



## How to install and operate the DLS ULTIMATE TA2 2-channel Tube Amplifier



### Welcome!

This owners manual is written in easy english and uses a lot of drawings to simplyfy the installation and use of the above amplifiers.

Your DLS amplifier must be installed correctly in order to work well. This manual will show you how to install the amplifier like a pro. Please read the entire manual before beginning the installation.  
Install the amplifier yourself if you feel confident with our instructions and if you have the proper tools. However if you feel unsure, turn over the installation job to someone better suited to it.

### Warranty Service

This amplifier is covered by warranty, depending on the conditions in the country where it is sold. If the amplifier is returned for service, please include the original dated receipt with the product.



### Technical Assistance

For technical assistance ask the shop where the product was sold or the distributor in your very country.

You can always phone the DLS Helpdesk in Sweden + 46 31 84 00 60 or send an e-mail to [info@dls.se](mailto:info@dls.se). Information can also be found on our WEB-site [www.dls.se](http://www.dls.se)



## Contents

Features.....	2
Installation.....	2
Tools and materials needed.....	2
<b>Wiring</b>	
Power and speakers.....	3
Inputs & controls.....	4
Crossovers.....	4
Testing.....	5
Trouble-shooting.....	5
Professional tips.....	6
System drawing.....	7

## SPECIFICATIONS

RMS output per channel at 13,8 volts,  
20 Hz - 20 kHz , < 0,1% distortion.

Number of channels	2
Working mode	AB
Output power in 4 ohm	2x100 W
Output power in 2 ohm	2 x 200 W
Tubes in signal path	2 x CV4010
THD@ 1W	<0,04%
Frequency response +/- 0,5 dB	10 Hz - 50 kHz
S / N ratio, A-weighted	>102 dB
Damping factor	>240
Input impedance	>10k
High pass filter	20 - 200 Hz
Filter slope	12 dB/octave
Input sensitivity	0,5 - 7V
Max cable size Dc input	16 mm <sup>2</sup> (AWG5)
Max cable size, speakers	16 mm <sup>2</sup> (AWG5)
Fuses	20A x 2
Ptotection	Current & thermal
Amplifier warm-up time	45 seconds

### Power consumption:

Supply voltage	12-14 V DC
Idle	1,5 A
Maximum	40 A
Dimensions (mm) W x H x D	410x240x73
Dimensions (inch) "	16,14x9,45x2,87
Weight	6,2 kg ( 13,67 lb)

We follow a policy of continuous advancement in development.

For this reason all or part of specifications & designs may be changed without prior notice.



**TA2 model include**

- ◆ RCA inputs
- ◆ CV4010 pentodes in signal path
- ◆ Two high power stereo channels
- ◆ Thru dual mono amplifier with separate DC inputs
- ◆ High pass filter variable 20 - 200 Hz
- ◆ Variable input 0,5 - 7 Volt
- ◆ Remote turn on / off
- ◆ Electronic protection circuitry against short-circuit, DC offset and thermal overload

**Special features**

This amplifier is using the very best components in all sections of the amplifier, from the input circuitry, through the whole amplifier to the final stage output.

- Two pieces of CV4010 pentodes is used in the signal path. These tubes are made by VALVE Electronics in England during 1982 - 1984. The Valve Electronics company produced the best sounding tubes in the tube industry before they closed. The tubes are spare parts for military equipment so they fulfil military specifications.
- We use silver wire capacitors in signal path and power supply for a focused sound image.
- Special designed DLS Audio capacitors in key points and WIMA polypropylene capacitors.
- Four pieces of 4700 uF on each channel for deep and wide sound stage.
- Dual mono power system design plus separate power supply for tube and pre-amp stage for clear sound reproduction.

# Installation

**Before you begin installation**

Before you begin you need to read the manual, to have some tools, cables and other material available. There is one such list of material on the following page.

**Amplifier location**

**Important**

Allow air circulation around the amplifier.

The DLS ULTIMATE TA2 amplifier have a great flexibility in mounting but the best is to mount it somewhere in the trunk.

When you select a location, do remember that the amplifier generates a lot of heat.

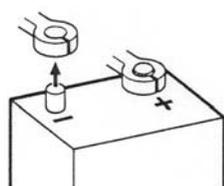
Choose a location where air can circulate freely around the amplifier. Do not cover the amplifier with carpets or hide behind trim panels.

Do not mount the amplifier in an inverted or upside down position.

Check all locations and placements carefully before making any cuts, drilling any holes or making any connections.

**Disconnect Battery**

Before starting the installation, always disconnect the negative terminal of the battery.



**Tools and material needed**

**Tools:**

- ◆ Flat and Phillips screwdrivers
- ◆ Wire cutter
- ◆ Wire stripper
- ◆ Electric drill with drills
- ◆ Crimping tool
- ◆ Digital multimeter or test lamp
- ◆ Wire brush, scraper or a piece of an abrasive sheet to remove paint for a good ground connection
- ◆ Grease to protect the ground connection from oxidation

**Material:**

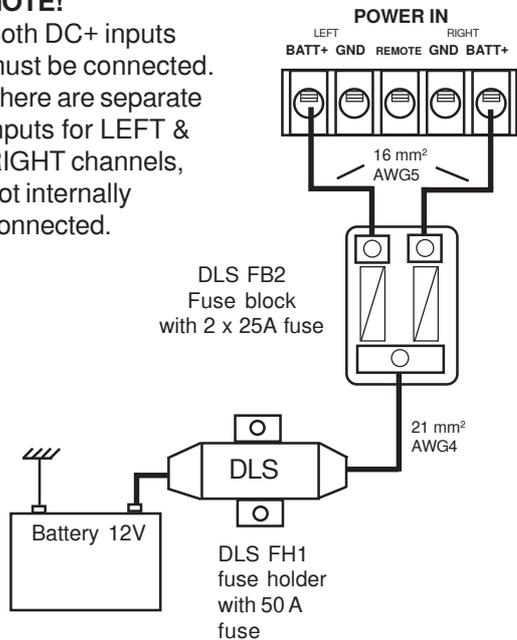
- ◆ Speaker wire: minimum 16 AWG = 2,5 mm<sup>2</sup> for speakers
- ◆ Sheet metal screws for mounting the amplifier to the amplifier board and the amplifier board to the car + some extra for fuse holder, amplifier ground etc.
- ◆ Electrical insulation tape
- ◆ ½ inch thick plywood or particle board for the amplifier to be mounted upon.
- ◆ 20- 25 feet = 6- 7.5 meter power cable, preferably AWG 4 = 21 mm<sup>2</sup> or heavier
- ◆ 1 pc of fuseholder to install close to the car battery + fuse 50 Ampere.
- ◆ 1 pc of Fuse block like DLS FB2 for splitting the power cable to both DC inputs.
- ◆ 20 feet of AWG 15 = 1,5 mm<sup>2</sup> wire for remote turn on / off cable from radio.
- ◆ RCA-cable for input from radio.
- 20 feet or 5 meter for trunk installations
- Use high quality cables like SL5 Ultimate
- ◆ Two min. 4 gauge ring crimp terminals—one for connection to the battery plus and one for the amplifier ground connection.
- ◆ Wire tie
- ◆ Insulating grommet or insulating tube

# Wiring

## Power terminals ( BATT+ )

**NOTE!**

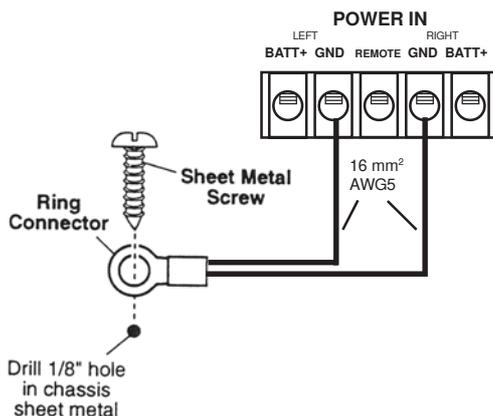
Both DC+ inputs must be connected. There are separate inputs for LEFT & RIGHT channels, not internally connected.



Connect the fuse holder as close to the vehicle battery + as possible, using AWG 4 = 21 mm<sup>2</sup> or heavier cable. Use ring crimp terminal cable to connect to battery +. Apply silicon grease to the fuse to prevent corrosion. Connect to amplifiers + inputs via a Fuse block. The amp terminals accept 16 mm<sup>2</sup> (AWG5) cable size

## Ground Terminal ( GND )

Connect to a good chassis ground. The ground connection should be clean, unpainted metal to provide a good electrical connection. Use a wire brush, a scraper or a piece of an abrasive sheet to clean the metal. Use a lock washer or two to secure contact. Protect with silicon grease or by paint applied afterwards.

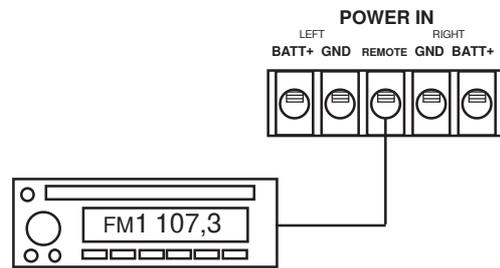


## Remote terminal

Connect the radio power antenna lead = remote turn on/off from the car stereo to the amplifier remote connection. This turns on the amplifier whenever the car stereo is turned on.

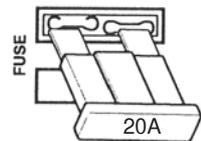
We recommend to use a separate remote wire and run the RCA lead separate from remote wire, power cables and speaker cables.

You can insert the cable directly into the amplifier terminal. If there is no remote voltage available from the stereo, you must connect to the ignition key through the radio or any accessories fuse.



## Fuses

Use only two 20 ampere ATC blade type fuses. Make sure to replace with the same value.



The value is printed above the fuse holders.

## Speaker terminals

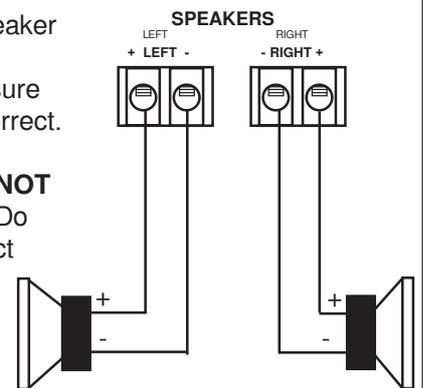
Connect one speaker to each speaker terminal. Make sure the polarity is correct.

**NOTE!**

The amplifier is **NOT BRIDGEABLE**. Do not try to connect speakers in bridge mode.

Observe polarity on terminals!

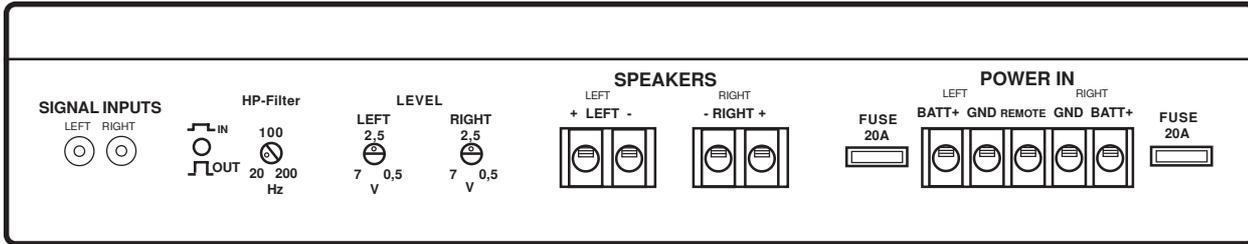
The terminals accept 16 mm<sup>2</sup> (AWG5) cable size



## Professional Tip:

Be sure to use a rubber grommet or a plastic insulating tube where the cable passes the firewall or other places when it can easily be jammed. Use wire ties to secure to existing cables in the engine compartment.

# Input, controls & crossover



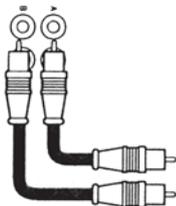
## Input Wiring

Inputs are low level from the RCA output of the car stereo head unit.

### Low level input

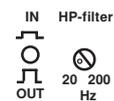
Use a pair of shielded stereo audio cables with RCA type jack. Most trunk-mount amplifiers need a 20 feet RCA cable (appr 5 – 6 meters). Avoid placing the RCA cable close to speaker cables, power cables and remote control cable.

Use high quality RCA interconnect cables like DLS HQL to ensure the sound quality.



## High pass crossover

The **HP-filter** can be used as a high pass crossover blocking very low frequencies from reaching the speakers. It is mostly used at say 60 - 80 Hz to protect small speakers (like 6 inch and smaller) from deep bass. On this amplifier you can choose a setting between 20 - 200 Hz. The slope of the High pass filter is 12 dB / octave. The filter can be switched off if you want to run the amplifier in full range mode.



## Input Level controls

The input level controls (one for left, and one for right channel), 7V – 0,5 V, matches the output of your radio to the input of the amplifier. After installation is complete, make sure the input of the amplifier is turned down all the way (counter-clockwise at 7V). Play a tape or CD, make sure all bass or treble settings or equalizer are flat, and turn the volume of the radio up until you just start to hear distortion. Turn the volume control down just a bit. On the amplifier increase the input level control (clockwise or to the right) until you just start to hear distortion, then back the level control just a bit. Now your radio and amplifier levels are matched. Both level controls must be set to the same level.



## Amplifier warm-up / LED indicator

All tubes need time to pre heat the heater. On TA2 the time for the valve to warm up is 45 seconds indicated by blue LED light in the tube window on top. After 45 sec. the LED colour changes to red. Now the amplifier is ready for use. To get the perfect sound quality it needs 30 minutes running.

### LED indicator in tube window:

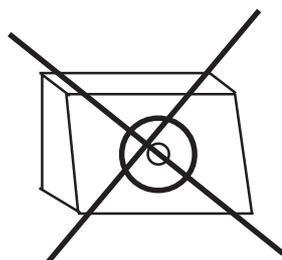
- BLUE:** Amplifier is warming up for 45 seconds
- RED:** Amplifier is warm and working
- GREEN:** Amplifier protection circuit activated because of thermal overload, short circuit or DC-off-set. Turn off the amplifier to reset. If the problem still exists, check your wiring. If nothing helps, contact your local DLS dealer for advice.



## Not for subwoofer use

This amplifier is not intended for subwoofer use, only for high class front or rear speaker systems!

The amplifier is **NOT BRIDGEABLE**. Do not try to connect speakers in bridge mode.



## Running in time

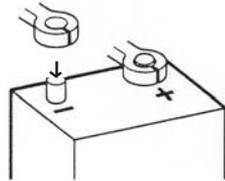
As all tube amplifiers TA2 need one month or more running in time for all components to work correct and producing the outstanding sound quality that TA2 is capable of. The sound quality is very good from the start but it will be even better after 30 days of playing.

# Testing

Before you finish the installation, you should do the following tests to make sure the wiring is correct and everything is operating properly.

## Reconnect Battery

When wiring is complete, reconnect the battery negative terminal.



## Test power wiring

1. Turn on the head unit but do not turn up the volume. The amplifier power light should come on. If not, check the remote and +12 volt wires. Also check the ground connection.
2. Turn up the head units volume slightly. All speakers should operate. If not, check wiring connections at amplifier and speakers.

## Test speaker connections

Make sure the speakers are connected right. Use the balance control on the head unit to make sure right channel is on right speaker etc. If speakers don't play at all, one or both speaker wires may be disconnected.

# Troubleshooting

If problems occur during the installation, or later, this guide might help you to find out what's wrong.

### THE AMPLIFIER DOESN'T START:

1. Check power lead, ground and remote connections at the amplifier using a multi meter.
2. Check the battery terminal connections.
3. Check the power lead fuse or circuit breaker. If fuse damage continues, inspect the power lead for short circuits.
4. Check the amplifier protection fuses. Are these broken change to new ones with the same value. If short circuiting continues, contact your local DLS dealer. A fault may exist in the amplifier.
5. To start the amplifier requires a remote voltage of 9-15 volt. Check the voltage with a multi meter.

### AMPLIFIER PROTECTION FUSE BLOWS AT LOW VOLUME :

1. One or more speaker cables are shorted. Make an insulation test with a multi meter. The cables must not have a connection to earth.

### THE AMPLIFIER TURNS OFF AFTER 10 - 30 MINUTES.

The amplifier is overheating due to inadequate ventilation. Check mounting position is free from obstruction.

#### Do this:

1. Move the amplifier to a place with better ventilation.
2. Install one or two fans to cool down the heat-sink.
3. Overheating can also be caused by an impedance load below the level permitted.

### NO OUTPUT FROM ONE OR MORE SPEAKERS:

#### Check the following:

1. Balance control position.
2. Fader control position.
3. Gain controls, left & right.
4. Speaker cable connections to both amplifier and drivers.
5. Signal lead plugs and cables.
6. Change left and right signal lead plugs in the amplifier to see if the problem moves to a different speaker, the lead has a fault. If the problem remains, the speaker or amplifier are at fault.
7. Make sure that DC cables are connected to both the inputs.

**Professional Tip:**

**NOISE PROBLEMS**

**WHINING NOISE VARYING WITH ENGINE REVOLUTIONS:**

**Do this:**

1. Check gain controls, They should **NOT** be set to MAX sensitivity.
2. Rewire the power supply (12 V) to source unit direct from battery.
3. Rewire ground wire from source unit to clean position on chassis.
4. Check all power connections to ensure that they are clean and tight.
5. Check quality of system ground connection.
6. Install a Power Cap capacitor. This can be helpful against most noise problems.

**CONSTANT WHINING NOISE:**

**Do this:**

1. Check gain controls, They should **NOT** be set to MAX sensitivity.
2. Ensure that all equipment has a common ground point.
3. Check quality of earth strap connection from battery negative terminal to chassis.
4. Disconnect signal cables from amplifier to see if noise disappears. If so the leads are picking up noise. Test this by laying a new cable over the seats and reconnecting to the amplifier. If the noise does not return, re-route original cable away from source of interference.  
If noise remains regardless of cable position, try to use so called Quasi-balanced signal cables. DLS PRO-cables are Quasibalanced.

**Professional Tip:**

**Installing in trunk**

When installing the amplifier in the trunk, run the power wires along the same path as the other vehicle wiring. Many cars have insulated channels for wiring. you will have to remove the door sill trim and the carpet.

**Professional Tip:**

**Crimp connections**

Purchase crimp connectors and crimping tool. Connectors are color coded.

1. Strip 1/4 inch (6 mm) of insulation from the wire.
2. Insert into connector
3. Crimp tightly

**Professional Tip:**

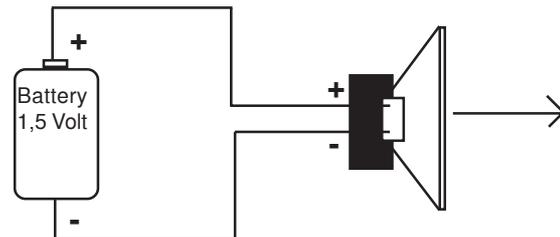
**SPEAKER POLARITY CHECK.**

All speakers in a car audio system should be connected in phase (the same polarity). All speaker cones must move in the same direction. Out of phase speakers will cause a lack of bass, and a poor stereo soundstage.

**Checking polarity:**

Hold the - connection of the speaker wire to the - terminal of a 1,5 Volt flashlight battery. Tap the + wire on to the + terminal of the battery, and observe the movement of the cone. The cone should move outwards when the wire touches the battery, and inwards when the battery is removed. If it is the other way around, the speaker has been connected backwards and it must be removed and connected correctly.

If your system also has a subwoofer connected through a passive 6 or 12 dB crossover, try to connect this with various polarity and judge what sounds best. The phase shift in passive crossovers sometimes makes it necessary to change polarity.



**NOTE!** Tweeters can not be tested this way, double check the connections instead.

**Professional Tip:**

**Securing wires**

Use wire ties to bundle together when possible. (But never bundle speaker wires or signal cables together with power wires.)



**Professional Tip:**

**Speaker and power wires**

Do not run speaker and power wires next to each other. Power wires can generate a "siren" sound in the speakers. Run speaker and power wires on opposite sides of the car.



On this page you can make your own notes , system drawing or whatever you like!

Thank you for buying DLS, enjoy!



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