality may be degraded due to the compromised power conditions. The Standby LED flashes to indicate an irregular power condition exists.

Troubleshooting Introduction

It is always important to have the latest Firmware installed in the CT/SSP-800. This may solve certain problems that have occurred. If this is not the case, then intervention is needed in order to repair the CT/SSP-800. Through the use of the LED status indications, signal status and general observations, a troubleshooting approach will be defined.

Troubleshooting guide

Preliminary verifications

A quick way to verify the state of the CT/SSP-800 is to check all power supplies. Please follow a verification procedure at Appendix I.

Common Repair Scenarios

Along with using this Service Manual for troubleshooting purposes, it is essential to consult our Service Notices. A complete set of notices will be available concerning current and past faults found on the CT/SSP-800. These are descriptive of the fault along with troubleshooting techniques and solutions.

The following cases are described using keywords for the fault. These will be the most common faults found on the CT/SSP-800. Although thorough, certain instances may arise that are not described in this manual or in the Service Notices. For any additional troubleshooting support, please contact Classé Technical Support.

Keyword(s): No audio
A dedicated linear power supply is implemented for all analog purposes. This comprises of an 80VA torroidal transformer along with a series of linear regulators providing +12/-12 volts and 5 volts. These voltage rails will mostly power op-amps, volume control chips, relays and DAC's. Decoupling of these voltage rails are done with 10uF and 0.1uF capacitors. At occasion, these capacitors may produce a fault by becoming resistive and shorting the rail (s) in question. A full troubleshooting procedure is available at Appendix A.

Symptoms of such a case will be described as the following;
- No sound
- No relays heard clicking between input selections
- Mute relays not heard

Keywords: SMPS power supply
An SMPS power supply will provide 12 and 5 volts DC for all digital purposes. The 5 volts will also provide 3.3 volts through a regulator. The 12 volt rail will provide power to front panel and Video board as well as the Audio board. This voltage will also be converted to 5 volts and 3.3 volts.

Keywords: No video, no preview
Lightning strikes: Occasionally, lightning storms occur and can damage the CT/SSP-800 through a cable box or satellite receiver that would be plugged into it. Typically these devices are plugged through the HDMI inputs on the Video Board. The result of such an incidence will inevitably burn digital components and PCB traces. Typically in such instances, a complete replacement of the Video Board is needed as repair at a component level is risky and complicated.

Keywords: No relays switching, no audio. * Specific serial numbers

The LVDS is a low voltage differential interface that allows for digital communication over a certain length while assuring quiet EMI signal noise. These transceivers are used for providing digital audio towards the DAC converters. There are 4 pairs or transceivers used for audio. L&R Aux, L&R Main, Center, Sub out, L&R Surround, L&R Rear will all pass through LVDS transceivers. A dedicated pair of transceivers are used for relay control, volume chip control, and CODEC resets. When problematic LVDS components occur, no audio may be heard on all or specific channels as well as un-responding relays. A replacement of all transceiver pairs is recommended.

Keywords: Touch screen alignment, touch screen misalignment, calibration.

The SSP-800 may develop a problem with touch screen alignment. When this occurs, the alignment of the trigger points become skewed relative to the soft button(s). No calibration is available in this case as it is a hardware issue. A complete replacement of the video display is required. The front panel PCB in this case will not need to be replaced.
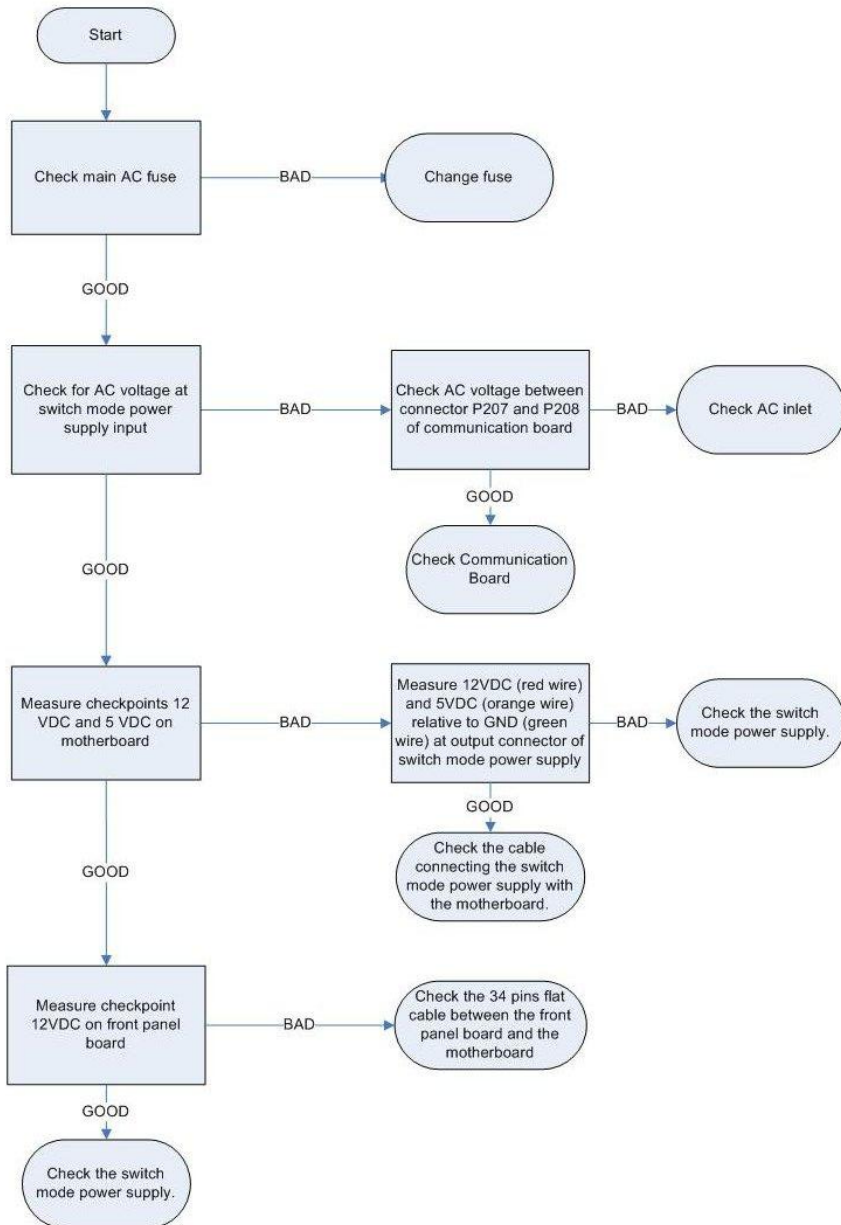
<u>Keywords: On screen error codes X.0.0.0.0.</u>

Numerical Error codes such as 2.0.0.0.0 can be displayed when an initialization error has occurred. These errors may arise when taking the CT/SSP-800 out of standby or when powering up. The first number of the error code describes in which stage the error occurred. There are 5 stages. The description of these stages go beyond the scope of this manual. The four remaining zeros are fixed and will remain zeros. Two scenarios can exist when this type of error is produced.
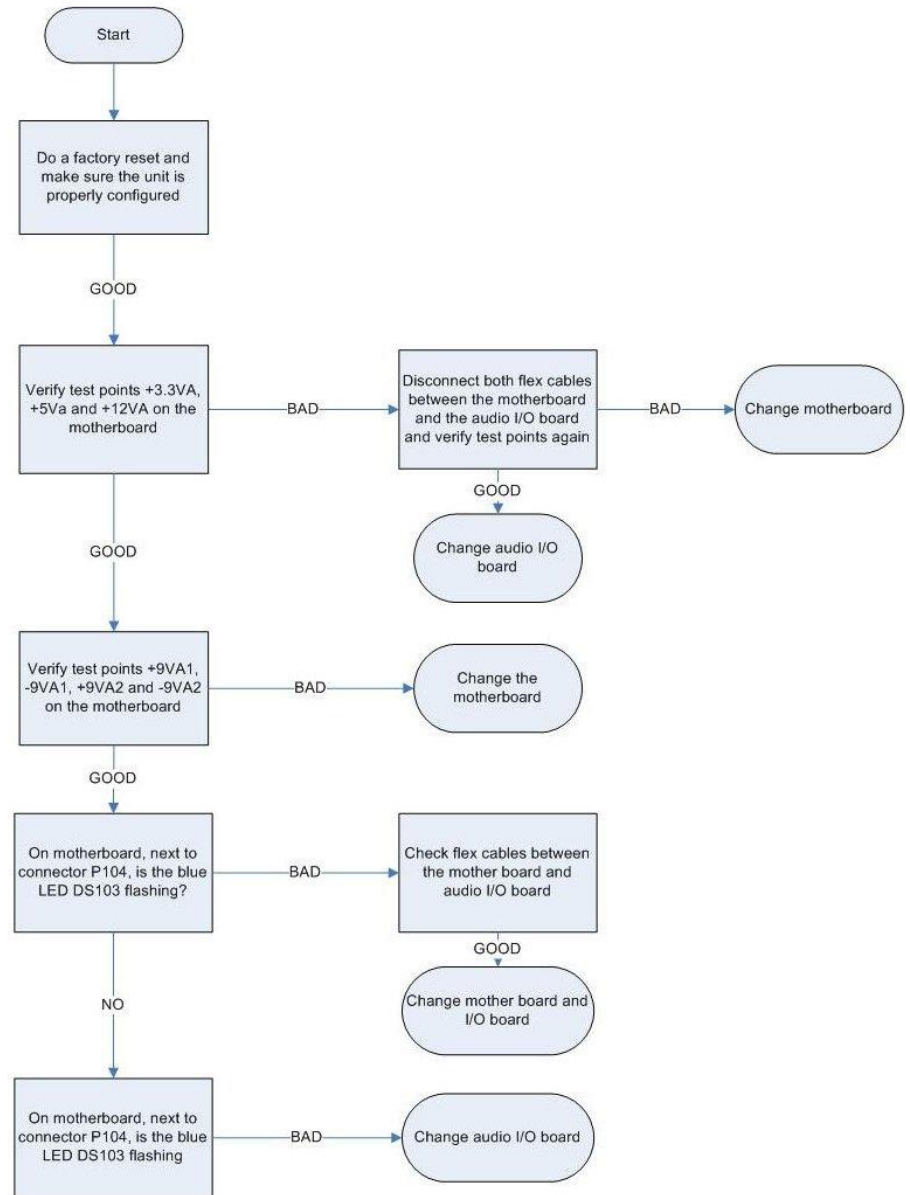
1- When the CT/SSP-800 is brought out of standby, it will want to lock itself onto the last source seen before going into standby. If this source is digital and mainly HDMI, is absent or off the CT-SSP may find itself trying to lock onto an absent clock. This in turn will cause the DSP board to be overwhelmed within a process where finally a timeout is reached and an error code X.0.0.0.0 is given.

2- When the CT/SSP-800 is powered on, it will want to lock itself onto the source configured for input #1. If this source is digital and mainly HDMI, is absent or off the CT-SSP may find itself trying to lock onto an absent clock. This in turn will cause the DSP board to be overwhelmed within a process where finally a timeout is reached and an error code X.0.0.0.0 is given.

Solutions to these errors are often solved by the power on sequence of the components within a system. Essentially, the sources and TV/Projectors must be turned on first before the CT/SSP-800. In this way, the CT-SSP-800 will always be able to lock itself to the initial source without problems.

Unit will not power up / Standby LED does not flash or light up

Start

Check main AC fuse — **BAD** → Change fuse

GOOD

Check for AC voltage at switch mode power supply input — **BAD** → Check AC voltage between connector P207 and P208 of communication board — **BAD** → Check AC inlet

GOOD (from P207/P208) → Check Communication Board

GOOD

Measure checkpoints 12 VDC and 5 VDC on motherboard — **BAD** → Measure 12VDC (red wire) and 5VDC (orange wire) relative to GND (green wire) at output connector of switch mode power supply — **BAD** → Check the switch mode power supply.

GOOD (from measure 12VDC/5VDC wire) → Check the cable connecting the switch mode power supply with the motherboard.

GOOD

Measure checkpoint 12VDC on front panel board — **BAD** → Check the 34 pins flat cable between the front panel board and the motherboard

GOOD

Check the switch mode power supply.

No analog audio

Start

Do a factory reset and make sure the unit is properly configured

GOOD

Verify test points +3.3VA, +5Va and +12VA on the motherboard — **BAD** → Disconnect both flex cables between the motherboard and the audio I/O board and verify test points again — **BAD** → Change motherboard

GOOD (from disconnect flex cables) → Change audio I/O board

GOOD

Verify test points +9VA1, -9VA1, +9VA2 and -9VA2 on the motherboard — **BAD** → Change the motherboard

GOOD

On motherboard, next to connector P104, is the blue LED DS103 flashing? — **BAD** → Check flex cables between the mother board and audio I/O board

GOOD (from check flex cables) → Change mother board and I/O board

NO

On motherboard, next to connector P104, is the blue LED DS103 flashing — **BAD** → Change audio I/O board

Does not initialize (Standby LED flashing continuously)

A CT/SSP-800 that does not initialize completely will continually flash its blue LED on the front panel. The significance of this is that the internal micro-controllers cannot execute the firmware properly. Probable causes for this are as follows;

1- Corrupted Firmware
2- Bad digital power supplies
3- Sensor board communication errors
4- Micro-controller errors

Re-downloading the Firmware could resolve the problem. If not, related hardware will need to be verified. If communication is not possible, power supplies would be suspect.

Standby LED flashes continuously
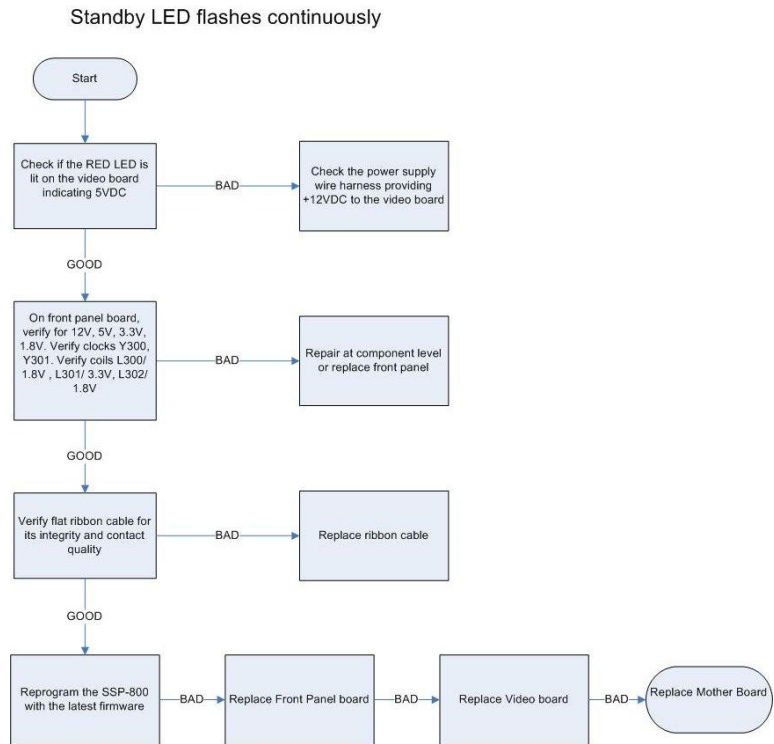
Firmware explained

Firmware code will reside on the front panel in its entirety. This will be stored in Flash memory until the CT/SSP-800 will be powered on and initialized for the first time. Upon power up, the firmware will be transferred into RAM memory to 3 different locations. The front panel will contain the functional firmware of the CT/SSP-800 followed by the Video board FPGA firmware and finally the DSP board firmware. The firmware will be transferred into RAM and immediately executed at those three distinct areas. Upon completion, the CT/SSP-800 will be fully initialized and ready to operate. **See LED status at P4**

In the event that a hardware malfunction occurs and that the CT/SSP-800 does not initialize, the same areas of concern will need to be verified. The Front Panel, Video board and DSP board will need to be interchanged/replaced or repaired. The Motherboard may also be a culprit as power supplies and a micro-controller resides. It is important to understand that the Front Panel contains the serial number so in the event of replacing it, the correct serial number would need to be programmed into the Front Panel. For this reason, swapping Front Panels between units is not recommended. It is strictly used for troubleshooting purposes only.

Firmware Download procedure

Firmwares are found at the following link:
http://www.classeaudio.com/downloads/Downloads.htm?Path=/OPERATING_SOFTWARE

USB Driver:
http://www.silabs.com/Support%20Documents/Software/CP210x_VCP_Windows.zip

Microsoft Redistributable software:
http://www.microsoft.com/en-us/download/details.aspx?id=5638

1. Follow the link above for the correct Firmware
2. Select the file for the model you want to update.
3. The *.pkg file is the operating software for the Classé component. Download the *.pkg file and save to a location on your hard drive. Take note of this location as you will be prompted for the location of the *.pkg file later on.
4. Download the Downloader.exe file and save it to your desktop. You need this program to load the software (*.pkg) into the Classé component. If you're having trouble with this program you may need to download the redistributable package from Microsoft located here.
   Note: Always read the RELEASE NOTES for the software you are planning to download to confirm that the download is appropriate for your unit.
5. Power down the Classé unit using the main power switch at the rear of the unit.
6. Connect the unit to your PC. All models can be connected using a Pin-to-Pin RS232 cable. Models that also have a USB port have the option of using the B side of a USB A/B cable. Using the USB port disables the RS-232 port and vice versa.
7. Follow the instructions below for your particular cable selection:

Updating via RS-232 input

There are two scenarios for connecting with RS232A. If your PC has only one RS232 port simply plug in the RS232 cable. In this case the communication port should be COM1. Follow the instructions below to verify.
B. If your PC has no RS232 connector, you may use a USB to RS232 adaptor. These adaptors are available at your local electronics store, and come with the appropriate drivers for installation on your PC. Follow the instructions for the adaptor carefully to ensure proper installation. It is possible, in both cases, for COM1 to be unavailable. If this is the case you must identify the port you are connected to. To verify:

1. PRESS START ☐ CONTROL PANEL ☐ SYSTEM
2. Once in the "SYSTEM PROPERTIES" window select the "HARDWARE" tab.
3. Select "DEVICE MANAGER". A "DEVICE MANAGER" window will open with a list of devices on your computer.
4. Find the "PORTS (COM & LPT)" section in the list, and expand it (if not already expanded) by clicking on the small "+" sign to the left.
5. Find the connector you are using in the list, and take note of the COM port associated to it. This information is in brackets beside the description. I.e. "Prolific USB-to-serial Bridge (COM1)".

Updating via USB input

1. Connect the B end of the USB cable to the rear of the unit.
2. Connect the A end of the USB cable to your PC.
   Note: Ensure that your PC is booted up, and has an internet connection available as you may need to install Drivers from Microsoft Update. If you do need to install drivers a dialogue box will automatically appear on your PC stating that there is new hardware. Follow the directions to install the necessary drivers for the USB connection. You will need to follow this process twice as there are 2 sets of necessary drivers. The second installation will automatically start once the first is completed.
3. Once the hardware is installed you must take note of the COM port being used by the USB connector. To find this information press START ☐ CONTROL PANEL ☐ SYSTEM.
4. Once in the "SYSTEM PROPERTIES" window select the "HARDWARE" tab.
5. Select "DEVICE MANAGER". A "DEVICE MANAGER" window will open with a list of devices on your computer.

6. Find the "PORTS (COM & LPT)" section in the list, and expand it (if not already expanded) by clicking on the small "+" sign to the left.
7. Find the "CP210x USB to UART Bridge Controller (COMx)" and make note of the Com number.

Saving and archiving user settings

Retrieving and archiving your custom settings from the SSP800 (or any Delta product).
Step 1: Turn off the power to the SSP800 (using the rear panel power switch or unplug from the mains supply (wall outlet)) and attach your computer to the communications port on the SSP800.
Step 2: Start the Downloader program.
Step 3: Select the communications port on your PC that is attached to the SSP800.
Step 4: Press Next.

The Downloader should now be waiting for a reply from the SSP800.
Step 5: Power on the SSP800 by reversing the process in Step 1.
The Downloader should show a message that says device detected and quickly change the following screen.
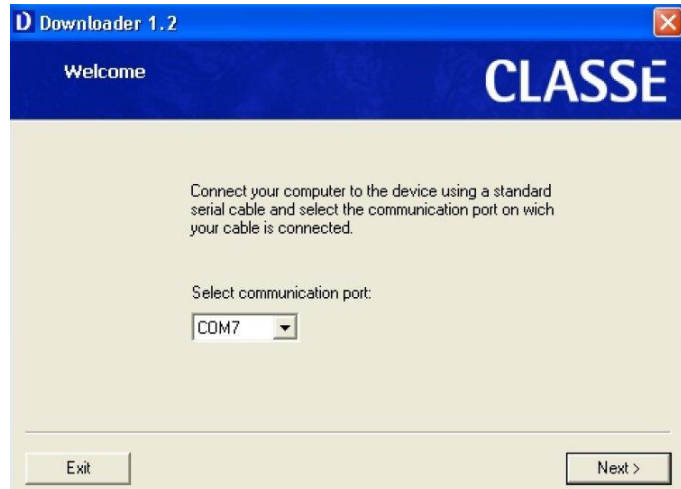
Step 6: Select the 'Backup Setting' check box. And un-select the 'Update Firmware' check box.
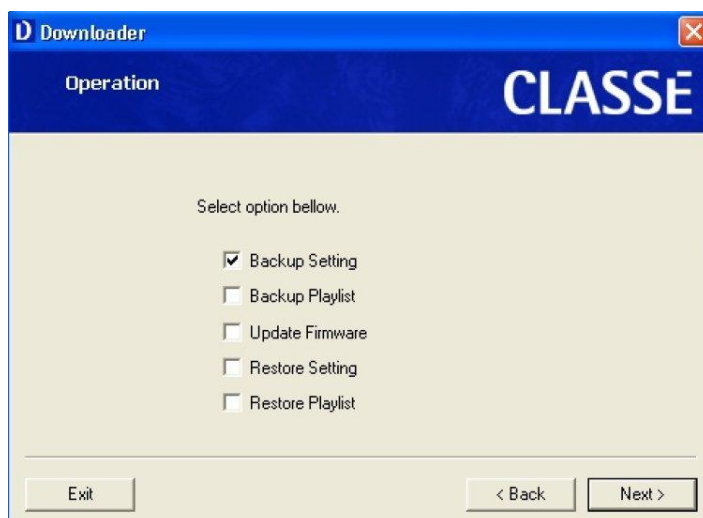
Step 7: Press Next.
The Downloader will now retrieve you custom settings and save them to your PC hard disk.
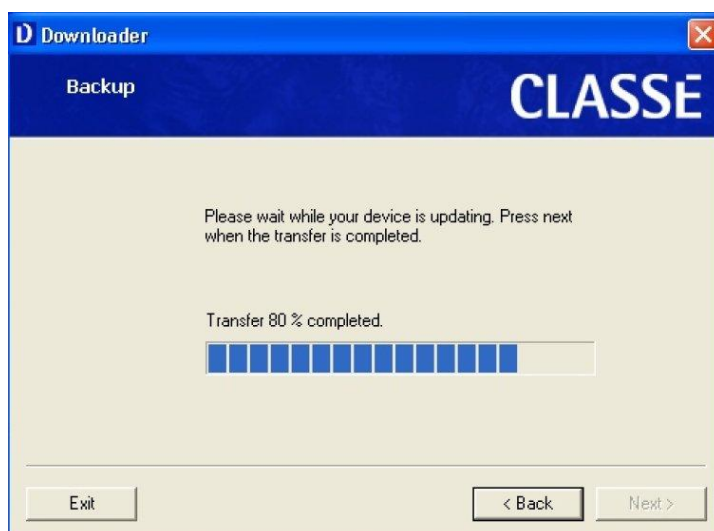
Depending on the version of the downloader program the file will be in one of two places. If the Downloader is version 1.1 or lower the file can be found in the root directory of hard disk. Example: C:\setting.bak If the Downloader is version 1.2 or greater the file can be found in the same directory the
downloader program is located. Example: C:\MyClasseFiles\setting.bak
Step 8: Close the Downloader program.
Step 9: Power off the SSP800 (See Step 1).
Step 10: Power on the SSP800 and let it boot normally.

The setting.bak file contains all of the custom settings that you made to the SSP800 including custom input names, custom configuration settings (speaker settings, level and distance adjustments) and PEQ settings.
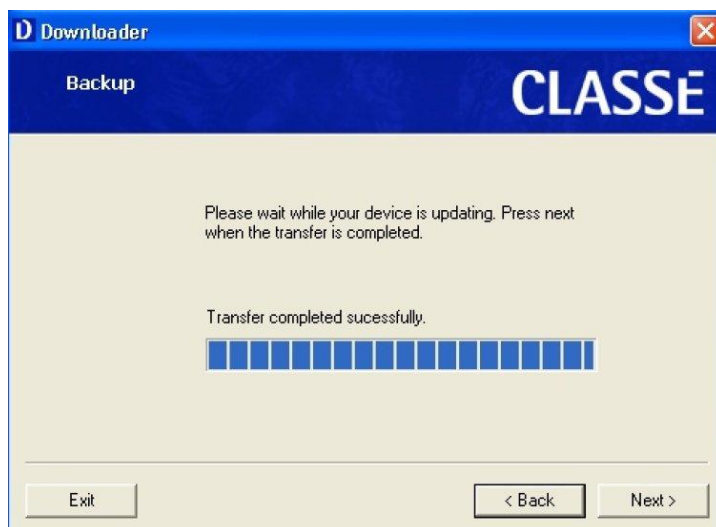
PCB List

Description	SSP-800 PCB Number	CT-SSP PCB Number
Video PCB HDMI 1.4	R6706	R6706
Video PCB HDMI 1.3	?????	?????
Communication PCB	R6705	R6705
Digital & Analog audio PCB	R6704	R6704
Mother Board PCB	R6703	R6703
SMPS / Switching Power Supply	51097930-00	51097930-00
DSP PCB	51377860-00	51377860-00
IR PCB	R453X	R453X
Front Panel PCB	R452X	R452X
Front switch PCB	--	R7302

PCB Identification

Please consult Mechanical assembly document.

PCB revisions and compatibility

All PCB revisions are compatible among each other. The only exception to this is that when a single DSP PCB #G210-2030-XR00 is installed, this would only be compatible with a HDMI V1.3 PCB #51095793-01.

Circuitry guide

R6703 – Main Board

- CPLD U101 provides for DAE/SRC/UART communications
- Provides front panel interface and connectors
- LVDS interfaces
- DACs
- Rail sensing for power fail muting circuitry
- Volume control devices
- Voltage regulation from for +12/-12 volts, +9/-9 volts, +5 volts, 3.3 volts, 1.8 volts
- CPLD U1401 for digital audio routing
- Linear transformer regulation for +12/-12 volts, +5 volts

R6706 – Video Board

- HDMI 1 & 2 transmitters
- HDMI 1 – 4 & HDMI+ARC 1 port processor
- Component OUT video encoder
- Composite 1 – 2 & Component video decoder
- Digital audio output
- OSD overlay FPGA
- Front panel control MCU

R6705 – Communication Board

- Trigger 1 & 2 output buffers
- IR in/out buffers
- USB port communication controller
- RS-232 port transceiver
- System on/off control
- AC voltage and phase sensing circuit
- AC control MCU

R6704 – Digital/Analog Audio Board

- Optical and coax digital audio input buffers
- Analog audio balanced and single-ended inputs
- Bypass mode and A/D conversion circuit for analog audio input circuit
- 7.1 analog audio input buffers
- Digital audio single-ended output

CT-SSP-800 HIGH LEVEL BLOCK DIAGRAM

FUSE

INLET

ANALOG AUDIO OUTPUT CONNECTORS

INTERFACE CONNECTORS

DIGITAL AUDIO INPUT / OUTPUT CONNECTORS

COMM PCB
R6705

FFC 40p

AUDIO INPUT PCB
R6704

P208

P201

P207

P202

P106

P301

P101

P601

18 AWG x 3

18 AWG x 6

18 AWG x 2

HDMI VIDEO / ANALOG VIDEO CONNECTORS

18 AWG x 4

SMPS

P1

SK2

FFC 40p

VIDEO PCB
10001940

J4

J12

JP1

P1401

P1406

FFC 40p

18 AWG x 5

RIBBON 24p

DAE-7
DSP MODULE

P1506

P104

P9

B/B CON.

P103

P201

P1501

MAIN PCB
R6703

ANALOG
AUDIO
TRANSFORMER

18 AWG x 5

RIBBON 34p

RIBBON 26p

B/B CON.

P100 / FFC

P160

P540

P203

P202

FFC 6p

IR PCB
R453X

P800

LCD DISPLAY

VOLUME
ENCODER

P275 / P500

RIBBON 5p

FRONT PANEL PCB
R452X

AC LINES

DC SUPPLY LINES

DATA/SIGNAL/PS LINES

MECHANICAL CONNECTION

Appendix A: AC line voltage ranges

The CT/SSP-800 is set at the factory (internally) for 100V, 120V, 230V, or 240V AC mains operation, as appropriate for the country in which they are sold. The CT/SSP-800 include protection circuitry that will prevent the units from operating at dangerously high or low voltages.

The acceptable AC line voltage ranges are:

Operating voltage (factory setting):	Lower limit:	Upper limit:
100VAC	90	109
120VAC	108	132
230VAC	207	253
240VAC	216	259

If the voltage is outside of the above ranges when the CT/SSP-800 is first plugged in, the unit will NOT turn on.

Appendix B: Voltage change

1. ⚡ Unplug the unit before opening.
2. Remove 10 top cover screws.

3. Locate P203, P204 and P206 headers inside the unit on PCB R6705RXX.
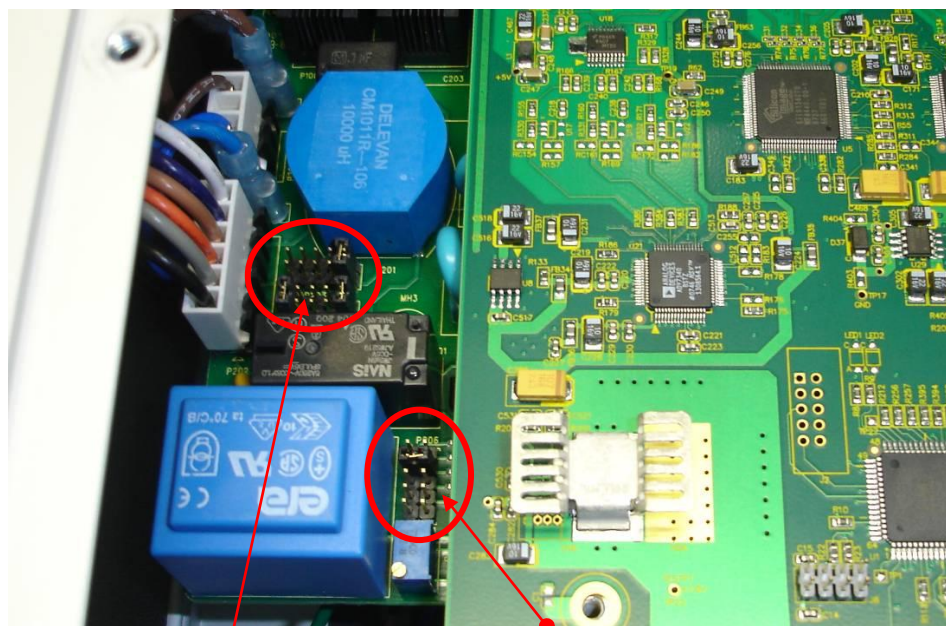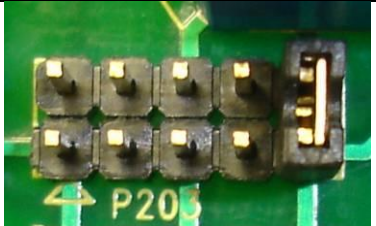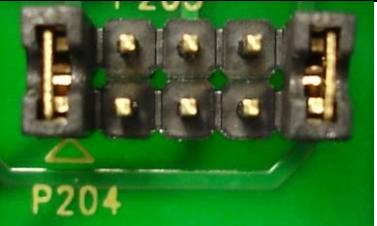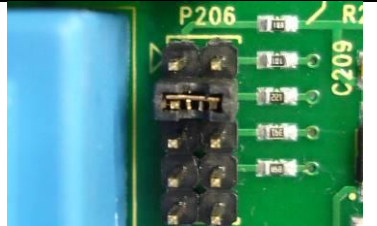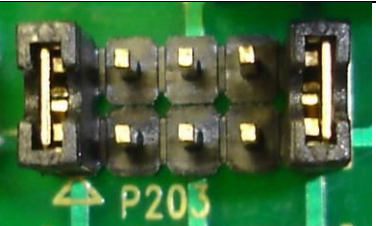

P203 and P204   and   P206

For 100 Volts:

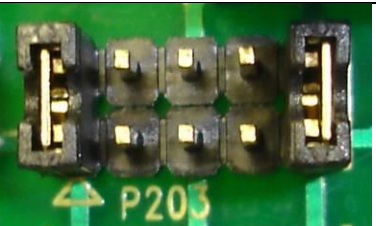| For **P203** put (1) jumper between pin 5 and 6	For **P204** put (2) jumpers between pin 1-2 and Pin 5-6	For **P206** put (1) jumper between pin 1-2

For 120 Volts:

For **P203** put (1) jumper between pin 9 and 10	For **P204** put (2) jumpers between pin 1-2 and Pin 9-10	For **P206** put (1) jumper between pin 3-4

For 220/230 Volts:

For **P203** put (2) jumpers between pin 1-2 and Pin 9-10	For **P204** empty	For **P206** put (2) jumpers between pin 5-6 and Pin 9-10

For 240 Volts:

For **P203** put (2) jumpers between pin 1-2 and Pin 9-10	For **P204** empty	For **P206** put (2) jumpers between pin 7-8 and Pin 9-10

Jumper Per connector:

P203				
	100 VAC	120 VAC	220/230 VAC	240 VAC
1-2			X	X
3-4				
5-6	X			
7-8				
9-10		X	X	X

P204				
	100 VAC	120 VAC	220/230 VAC	240 VAC
1-2	X	X		
3-4				
5-6	X			
7-8				
9-10		X		

P206				
	100 VAC	120 VAC	220/230 VAC	240 VAC
1-2	X			
3-4		X		
5-6			X	
7-8				X
9-10			X	X

Fuse: 218.800 T800mAL250V for 100/120V
219.500 T500mAE250V for 220/230/240V
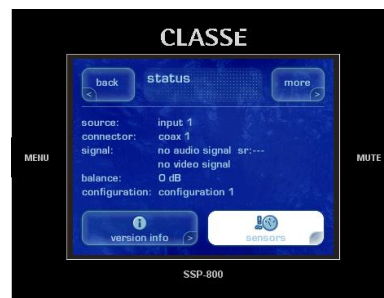
Voltage calibration check:

- Power up the unit with the appropriate mains voltage.
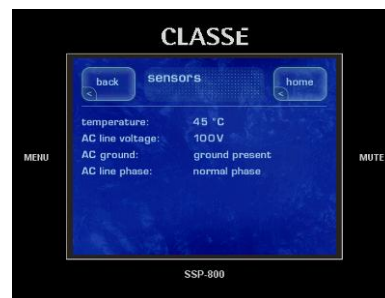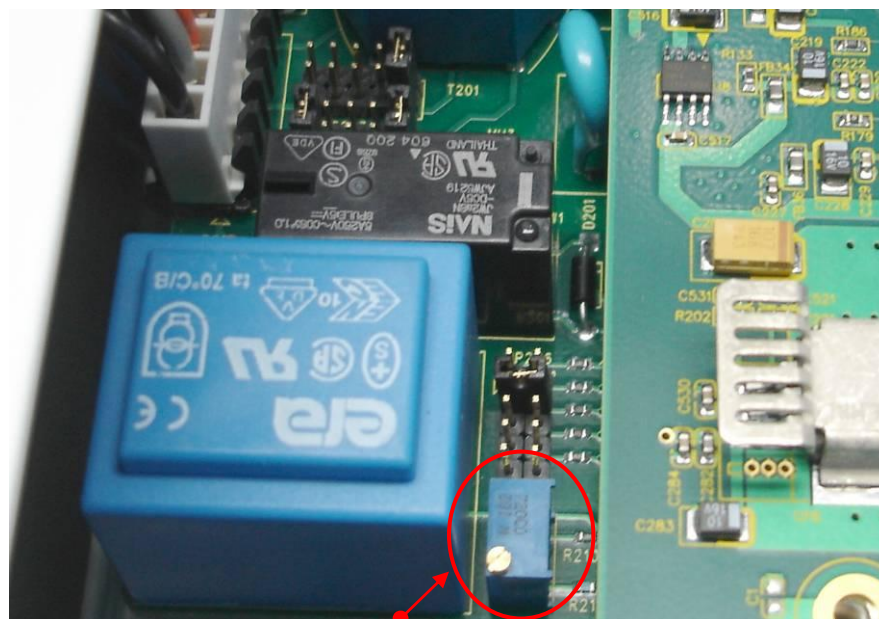- Press MENU / STATUS / SENSORS.

"MENU"

"status"

"sensors"

"displayed voltage"

- Verify that the displayed voltage corresponds to the input Vac, if not adjust trimpot RV201 until the status screen shows the correct voltage.


RV201 Trimpot

## Appendix D: USB & RS232 interface configurations

USB configuration

1. Connect the B end of the USB cable to the rear of the unit.
2. Connect the A end of the USB cable to your PC.
   Note: Ensure that your PC is booted up, and has an internet connection available as you may need to install Drivers from Microsoft Update. If you do need to install drivers a dialogue box will automatically appear on your PC stating that there is new hardware. Follow the directions to install the necessary drivers for the USB connection. You will need to follow this process twice as there are 2 sets of necessary drivers. The second installation will automatically start once the first is completed.
3. Once the hardware is installed you must take note of the COM port being used by the USB connector. To find this information press **START □ CONTROL PANEL SYSTEM**.
4. Once in the "**SYSTEM PROPERTIES**" window select the "**HARDWARE**" tab.
5. Select "**DEVICE MANAGER**". A "**DEVICE MANAGER**" window will open with a list of devices on your computer.
6. Find the "**PORTS (COM & LPT)**" section in the list, and expand it (if not already expanded) by clicking on the small "+" sign to the left.
7. Find the "CP210x USB to UART Bridge Controller (COMx)" and make note of the Com number.
8. Configure utility program to the corresponding Com number used.

Appendix E: Trigger

The SSP has two available trigger controls. Each may be programmed to either "logic" (12V) or "inverse logic" (0V) settings. The ability to change the way the trigger operates can solve installation-specific problems that otherwise require external devices that add to both the cost and complexity of your system.
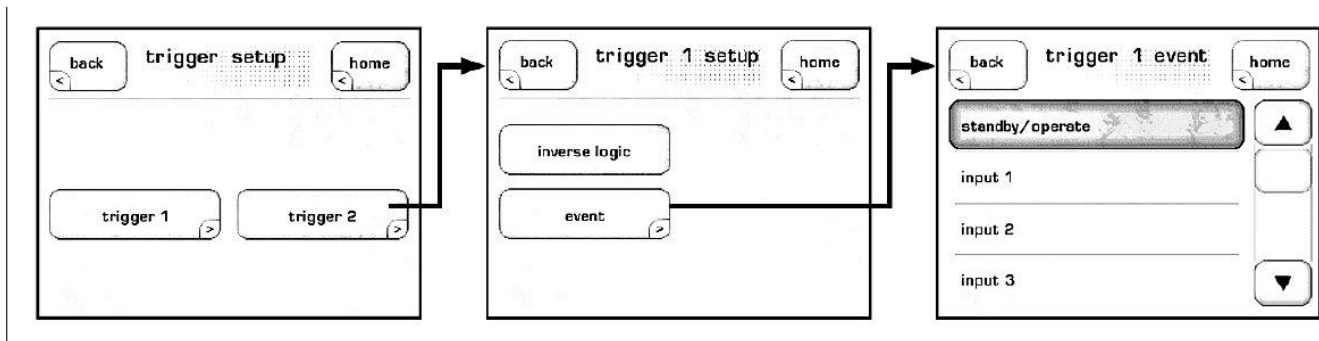

The Event button is used to assign the trigger activation to a specific event. The triggers can be associated with the Standby mode, a specific input, configuration, surround processing mode activation, or even a combination of these. To use the Inverse Logic option, simply highlight the Inverse Logic button on the Triggers setup page.

12 volts @ less than 100 mA
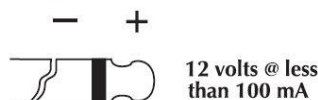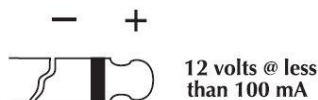
Appendix F: IR

IR Input
Use the IR input when the front panel IR window does not have a clear line-of-sight with the remote control, for instance, when the SSP is installed in a cabinet or closet. Attach this input to an infrared repeater system to route signals from the remote control to the SSP via a mono mini-jack (3.5mm phono).
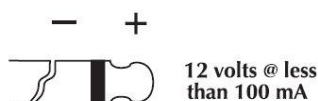
The list of available IR command codes can also be used in macros for sophisticated remote control systems, facilitating the control of the SSP in the larger context of the complete system.

IR Output
Use the IR output to pass IR commands from an external IR transmitter through the SSP to another component, when necessary. The output uses a mono mini-jack (3.5mm phono) with the same properties as the diagram

Appendix G: Fuse chart

Voltage	Manufacturer's P/N		Size	Rating	Classe P/N
	Littlefuse	Bussman			
100/120V	218.800	T800mAL250V	5X20mm	0.8A/250V slow blow	G206-1060-xr00
220/230/240V	219.500	T500mAE250V	5X20mm	0.5A/250V slow blow	51300961-00

Appendix H: Typical Specifications

Frequency response 20Hz - 200kHz < 0.1dB, stereo analog bypass
20Hz - 20kHz < 0.2dB, all other sources
Distortion *(THD+noise)* 0.001%, digital source/bypassed analog source .002%, processed analog source
Maximum input level *(single-ended)* 2Vrms (DSP), 6Vrms (bypass)
Maximum input level *(balanced)* 4Vrms (DSP), 12Vrms (bypass)
Maximum output level *(single-ended)* 8Vrms
Maximum output level *(balanced)* 15Vrms
Gain Range -100dB to +14dB
Input impedance 100kΩ
Output impedance *(main output)* 56
Signal-to-noise ratio *(ref. 10Vrms input)* 102dB, bypassed analog source
100dB, processed analog source
105dB, digital source
Channel separation better than 100dB
Crosstalk *(any input to any output)* better than -120dB @ 1kHz
Video input impedance 75
Video output impedance 75
HDMI v.1.4a supporting 2D video at resolutions up to 1080p
@ 24/50/60 fps, standard 3D video formats with resolutions
up to 1080p @ 24 fps, Audio Return Channel (ARC),
HDMI Ethernet Channel (HEC), Deep Color and x.v.Color(xvYCC)
Rated power consumption 75W
Mains voltage determined by the needs of country for which the unit
was manufactured; cannot be reset by dealer or user
Overall dimensions SSP-800 width: 17.5" (445mm) CT-SSP width: 19" (482mm) SSP-800 depth (excluding connectors): 16.5" (419mm)
CT-SSP depth (excluding connectors): 14.91" (378.71mm) SSP-800 Height: 6.75" (172mm)
CT-SSP Height: 6.97" (177mm)
Net weight SSP-800: 29 lbs (13 kg) CT-SSP: 33 lbs (15 kg)
Shipping weight SSP-800: 38 lbs (17 kg) CT-SSP: 49 lbs (22 kg)

Appendix I: Power Supply test points

Plug AC line and turn ON the main switch from back of the unit and ensure **that you hear the clicking sound of relay within 2 second**. Verify supply voltage on mother board R6703R04 at test point TP1502 =+12Vdc, TP202=+5Vdc, TP204=+3.3Vdc, positive side of capacitor C1546=+12Vdc, negative side of capacitor C1545=-12Vdc, TP1505=+5Vdc and TP301=+3.3Vdc with respect to analog ground TP1513.
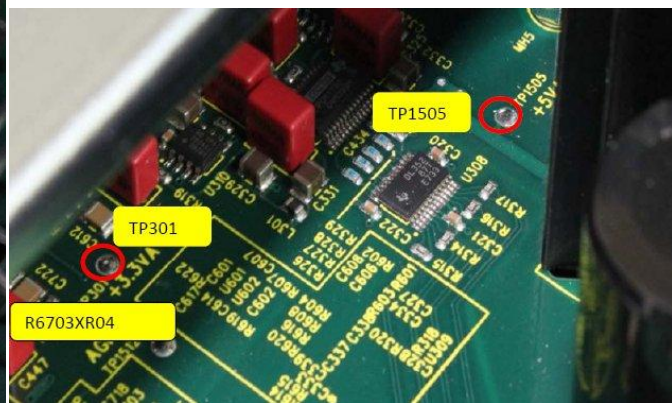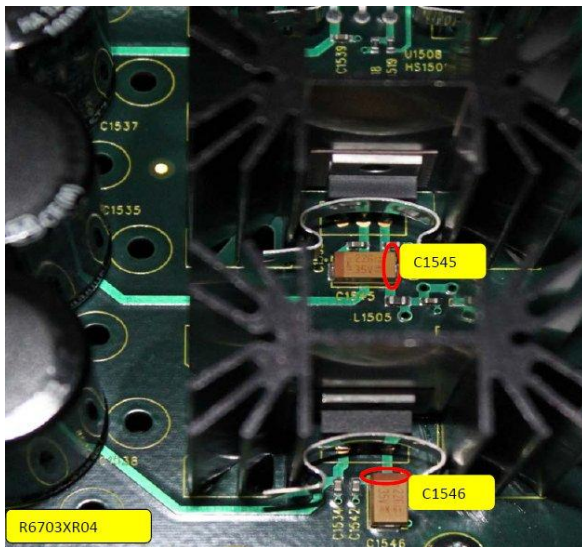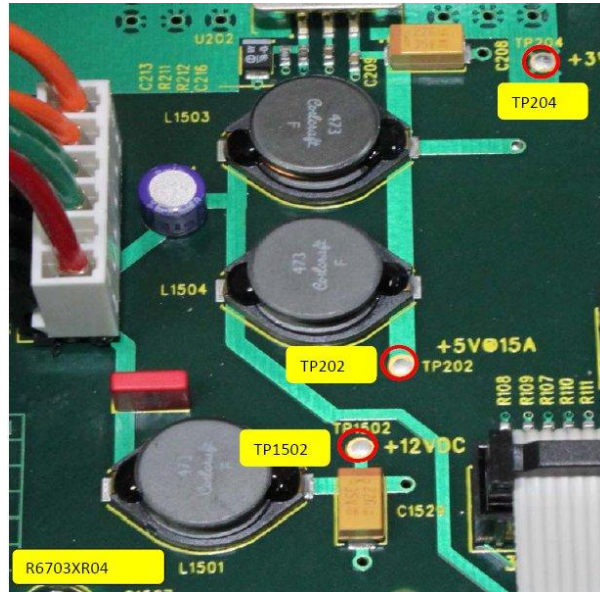
Appendix J: Quick spare parts list

Parts/PCB's

Classé Part Number	Description
51518034-01	Video PCB HDMI 1.4
51095793-01	Video PCB HDMI 1.3
R6705-04-03S	Communication PCB
R6704-03-00S	Digital & Analog audio PCB
R6703-04-02S	Mother Board PCB
51097930-00	SMPS / Switching Power Supply
51377860-00	DSP PCB
R453X	IR PCB
R452X-05-01X	Front Panel PCB for SSP-800 & CT-SSP *upright volume connector*
R452X-04-06B	Front Panel PCB for SSP-800 & CT-SSP *right angle volume connector*
R7302-02-00S	Front Switch PCB *for CT-SSP*
G219-1034-XR00	Front panel touch screen
51097930-00	SMPS / switching power supply
GR605-07-001	Power supply Harness
G206-1060-XR00	T800mAL250V Fuse (For 210V, 220V units)
51300961-00	T500mAE250V Fuse (For 220V, 230V, 240V units)

Amendment Record

DATE	DETAILS OF CHANGES	ISSUE STATUS	APPROVAL
May 2013	Initial release	V 1.0	GU