User's Manual

Digital Power Amplifiers

MODEL: STV SERIES

LDA audioTech

INDEX

WARNINGS

Read this instruction manual before operating the device.
1. Keep this manual for further reference.
2. his device must not be exposed to water. As a precautionary measure, objects containing liquids must not be placed next to/on top of it.
3. Do not block the system's ventilation inlets/outlets, and do not install the device to sources of heat.
4. If the device is going to be mounted on a frame or rack, make sure that there is good ventilation.
5. Only use original accessories provided by the equipment's manufacturer.
6. Unplug the device when it is not going to be used for a long period of time.
7. Clean with a wet cloth, and do not use chemicals products.

1. TECHNICAL DESCRIPTION

The STV series has amplifiers of 2 and 4 Class AB channels with direct output (without transformer) at 100V. Available configurations are for 2 200W, 400W or 800W channels, and 4 200W or 400W channels.

Each amplifier channel includes connected loudspeaker line monitor and protection functions against over-heating, clip and short-circuit, in addition to forced ventilation at variable speed.

The STV series has a graphical screen on the front panel that allows configurating operation parameters, and the control and monitoring of the equipment. It also includes three general indicators: on/standby, link Ethernet (only for ETX-1 and ETX-1CN), and active priority input, and two indicators per channel: presence of signal/clip and state of channel (indicates 3 different states).

All versions comply with standard EN-UNE 60849 regarding voice evacuation systems, since the operation of the audio channel, from the input to the output of the amplifier, is monitored with and without input signals to the system, therefore ensuring that it is available during an emergency.

All models have DSP per channel for audio control. In addition to the 2 or 4 inputs depending on the number of amplifier channels, they also include a priority input activated by means of an external operation.

The entire series includes an expansion bay to assemble remote control and monitoring modules through Ethernet (ETX-1), or direct audio inputs through CobraNet (ETX-1CN). This module also includes the features of model ETX-1.

The dimensions of all products are the same for all possible channel configurations, and can be installed on 2 19" rack units.

STV WITHOUT EXPANSION MODULE

STV WITH EXPANSION MODULE ETX-1

STV WITH EXPANSION MODULE ETX-1CN

2. DESCRIPTION OF CONTROLS

2.1.   BEFORE SWITCHING THE DEVICE:

1. Make sure that the power supply circuits are properly dimensioned and that the power voltage is stable. To dimension the circuits, check the technical characteristics of the specific model.

2. Make sure there is correct air circulation from the front of the device towards the back, and avoid obstructing the air flow. This device has forced ventilation at variable speed depending on the dissipation needs, in order to maintain the best operation temperature. Blocking the air inlets or outlets can cause overheating of the device. In case of overheating the system will protect itself by cutting the audio signal until it recovers the optimum operating temperature.

3. Check that the loudspeaker lines connected to the amplifier channels exceed the minimum specified impedance for nominal channel power.

2.2.   DESCRIPTION OF CONTROLS. FRONT PANEL:
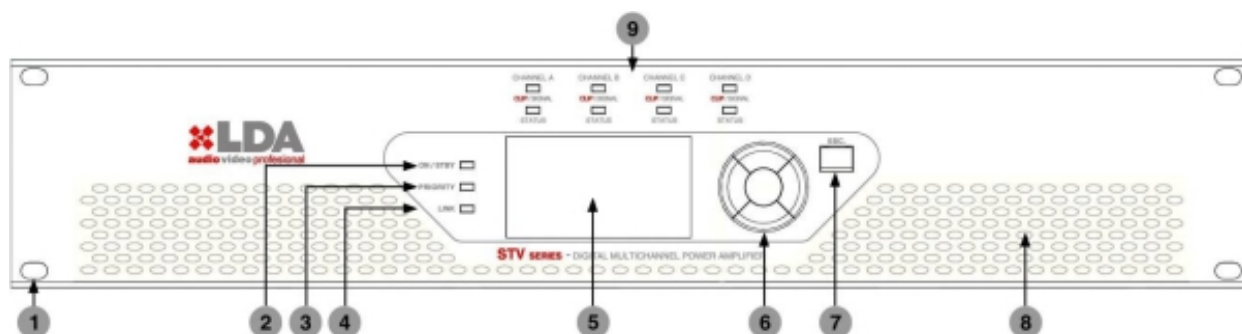
1. Drill holes for assembly on 19" rack

2. "On / Standby" indicator.
   "Standby": The indicator light will be red. In this condition the device will wait for the amplifier channels to be switched on. The unit's control and monitoring elements remain active, allowing the configuration of all the operation parameters. This state is the same if the device is controlled remotely through an ETX series expansion module. In this mode, the level of consumption remains low.
   "On": The indicator light will be green. Before indicating "on", the amplifier will check the whole system. If everything is correct, then it will go "on".

3. "Priority" indicator: In normal operating mode, it will remain switched off. When the priority audio input is activated, the indicator light will be green.

4. "Link" indicator: In case the system uses an expansion module of the ETX series, the light will be orange to indicate that there exists correct communication with the LDA remote control system.

5. 128x64 LCD Screen: It allows controlling and monitoring the system locally. It has contrast and intensity control, and also incorporates dynamic backlighting correction depending on the lighting of the place where the equipment is located, thus providing optimum display conditions. It includes screensaver configuration and turn-off timer to save energy.

6. Navigation control: It consists of five keys, four for direction and one for confirmation to navigate through the system's configuration and monitoring menus. Any parameter that needs to be modified must be confirmed by pressing the "OK" key.

7. "ESC." Navigation Control: The control key for menu back, "ESC", allows exiting the selected menu icon when pressed once, and when pressed consecutively it allows going backwards in the navigation. In case of parameter modification, as long as the "OK" key has not been pressed the previous state is recovered by pressing the "ESC" key.

8. Air inlets for forced ventilation of the amplifier channels, and general temperature of the device.

9. "CLIP/SIGNAL" and "STATUS" Channel indicators: "CLIP/SIGNAL": Indicates the signal level of audio channel X. A green light indicates a normal level of audio signal output; an orange light indicates a high output level, and a red light indicates "CLIP" output signal.

   "STATUS": Indicates the status of the amplifier channel:

   If the indicator light is red continuously: The amplifier channel is in the mode due to some problem detected during its operation. In this case, check that there is no problem of overheating by monitoring the temperature with the appropriate menu.

   If the problem is overheating, check that the connected voltage corresponds to the unit's specifications,
   and that the air inlets/outlets are not blocked or obstructed.

   If the problem is not due to overheating, turn the system off by pressing the "power" button on the back and contact the LDA Authorised Technical Service.

   If the indicator light is red intermittently: It indicates a transitory channel state due to

some problem detected in the loudspeaker lines with which the amplifier channels are loaded. In this case, check that the loudspeaker lines are not diverted or in short-circuit.

If the indicator light is orange: The amplifier channel does not have any load, the load is of very high impedance, or the loudspeaker line has an open-circuit fault.

If the indicator light is green: The amplifier channel is working in optimum conditions.

## 2.3.DESCRIPTION OF CONTROLS. CONFIGURATION MENU:
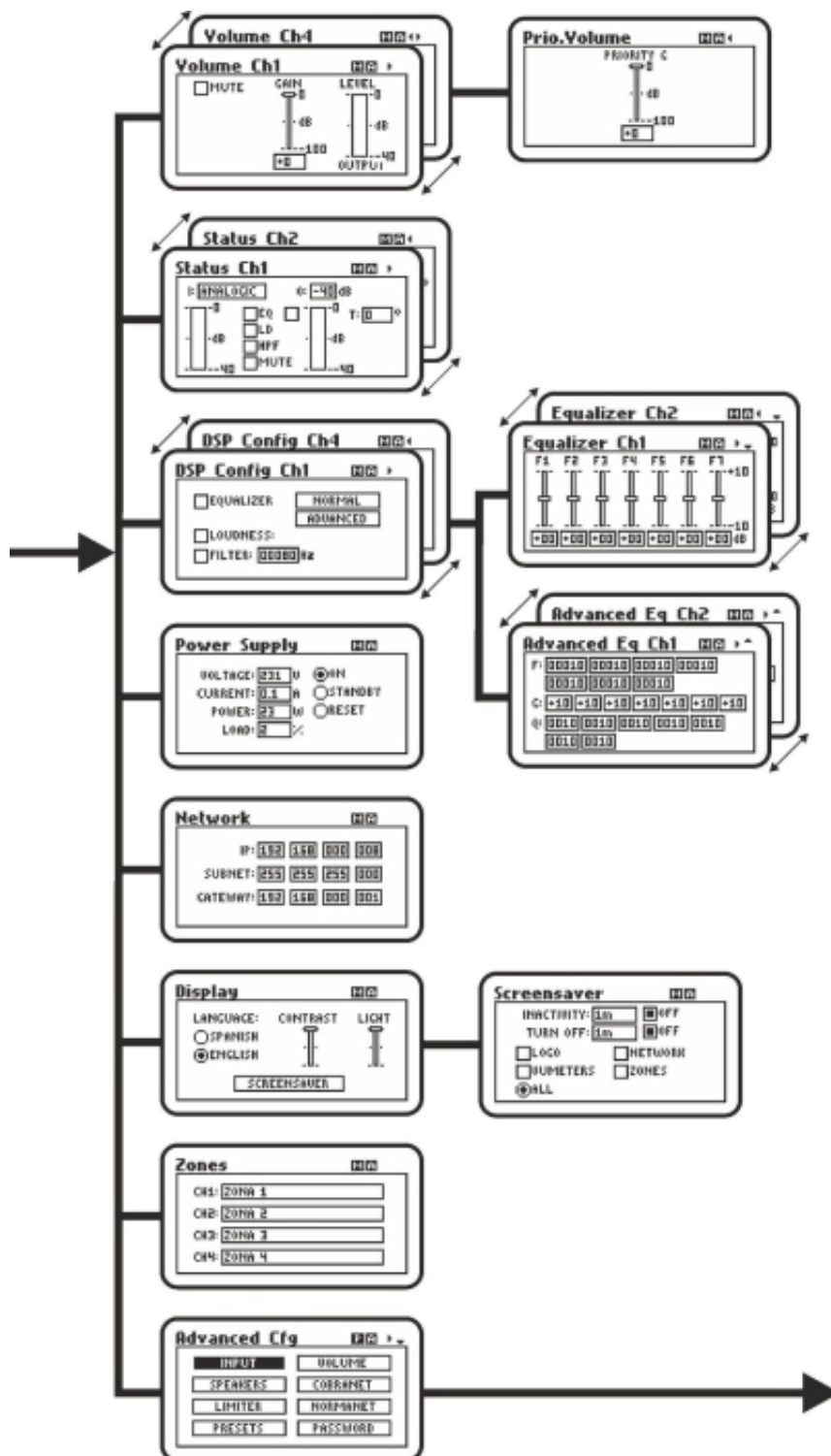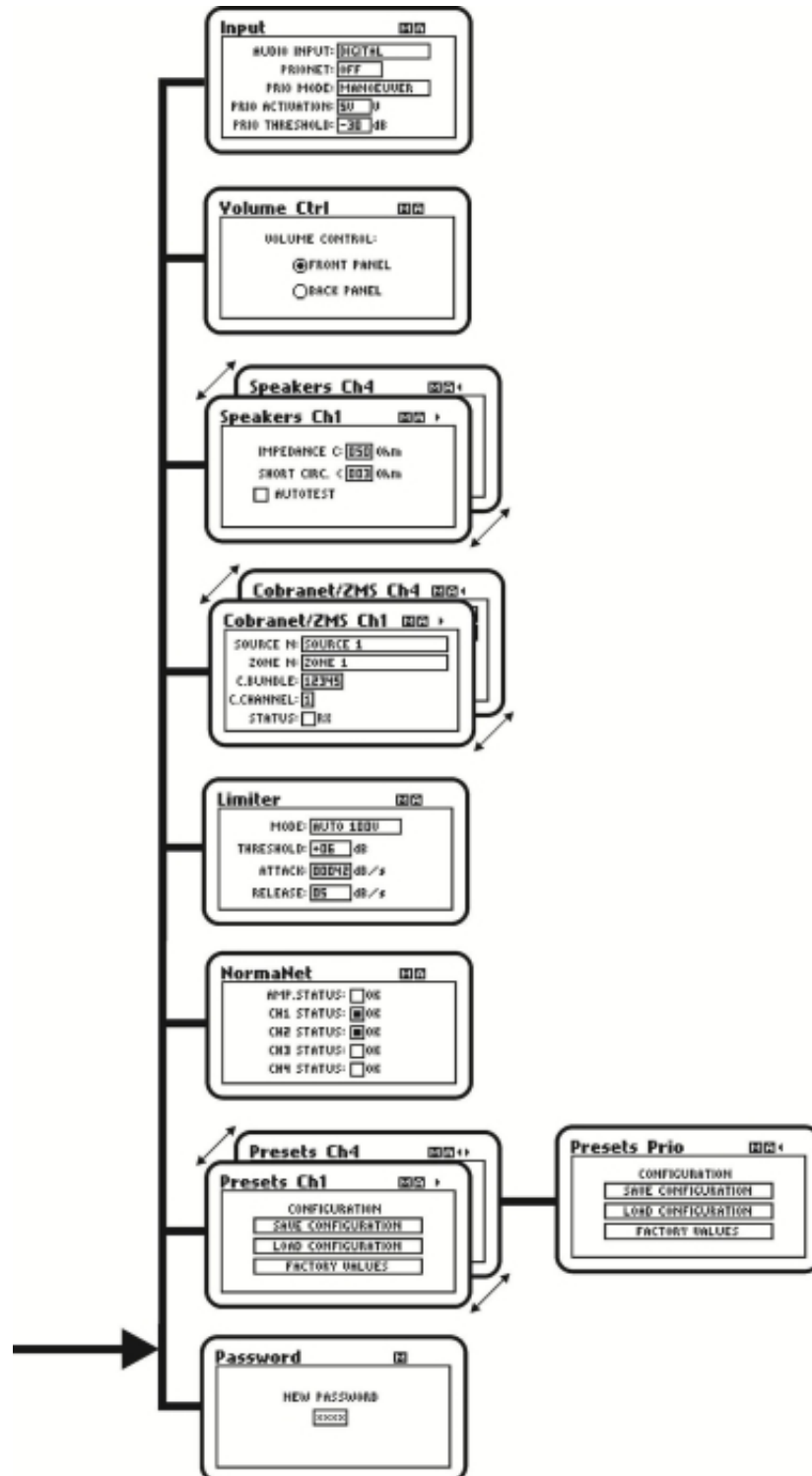
2.3.1. NAVEGATION INDICATORS:
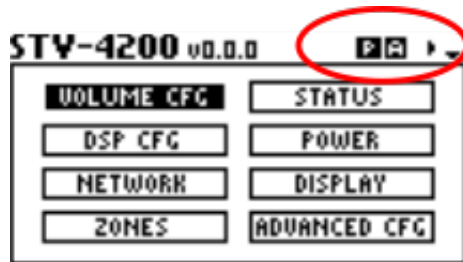
IMPORTANT:

It is necessary press the OK key in order to change the settings. If the ESC key is pressed, it will return to the previous value. The OK key must be pressed foR selecting the Mode if you are in the Navigation Mode. In another case, we it would keep in the Navigation Mode between menus.

2.3.2. MENU DIAGRAM:
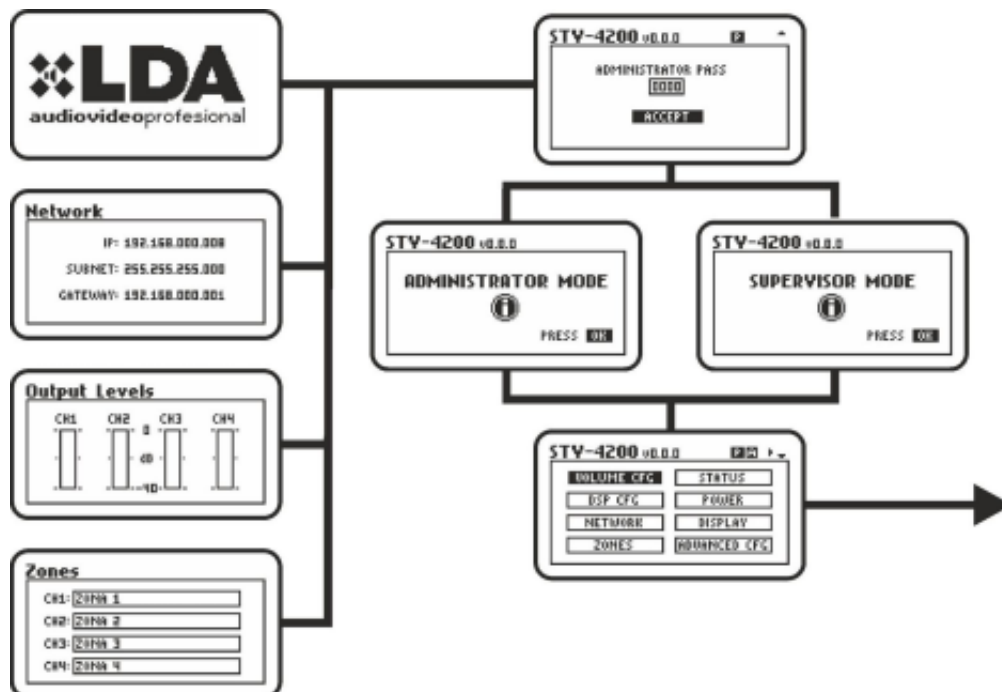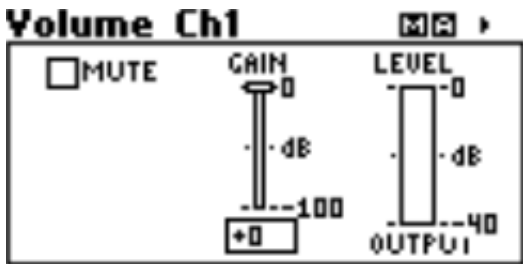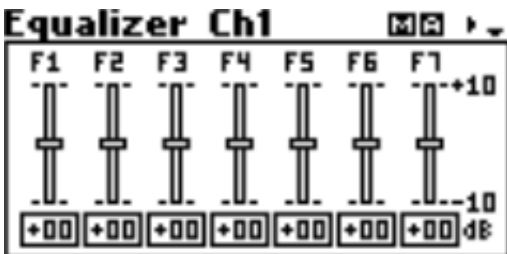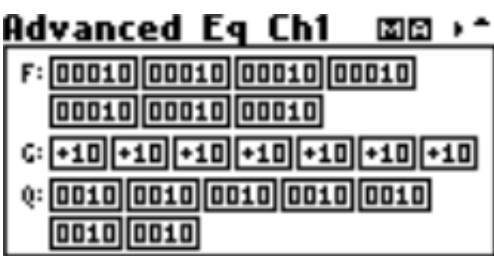
2.3.3 MENÚ:
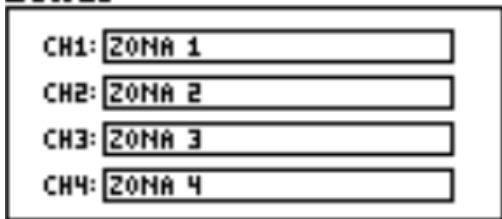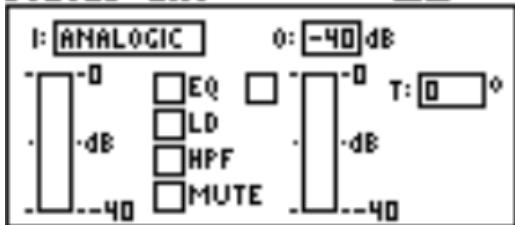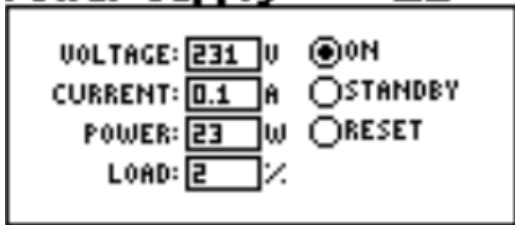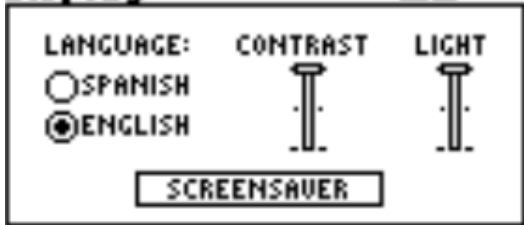
SCREEN	DESCRIPTION
	Welcome screen: During start-up and also as default screensaver.
	User access control. By default: 0000.
	Access Information Screen for Administrator mode. It's shown if the password is correct.
	Access Information Screen for Supervisor mode. It's shown if the password is correct. The equipment setting is not allowed in this mode.

STY-4200 v0.0.0 🅿️🄰 ▸ ▾ **VOLUME CFG** STATUS DSP CFG POWER NETWORK DISPLAY ZONES ADVANCED CFG	Menu to select submenus.

SCREEN	DESCRIPTION
Volume Ch1 	Gain and VU meter control: It has amplifier channel volume control for both normal input and to adjust the priority input level. It also includes output signal VU meter and mute indicator.
DSP Config Ch1 	It allows access to the submenu for preset 7 band equalization, or to the advanced equalizer. It also includes a control to activate a high-pass filter for low frequencies and "loudness".
Equalizer Ch1 	Gain set of 7 prefixed bands Equalizer. The adjustment of parameters could be made by means of Advanced Equalizer.
Advanced Eq Ch1 Central Frequency in Hz Gain measured in dB, Q times.	Advanced Equalizer per channel. It allows a personalized adjustment for each band. After band setting, the gain adjustment could be configured, which is by default: Q: Relative Constant of bandwidth for the filter: $$Bw = \frac{100 * fc}{Q}$$
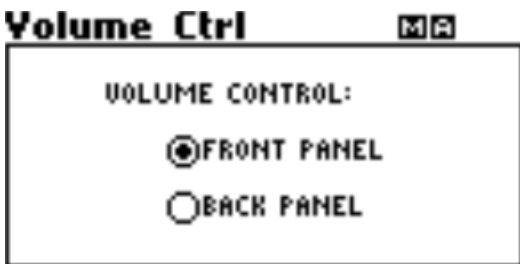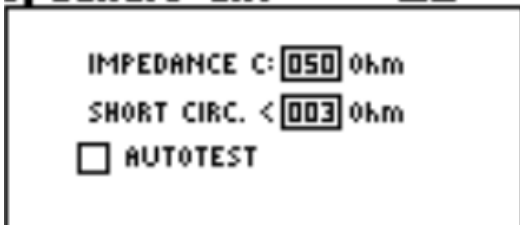
Network IP: 192.168.000.008 SUBNET: 255.255.255.000 GATEWAY: 192.168.000.001	LAN Configuration. This menu is only available if the system has an ETX series module.
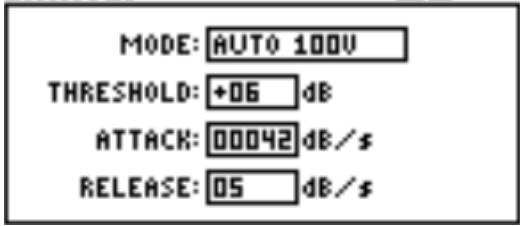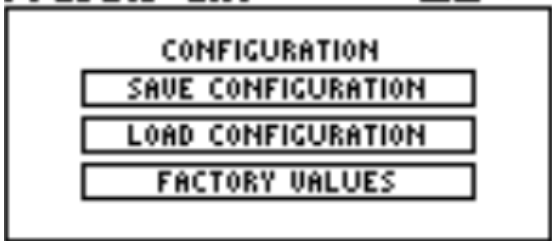
SCREEN	DESCRIPTION
Zones CH1: ZONA 1 CH2: ZONA 2 CH3: ZONA 3 CH4: ZONA 4	The name of the associated zone with an amplifier channel is shown. Available only for ETX modules.
Status Ch1 I: ANALOGIC O: -40 dB EQ LD T: 0° HPF MUTE	Channel monitor: It shows all the information regarding the amplifier channel selected: type of input, line voltage, equalizer, loudness, highpass filter, limiter and amplifier channel temperature.
Power Supply VOLTAGE: 231 V ●ON CURRENT: 0.1 A ○STANDBY POWER: 23 W ○RESET LOAD: 2 %	Main power supply monitor: It shows the voltage supplied to the system, as well as consumption in amperes and watts. It also indicates the general load of the power supply source. Switch On/ Standby Control
Display LANGUAGE: CONTRAST LIGHT ○SPANISH ●ENGLISH SCREENSAVER	Screen Setting Menu. Select the language, brightness/contrast adjustment. Access to Screensaver setting.

Screensaver

INACTIVITY: 1m ■OFF
TURN OFF: 1m ■OFF
☐LOGO ☐NETWORK
☐VUMETERS ☐ZONES
◉ALL

Screensaver Setting. It allows to set the screensaver release time due to long time without action over front buttons. The time without action could be adjusted (total turned screen off). The information shown could be selected.

SCREEN	DESCRIPTIONN
Advanced Cfg 🄿🄰 ▸▾ INPUT VOLUME SPEAKERS COBRANET LIMITER NORMANET PRESETS PASSWORD	Menu to select advanced configurations.
Input 🄼🄰 AUDIO INPUT: DIGITAL PRIONET: OFF PRIO MODE: MANOEUVER PRIO ACTIVATION: 5V V PRIO THRESHOLD: -30 dB	Inputs setting. Analogical/digital audio input selection – by rear inputs or CobraNetTM 1 . 1 Available only with ETX-1CN modules. PRIONET: Priority Input by CobraNet –only with ETX-1CN. MODE: Priority Activation mode selected by manoeuvre or noise port.
Volume Ctrl 🄼🄰 VOLUME CONTROL: ◉FRONT PANEL ◯BACK PANEL	Volume Controls selection by volume controls placed into rear panel or by front control.
Speakers Ch1 🄼🄰 ▸ IMPEDANCE C: 050 Ohm SHORT CIRC. < 003 Ohm ☐ AUTOTEST	Line Speaker setting and release conditions.

PANTALLA	DESCRIPCIÓN
Cobranet/ZMS Ch1 ☒☒ › SOURCE N: SOURCE 1 ZONE N: ZONE 1 C.BUNDLE: 12345 C.CHANNEL: 1 STATUS: ☐RX	Setting of CobraNet Channels. Supply name and Zone name are synchronized automatically by ZMS System application. The Bundle and Channel are set per channel.
Limiter ☒☒ MODE: AUTO 100V THRESHOLD: +06 dB ATTACK: 00042 dB/s RELEASE: 05 dB/s	Anti-clip function Setting. Modes: 100V or 70V output. The activation parameters could be set too.
NormaNet ☒☒ AMP.STATUS: ☐OK CH1 STATUS: ☒OK CH2 STATUS: ☒OK CH3 STATUS: ☐OK CH4 STATUS: ☐OK	Equipment status Checking. It checks the amplifier channels status.
Presets Ch1 ☒☒ › CONFIGURATION SAVE CONFIGURATION LOAD CONFIGURATION FACTORY VALUES	Access to Save/Load Preset per channel including Priority Input. It allows to save the current configuration status or to recover the previous status. The default values per channel could be load.

PANTALLA	DESCRIPCIÓN
Password 🅼🅰 NEW PASSWORD [0000]	Change of Access Password in Administrator model. By default: 0000.

PANTALLA	DESCRIPCIÓN
STV-4200 v0.0.0 LDA LINK ACTIVE ⓘ PRESS **OK**	Warning Screen about link with System Control. The Administrator Control will be disabled during remote control. This screen will be shown to try the access to Administrator control.
STV-2XXX v0.0.0 1041 ERROR ⚠	Warning Screen for failure detected. See section 6 for further information.

2.4. DESCRIPTIONS OF CONTROLS: BACK.
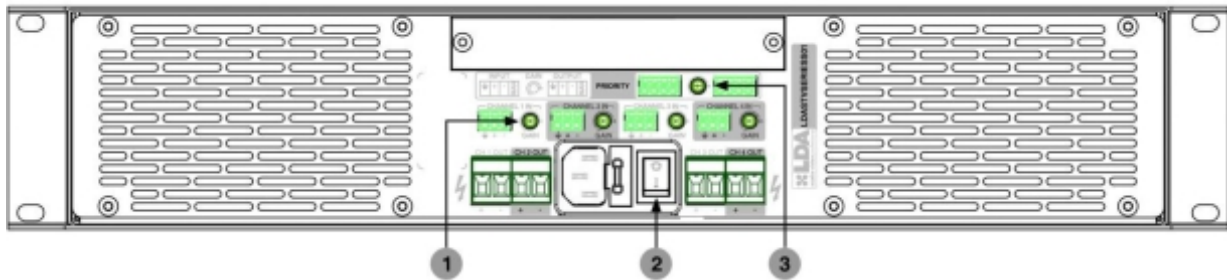
1. Gain Controls: The independent channel gain controls can be adjusted manually and intuitively from the back. The adjustment range from the back is comprised between -80dB to 0dB. These controls are set with the default value and can be disabled in order to perform gain control from the front panel by using the appropriate adjustment menu. The adjustment range is comprised between -100dB to 0dB.

2. "Power" Switch: It allows connecting/disconnecting the system completely from the power supply network. This switch cuts the total supply directly. The "Clic" sound, which is due to the speakers connection, can be avoid changing the equipment status to STAND-BY from the front before turn off the switch.

3. Priority Gain Control: With this control the gain of the priority channel can be adjusted independently. The adjustment range from the back is comprised between -80dB to 0dB. Its variation does not affect cascade priority output. This control is set with a default value and can be disabled in order to perform gain control from the front panel by using the appropriate adjustment menu. The adjustment range is comprised between -100dB to 0dB.

3. CONNECTIONS

All connectors needed to connect the equipment are supplied. They are all easily connected and do not need specific tools. 2.5mm and 5mm flat-blade screwdrivers will be necessary. Next to each type of connection there appears a descriptive image as a reminder of the correct way to do the connection.

3.1. CONNECTIONS: BACK.
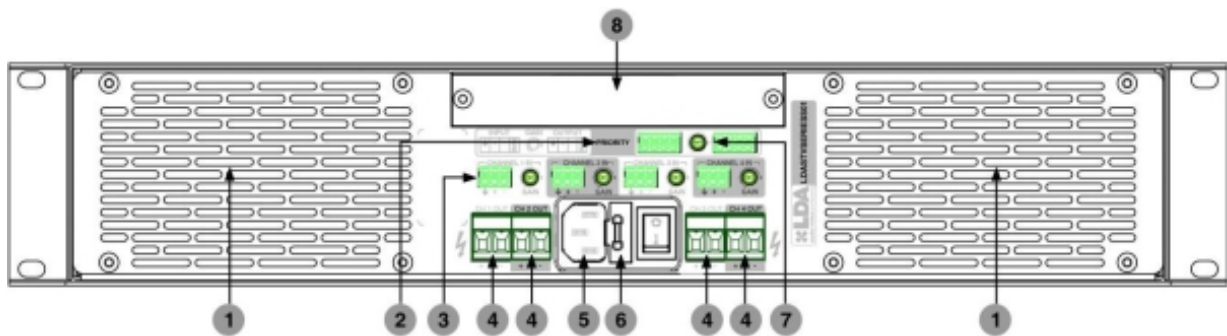
1. Air outlets for forced ventilation of the amplifier channels, and general temperature of the system.
2. Balanced priority audio input:
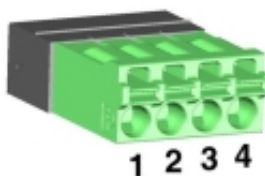
PIN	SIGNAL	DESCRIPTION
1	SHIELD	Must always be connected.
2	AUDIO+	Input impedance 10KΩ.
3	AUDIO-	Input impedance 10KΩ.
4	OPERATION	Active due to closure with pin 1)

3. Balanced audio input channel 1 ,2 ,3 ,4:
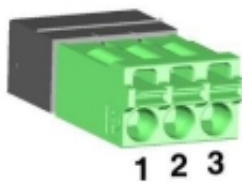
PIN	SIGNAL	DESCRIPTION
1	SHIELD	Must always be connected.
2	AUDIO+	*Input impedance* 10KΩ.
3	AUDIO-	*Input impedance* 10KΩ.

4. Amplifier channel output:

PIN	SIGNAL	DESCRIPTION
1	+	OUTPUT @ 100V POSITIVE
2	-	OUTPUT @ 100V NEGATIVE

CHANNEL POWER	MINIMUM IMPEDANCE OF LINE
200 W	50Ω.
400 W	25Ω.
800 W	12,5Ω.

5. IEC Power Supply Input: All STV series devices have standard IEC power supply input. The cable with an IEC female connector is supplied with the device..

6. Fuse: The STV amplifiers have a fuse next to the turn-on switch. A spare part is supplied inside the fuse holder.

MODEL	OUTPUT POWER	FUSE
STV-200	2x200W	3 AT 250V
STV-4200	4x200 W	5 AT 250V
STV-2400	2x400 W	5 AT 250V
STV-4400	4x400 W	10 AT 250V
STV-2800	2x800 W	10 AT 250V

7. Balanced priority audio output: Regenerated priority audio signal. Both the audio and the operation are regenerated to connect several systems in cascade. If the system is switched off, it directly allows priority input to pass.
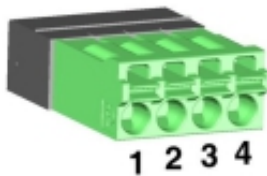
PIN	SIGNAL	DESCRIPTION
1	SHIELD	Must always be connected.
2	AUDIO+	Output impedance 100Ω.
3	AUDIO-	Input impedance 100Ω.
4	OPERATION	Output impedance 220Ω.

8. Expansion bay for connection of ETX series modules.

4. WORKING DESCRIPTION

4.1. PRIORITY INPUT:

The amplifiers of STV series include a priority input, at least, which is activated by means of manoeuvre or by noise-door -- setting threshold--. If the priority input is activated, the Priority indicator shows it from the front panel. At this moment, all amplifiers channels conmute with this input. Then, these channels will return to the previous status if the shoot condition turns to Stand-by.

If the amplifier of STV series has got an ETX-1CN module placed in, it will have two priority inputs. One of these inputs is the same which is described below and the another one is due to CobraNetTM, where all the channels will conmute with if the audio signal is detected. The channels will return into their previous status when the condition be on Stand-by. The priority levels are selected from the most priority to the less priority, they are Priority Input, Priority Input via CobraNet TM and audio input for the corresponding channel.

4.2. SETTING BY USB:

STV series amplifiers have a USB port in order to make easy the parameters setting. The setting interface needs the Driver required for each Operative System -- MICROSOFT WINDOWS XP / VISTA / 7 (32bit) / 7 (64bit)--.

4.2.1. DRIVER INSTALLATION:

The equipment must be connected to the PC firstly, then, a message will be shown for browsing the Driver location. The file name is LDAVirualCOM.inf. Follow the next steps to finish the installation.

4.2.2. CONNETION:

After the driver installation, it is needed a Communication Software like Hyper Terminal, Hercules, Tera, Term or another for communicating by series port.

The virtual series port of the equipment must has the following setting:

PARÁMETRO	VALOR
Speed	9600 bps
Data Bits	8
Parity	NO
Bits of STOP	1
Flux control	NO

After connection setting it can be established. The following screen will be shown at the beginning:
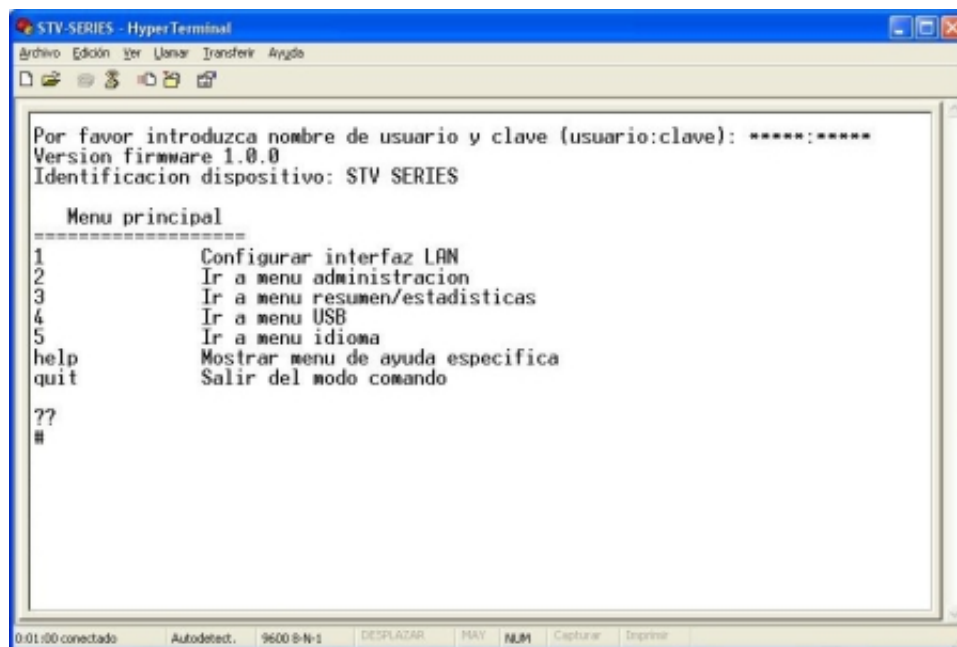
The user name is ADMIN and the password is the same which was set for the Administrator in the equipment. Default value 0000. Both items must be written with a ":" between them. For instance: ADMIN:0000.

4.2.3.   USB MENUS:

The main menu is compound for others submenus, where all the basic adjustment functions can be realized. They are:

LAN SETTING:
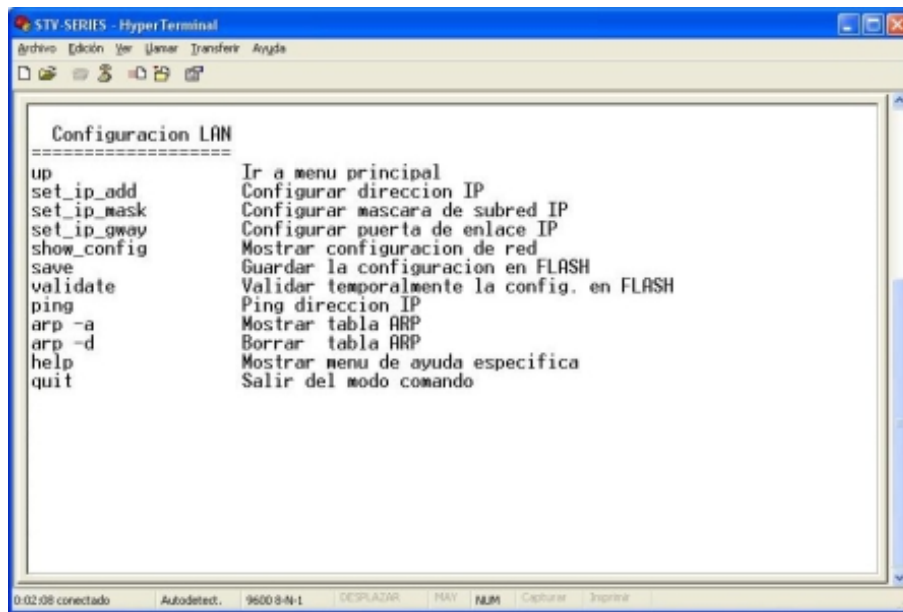
(Only available for the version including ETX-1/ETX-1CN)

MANAGEMENT:
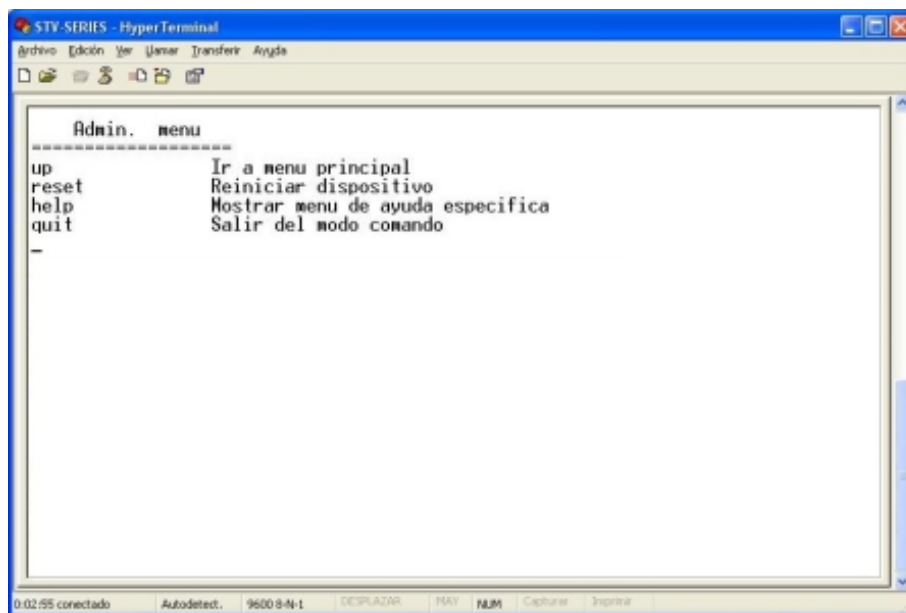
SUMMARY / STATISTICS:
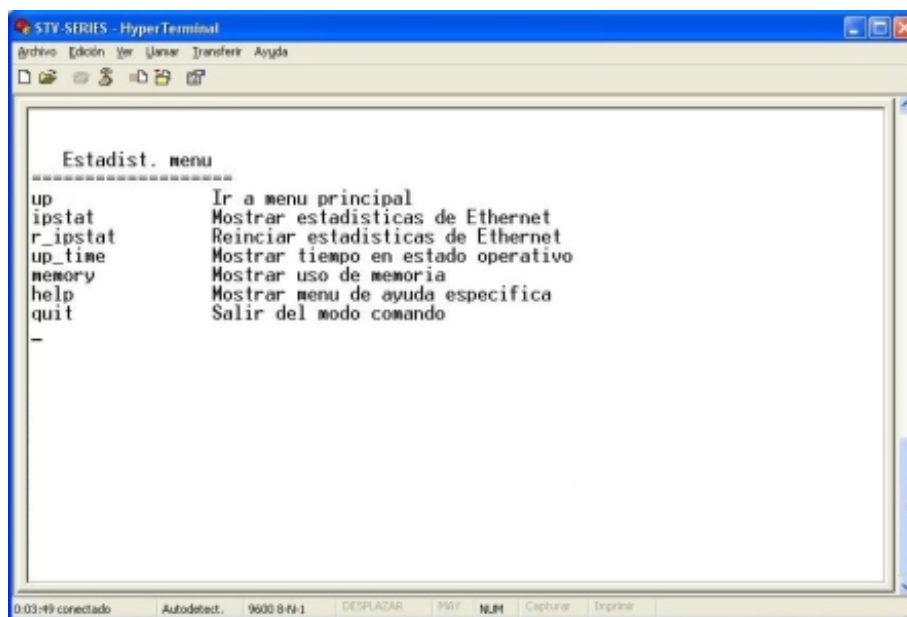
(Only available for the version including ETX-1/ETX-1CN)

USB:
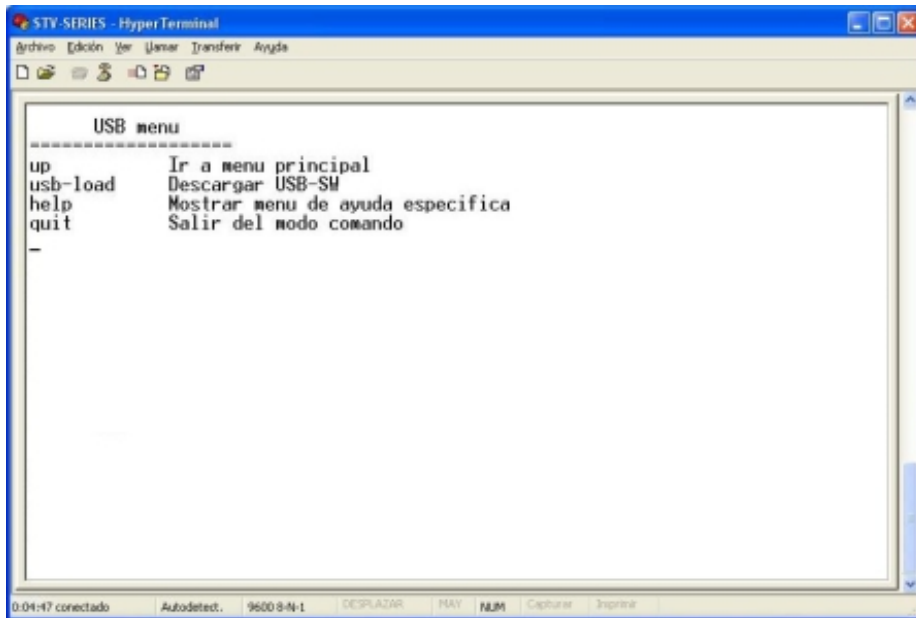
LANGUAGE:
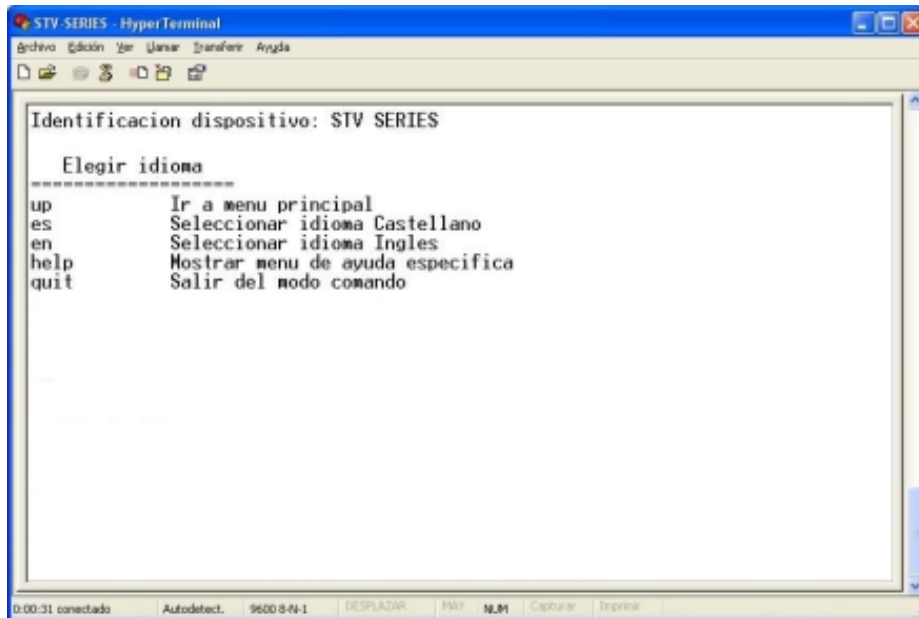
The Help tool is shown in all the menus. The option "UP", which is used to return up to the previous menu, is shown too.

All the settings by USB connection are updated in the equipment immediately. If the language is modified trough out USB, the USB interface change to it at the same time that the equipment display. It will be after the following Display updating.

5. ETX SERIES MODULES

5.1. TECHNICAL DESCRIPTIONS:

The expansion modules of the LDA ETX series allow the STV series to enlarge their integration and connectivity features. Both modules are insertable, exchangeable and easy to install in the system, thanks to a sole 40-wire ribbon cable connector with polarity.
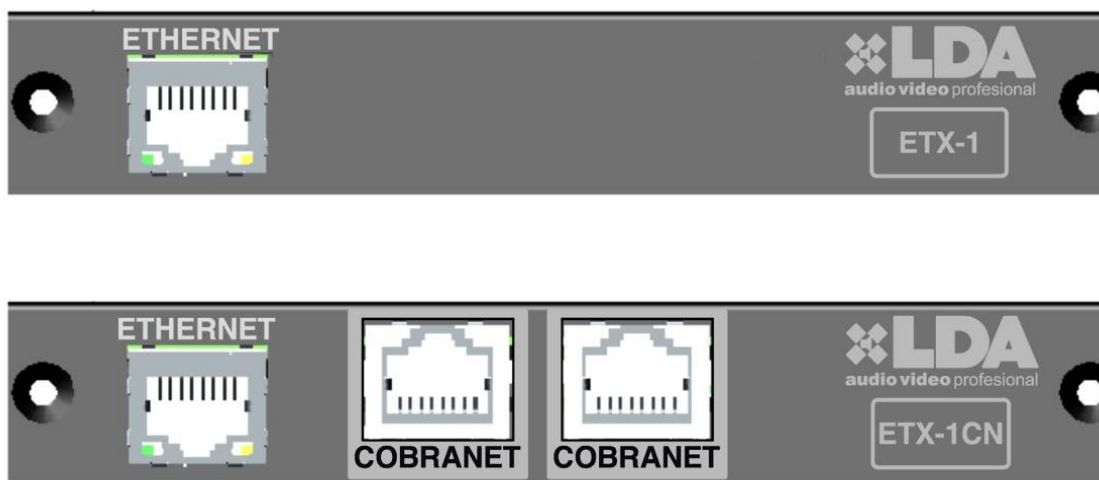
5.1.1. ETX-1 MODULE:

The ETX-1 module enables controlling and monitoring the STV series monitors through Ethernet. All the functions of the amplifier, controlled with the front panel menu, can be remotely operated.

When an amplifier of the STV series is controlled remotely, the local controls (located both on the front panel and on the back) remain blocked.

If the remote control communication is established correctly, this will be indicated by the "Link" LED on the amplifier's front panel.

The ETX-1 module can be configured from the equipment's front panel or remotely.

5.1.2.   ETX-1CN MODULE:

The ETX-1CN module includes all the features of the ETX-1 module. It also allows fitting the STV series amplifiers with direct CobraNetTM inputs.

When an ETX-1CN module is connected to an STV amplifier, the CobraNetTM audio inputs are selected as default inputs to the amplifier channels. These audio inputs can be changed to analogue by means of remote configuration.

The ETX-1CN module has two "COBRANET" inputs, a main one and a reserve. When the first input (on the left) losses communication with the network, for example because a switch has fallen, the ETX-1CN module will try to connect through the second "COBRANET" input. This is useful to ensure greater security in case of digital audio network redundancy.

The ETX-1CN module can be configured from the equipment's front panel or remotely.
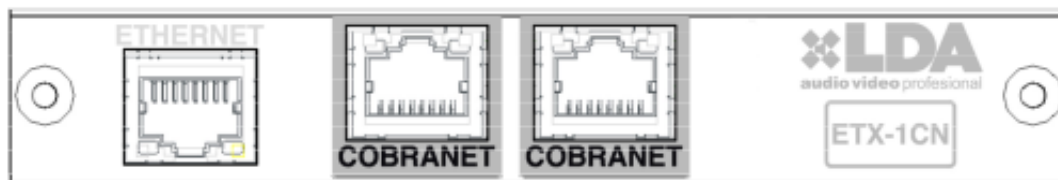
5.2.   INSTALLATION OF ETX MODULES:

To install the ETX series modules correctly, you must follow the following steps:

1. Turn the STV amplifier off with the switch located on the back of the device.
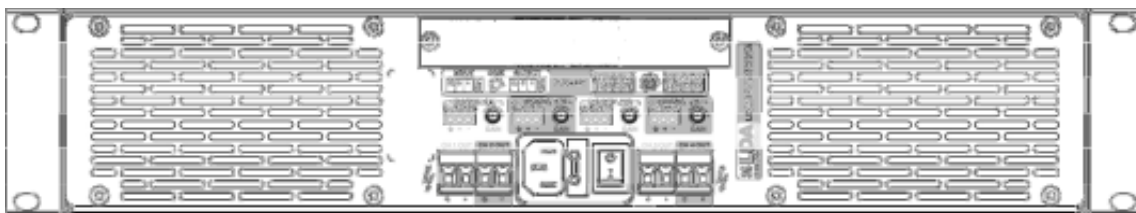
2. Pull out the two screws that secure the existing module. Keep the screws.
3. Disconnect the ribbon wire of the existing module and leave it outside the device.
4. Connect the ribbon wire to the ETX module. The connector to be inserted is polarised.
5. Insert the new module, which is already connected, inside the expansion bay.
6. Secure the module to the system with the screws that used to secure the original module.
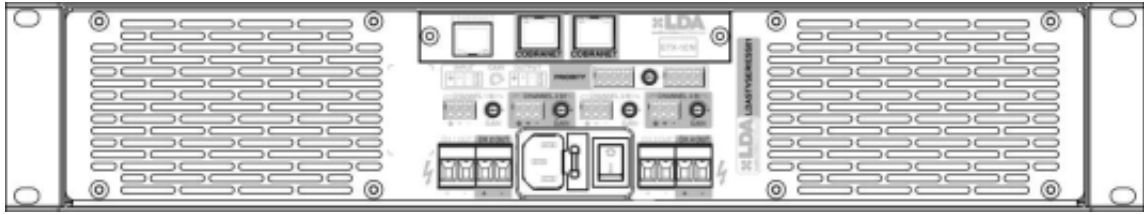
7. Turn the equipment on. The appropriate start-up test will run.

NOTE: The new module will be default installed with the same setting than the previous module, except for the setting in ETX-1CN by CobraNet™.

5.3.   TECHNICAL SPECIFICATIONS:

FRONT PANEL VIEW

TOP VIEW

BACK VIEW

115 mm.
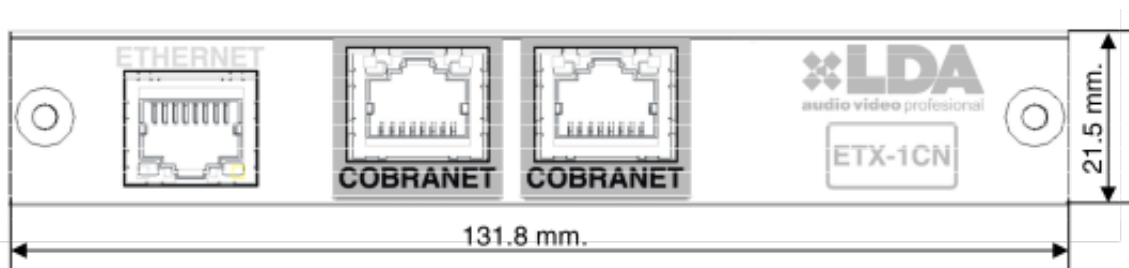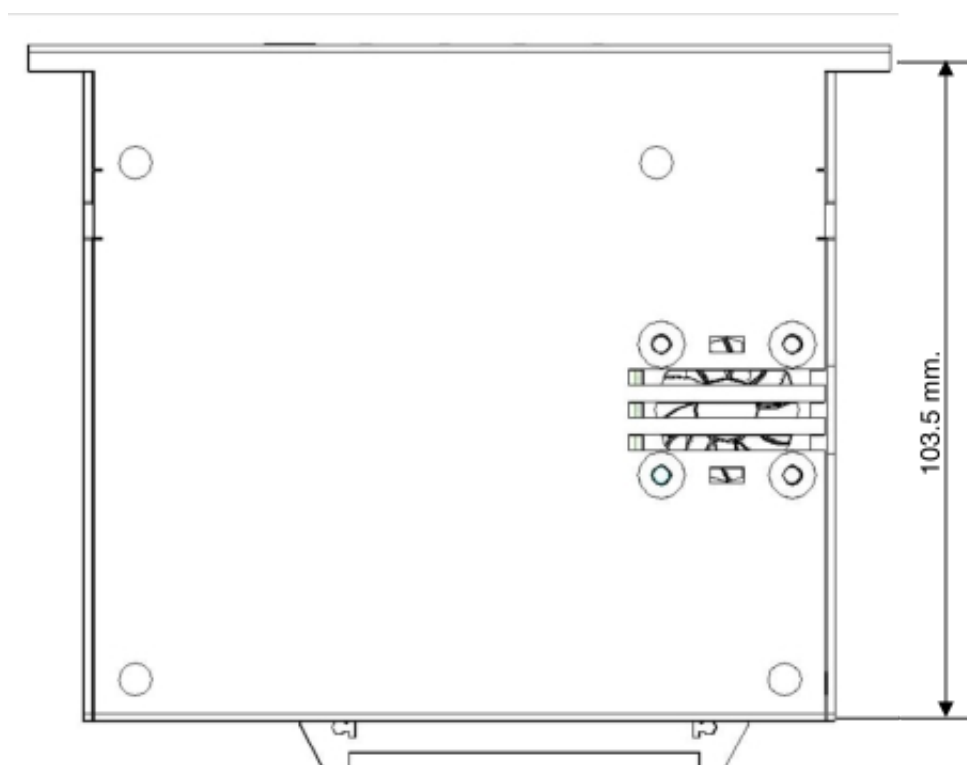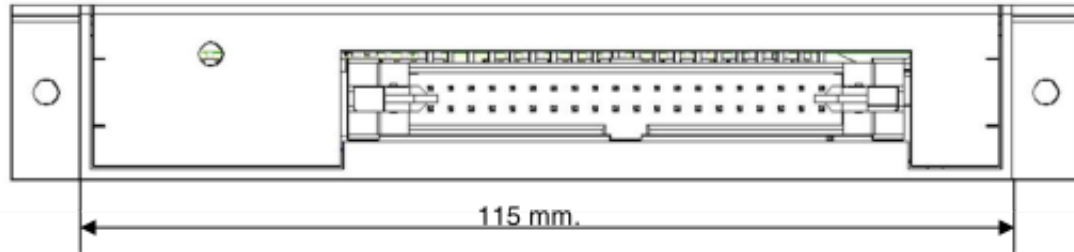
5.3.1. ETX-1 MODULE:

ETX-1	
TYPE OF CONNECTION CONTROL	Ethernet 10/100Mb
CONTROL CONNECTOR	RJ-45
INTERNAL CONNECTOR	IDC 40 wire polarised IDC
DSP CONTROL	Gain
LOAD SUPERVISION	YES
POWER SUPPLY SUPERVISION	YES
REMOTE SWITCH-ON	YES
FRONT PANEL BLOCKAGE	YES
PRIORITY SOURCE SELECTION	YES
REMOTE UPDATING	YES
SCREENSAVER PERSONALISATION	YES
IDENTIFIER PERSONALISATION	YES
REMOTE STANDBY	YES
DISSIPATION	Variable forced speed
DIMENSIONS (height x width x depth)	21.5 x 131.8 x 103.5 mm
WEIGHT	170 gr.
INSTALLATION	2 M3 screws x 5 sunk screws

5.3.2. ETX-1CN MODULE:

The ETX-1CN module has all the features of model ETX1. It also includes the following characteristics:

ETX-1CN	
TYPE OF CONNECTION CONTROL	Ethernet 10/100Mb
CONTROL CONNECTOR	RJ-45
INTERNAL CONNECTOR	40 way polarised IDC.
DSP CONTROL	Complet3
DIGITAL AUDIO CONNECTION	CobraNet™
DIGITAL AUDIO CONNECTOR	2 x RJ-45
COBRANET™ PRIORITY SOURCE	YES
COBRANET™ AUDIO INPUTS	4
DIMENSIONS (height x width x depth)	21.5 x 131.8 x 103.5 mm
WEIGHT	215 gr.
INSTALLATION	2 M3 screws x 5 sunk screws

6. TECHNICALS SPECIFICATIONS

6.1.   MECHANICAL CHARACTERISTICS:

FRONT VIEW
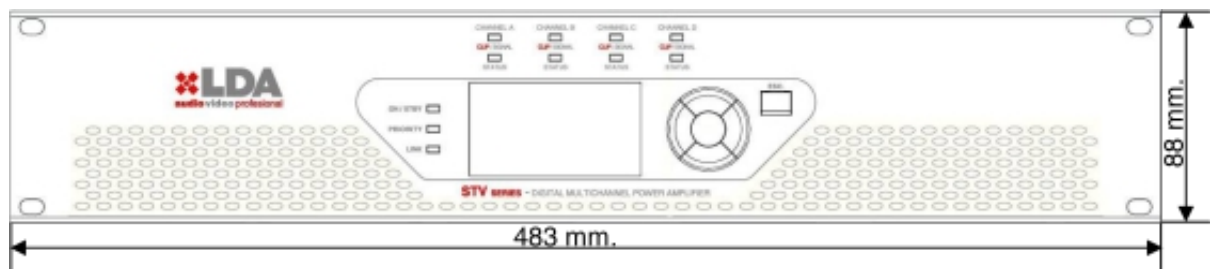
SIDE VIEW

BACK VIEW

The views correspond to the 4-channel models without an expansion module. The size of all models is the same.

6.2. GENERAL SPECIFICATIONS

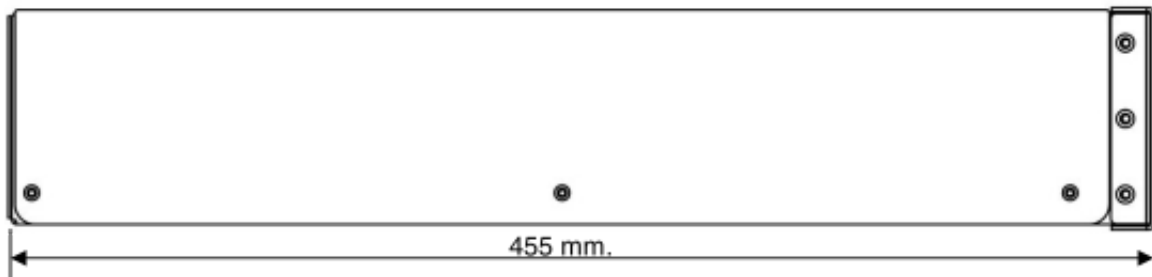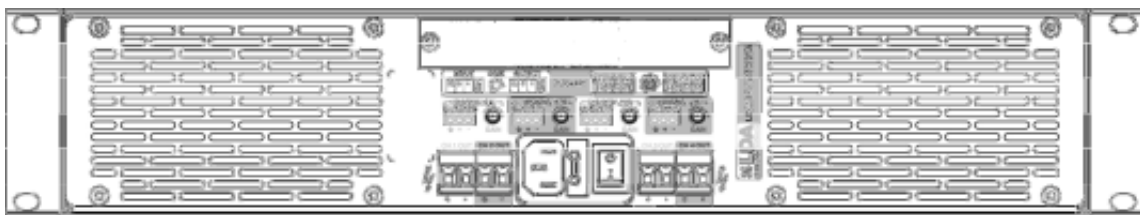| TECHNICAL SPECIFICATIONS STV SERIES	
Output power	200, 400 y 800W @100V por canal. (depeding on model).
Type of amplifier	AB Class with direct output without transformer.
Maximum output voltage	105V rms per channel.
Frequency response	20Hz - 20KHz +/- 0.1dB
THD+N	<0.05% @ 1KHz
Signal to noise ratio	>105 dB 20Hz - 20KHz with ponderation A..
Input sensitivity	0.707 Vrms for specified power.
Crosstalk	>80dB @ 10KHz
Minimum load impedance	50 / 25 / 12.5. (200W/400W/800W respectively).
Protection functions	Over-temperature, DC, infrasonic, short-circuit, slow starting.
Input connectors	Euroblock type of 3 removable contacts. Wire secured with screws.
Priority input connector	Euroblock type of 4 removable contacts . Wire secured with screws.
Priority regenerated output connector	Euroblock type of 4 removable contacts. Wire secured with screws.
Input impedance	Euroblock type of 4 removable contacts. Wire secured with screws.
Priority regenerated output impedance	100 (Balancead).
Power output connector	Euroblock type of 2 removable contacts. Wire secured with screws.
Indicators	On/Stand-By, Priority, Link. Per channel: VU meter, signal, clip, state of load, protection, display.
Control	128x64p graphic display and menu navigation controls. Gain adjustment per channel from the front pannel or with potentiometer. Expansion bay for ETX modules. Turn-on switch.
DSP	Integrated. Controlled from the front panel. Optionally, controlled remotely with ETX modules.
Casing	Aluminium. Iron front panel.
Weight	21.5 Kg (Para STV-2800)
Dimensions	88 x 483 x 455 mm (height x width x depth).Two

	19" rack units for all models.

6.3.   CARACTERRÍSTICAS SEGÚN MODELO.

STV-2200	
No. OF CHANNELS	2
OUPUT PER CHANNEL	200W @ 100V
MINIMUM LOAD PER CHANNEL	50 Ω
CONSUMPTION WITHOUT SIGNAL	0,07 A
CONSUMPTION 1/8 OF SP*	0.25 A
CONSUMPTION 1/3 OF SP*	2 A
THERMAL EMISSION 1/8 OF SP*	160 Kcal/h
THERMAL EMMISSION 1/3 OF SP*	205 Kcal/h
*SP= SPECIFIED POWER Consumptions calculated with all channels active at 240V power supply.	

STV-4200	
No. OF CHANNELS	4
OUPUT PER CHANNEL	200W @ 100V
MINIMUM LOAD PER CHANNEL	50 Ω
CONSUMPTION WITHOUT SIGNAL	0,07 A
CONSUMPTION 1/8 OF SP*	3,2 A
CONSUMPTION 1/3 OF SP*	4,9 A
THERMAL EMISSION 1/8 OF SP*	320 Kcal/h
THERMAL EMMISSION 1/3 OF SP*	410 Kcal/h
*SP= SPECIFIED POWER Consumptions calculated with all channels active at 240V power supply.	

STV-2400	
No. OF CHANNELS	2
OUPUT PER CHANNEL	400W @ 100V
MINIMUM LOAD PER CHANNEL	25 Ω
CONSUMPTION WITHOUT SIGNAL	0,07 A
CONSUMPTION 1/8 OF SP*	3,2 A
CONSUMPTION 1/3 OF SP*	4,9 A
THERMAL EMISSION 1/8 OF SP*	320 Kcal/h
THERMAL EMMISSION 1/3 OF SP*	410 Kcal/h
*SP= SPECIFIED POWER Consumptions calculated with all channels active at 240V power supply.	

STV-4400	
No. OF CHANNELS	4
OUPUT PER CHANNEL	400W @ 100V
MINIMUM LOAD PER CHANNEL	25 Ω
CONSUMPTION WITHOUT SIGNAL	0,07 A
CONSUMPTION 1/8 OF SP*	6,4 A
CONSUMPTION 1/3 OF SP*	9,9 A
THERMAL EMISSION 1/8 OF SP*	640 Kcal/h
THERMAL EMMISSION 1/3 OF SP*	820 Kcal/h
*SP= SPECIFIED POWER Consumptions calculated with all channels active at 240V power supply.	

STV-2800	
No. OF CHANNELS	2
OUPUT PER CHANNEL	800W @ 100V
MINIMUM LOAD PER CHANNEL	12,5 Ω
CONSUMPTION WITHOUT SIGNAL	0,07 A
CONSUMPTION 1/8 OF SP*	6,4 A
CONSUMPTION 1/3 OF SP*	9,9 A
THERMAL EMISSION 1/8 OF SP*	640 Kcal/h
THERMAL EMMISSION 1/3 OF SP*	820 Kcal/h
*SP= SPECIFIED POWER Consumptions calculated with all channels active at 240V power supply.	

7. SYSTEM STATE AND ERROR MESSAGES:

FAILURE	DIAGNOSTICS	DESCRIPTION	SOLUTION
1041	ON/STBY lights flashing green and orange or red and orange,	Indicators failure	The front isn't supervised. The parmeters shown belong to the previous valid status. The parameters which are read by remote way and the work of the equipment are not modified by this case. Contact with S.A.T. LDA.
1041	ON/STBY lights flashing green and orange or red and orange. The equipment can't start-up.	Control module failure	Make sure that ETX Control module is connected correctly. Follow the described steps in the previous section *4.2*. If the problems goes on, contact with LDA SAT.
	ON/STBY lights in permanent red. The equipment can't startup. It is reset automatically each 40 seconds and makes three tries for startingup.	Start-up test	If the Start-up test isn't passed, power supply isn't working correctly or it can not be supervised, turn the equipment off and contact with LDA SAT.
	STATUS lights flashing orange.	Input module failure	The control over the input module or the channels isn't exist. It hold the previous valid status. Contact with LDA SAT.
	STATUS lights inpermanent red.	Protected amplifier channel.	The amplification channel is protected by over-temperature or over voltage. Turn the equipment off, check the channel load is contained between the recommended parameters for the specified power. Check the air flow grilles aren't locked. Wait some minutes while the equipment temperature decreases. Turn the equipment on. If the equipment is protected again some minutes before, contact with LDA SAT.

FAILURE	DIAGNOSTICS	DESCRIPTION	SOLUTION
	STATUS lights flashing red.	Short-circuit	The short circuit protection is active because it has detected a short circuit in the amplifier output. Proceed to check the line that the channel is loaded shorted. Once solved the problem within 20 seconds, the channel will remove the protection status, and do a test recovery, increasing the gain level, to go back to the previous state. After the process, the STATUS indicator lights goes green. If even with the burden off the short circuit condition persists, contact SAT LDA.

8. AVERAGE TIME FOR REPAIRING, MTBF

The event or average time for repairing curve shows that the failure concentration is located at the beginning and at the end of this life-time curve. For that reason, the average time for repairing could be calculated. This curve could be modified due to changes in the environment, it is recommended to put attention in the changes of external agents over the installation.

The same techniques and standards are used since the maximum level ofdifficulty to the minimum level, it means to the last level of each components. This complete study over the esteemed average time and life-time allows to obtain a rate, which will be applied for the final product. The rate could be calculated by different standardized equations for obtaining the esteemed lifetime, being this result modified to become in a real value. This real value is conditioned by real working time of components and electrical and physics
stress under normal working.

The theoretical result is modified by real tests and corrections through out a serious control of failures. All failures are controlled and registered for each product in order to compare the precision of the calculated previsions. The horizontal distribution allows to detect the failure in other equipments before the failure appearance.

Next table stores different equipment models together with their esteemed average time for repairing following the calculation described below:

CODE OF EQUIPMENT	MTBF (years)
LDASTV2200S01	27,5
LDASTV4200S01	26,1
LDASTV2400S01	24,8
LDASTV4400S01	23,4
LDASTV2800S01	22,5