DS18 FRP-2.5K FRP Compact Full-Range Class D 1-Channel Amplifier Owner's Manual

Contents

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OWNER'S MANUAL

FRP SERIES

FRP-2.5K / FRP-3.5K / FRP-5K

COMPACT FULL-RANGE CLASS D
1-CHANNEL AMPLIFIER

COMPACT FULL-RANGE CLASS D 1-CHANNEL AMPLIFIER

INTRODUCTION

Welcome to the future of amplified sound – your choice in DS18 indicates you demand nothing short of maximum power. It's our pleasure to introduce you to our cutting edge FRP Series, a high performance solution tailored for Pro Audio Paging Systems.

This compact powerhouse is engineered for unparalleled power in tight spaces. Built with reliability at its core, it guarantees uninterrupted operation in any condition. The user-friendly interface makes navigating its power and customization intuitive for professionals and novices alike. DS18's FRP Series is where compact design meets uncompromising performance. This manual covers installation, configuration, maintenance, and troubleshooting: please read and follow the instructions to ensure your new amplifier performs at its peak. As with all our products, professional installation by an authorized DS18 dealer is highly recommended.

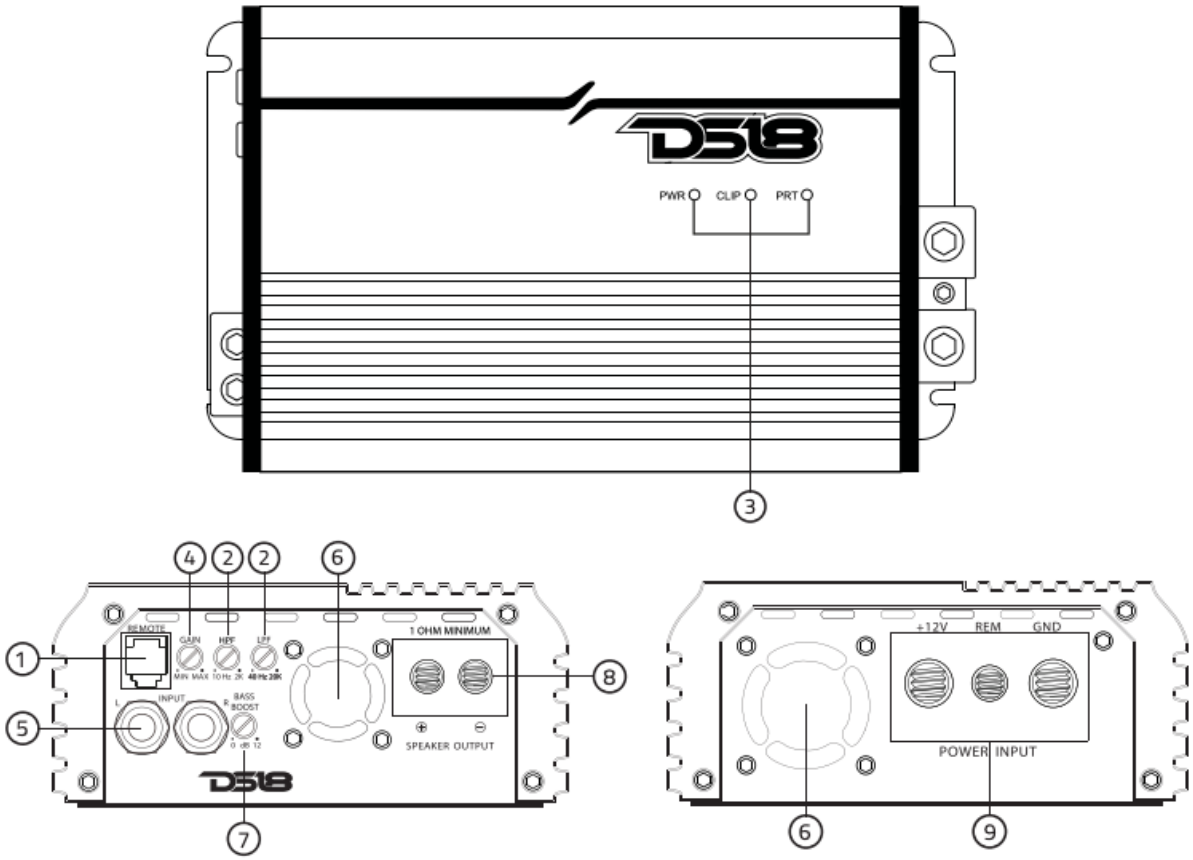
FEATURES

- **High Efficiency Micro Digital Design.**
- **Tiffany RCA Terminals.**
- **Variable Full Crossover Filters.**
- **Remote level knob control.**
- **Surface mount component technology.**
- **Protective coating to prevent moisture corrosion on the PCB.**
- **Bonded components for extra vibration protection**

- **Audio quality control verification using Audio Precision instruments.**
- **Stable & reliable Digital circuit design.**
- **Power, protection, and clipping LED indicator.**
- **Short circuit thermal, DC offset, and High/Low voltage protection.**

CONTROLS AND ADJUSTMENTS

FRP-2.5K / FRP-3.5K / FRP-5K



A. CLIP LED Indicator for Output Clipping: Keep an eye on the CLIP LED indicator located on the remote Level knob. To prevent distortion and ensure your audio remains clear and undistorted, promptly turn down the Gain control.

B. GAIN: adjust the output level.

C. POWER: Green Light = Amplifier is ON.

D. VOLTMETER DISPLAY: shows the input voltage of the amplifier in real time.

1. **Remote Level Control Connection**
   Connect the remote level control to this terminal. The remote level control allows adjustment of the subwoofer level from a remote location in the vehicle.
2. **LPF/HPF Crossover**
   Adjust the frequency setting of the low or high pass crossover. for LPF, Frequencies higher than the setting will be filtered out of the audio signal, for HPF, Frequencies lower than the setting will be filtered out of the audio signal.

3. **LED Indicators:**

   PWR: When the amplifier is on and in proper working condition, the green LED will illuminate.

   CLIP: Clipping usually happens because the gain is set too high in an attempt to maximize the amp's output potential. This can result in catastrophic damage to your equipment, when the gain is set too high for the application the amp will produce a squared or clipped sound wave, and the amp and the speakers connected to it will generate a large amount of heat trying to reproduce the clipped signal, this can result in catastrophic damage to your equipment.

   PRT: If the amplifier activates its protection mode, the red LED will illuminate. Refer to the troubleshooting guide for possible solutions if the amplifier activates its protection mode.

4. **Level Sensitivity**

   Adjust the amplifier's pre-amp sensitivity level. The minimum sensitivity level is 400mv, while the maximum level is 3.6V.

5. **RCA Audio Input Connection**

   Using high-quality shielded stereo RCA cables, connect the source signal to the amplifier RCA inputs.

6. **Smart Cooling Fan**

   Air recirculation system to help cool the amplifier internally, the larger fan brings in cold air and the smaller one draws hot air from inside.

7. **Bass Boost**

   Adjust the amplifier's 50Hz Bass Boost level up to 12dB.

8. **Speaker Output Connector**

   Connect the speakers to this output, the minimum impedance is 1 ohm and it can be a speaker of any range (subwoofer/woofer, mid-bass/mid-range, driver/tweeter). Make this connection carefully and neatly.

   Strip your wire back and twist the exposed leads and insert them into the block terminal while being careful that there is no loose or frayed strands of wire and tighten down on the terminal till the wire is tightly secured in place. If the wires ever come in contact with each other the amplifier will go into protection. Know your total ohm load before you make any connections.

9. **Power Input Connector**

   It is important to have good quality power and ground connections. Remember, to complete an electrical circuit, the ground connection is just as important as the positive power connection. Before any power connections are made, disconnect the ground cable of the battery. Use 4 gauge or larger automotive-grade wire if the distance from the battery to the amp is excessive. Avoid sharp or rough edges as a safeguard against short-circuiting and potential fire hazards.

   GND = Connect the proper gauge ground wire to the amplifier GND terminal. Locate the position on the chassis of the car where the amplifier will be grounded. Use solder or a crimped ring terminal to connect the ground wire. Pre-drill the prepped chassis to bolt the ground ring terminal with a nut, bolt, and lock washer to insulate the metal. Coat the connector with paint or silicone to prevent rust and oxidation. Silicone also works great to prevent nuts and bolts from working loose in the harsh environments of an automobile.

   Upon completion of the ground connection, grab the wire end connector to confirm the connection is solid. To prevent engine noise, it is recommended to ground the head unit and other electronic audio devices in the same location.

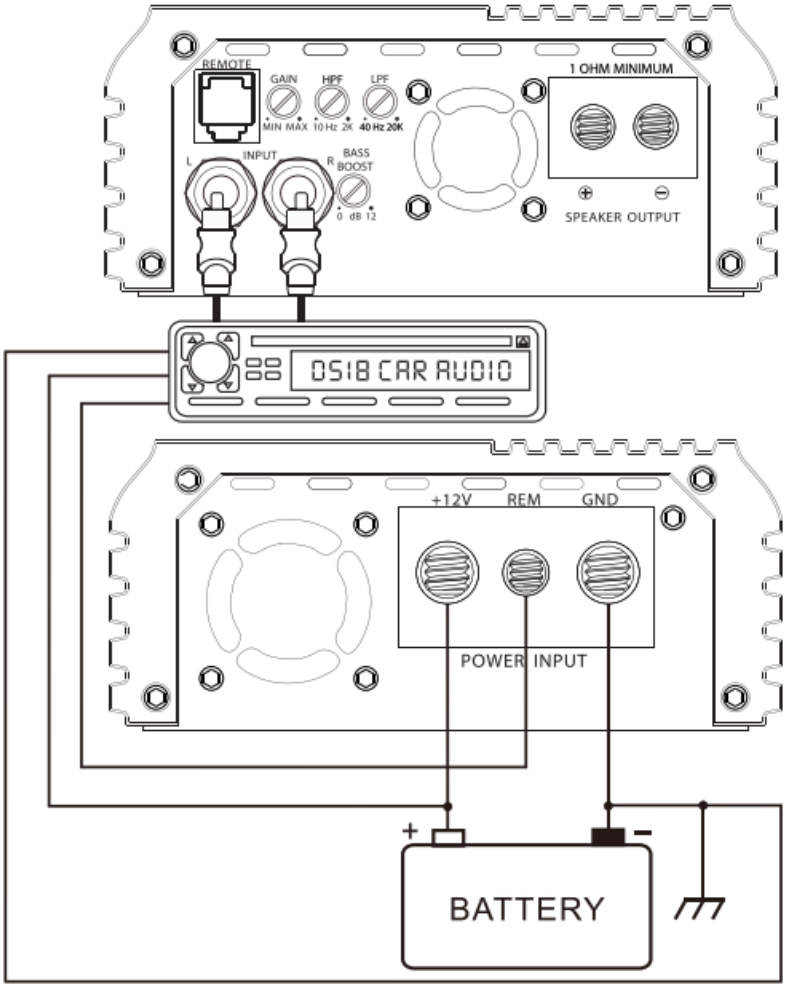
   REM = Connect the remote wire (power antenna output) from the head unit to the REM terminal. If the

head unit lacks a remote/antenna output, find a wire controlled by the accessory position of the key. It's crucial to ensure the amplifier turns off with the radio or key. If the amplifier stays on, it may lead to battery drainage.

+12V = Connect the proper gauge power wire to the B+ terminal. Trace the power wire through the car to the in-line fuse or circuit breaker that is no more than 18″ from the battery. Remember, the in-line fuse or circuit breaker protects the car in the event of a short circuit. Connect the in-line fuse or circuit breaker to the battery, but do not install the fuse or activate the circuit breaker yet.

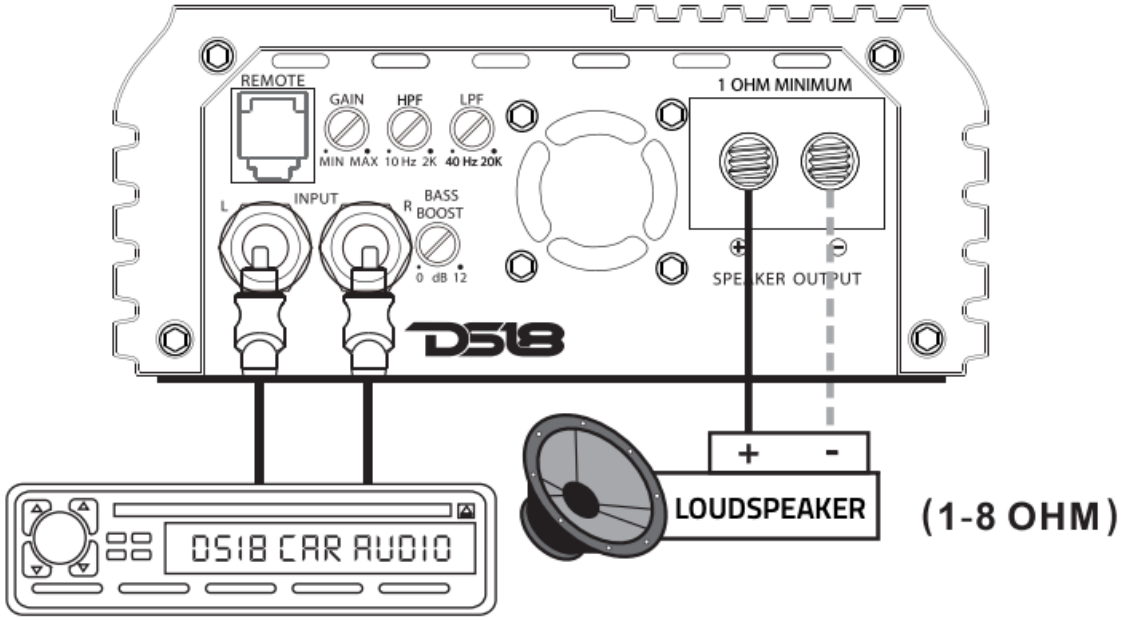
INSTALLATION

1. **Before you start disconnect the negative cable from the battery. Tape up the end so it is isolated from the battery.**
2. **Run an appropiate gauge wire from the battery to the amplifier. Plan this part of the installation carefully. This cable will carry very high current. If it should short to the body and it is not properly fused it could catch fire.**
3. **Connect the power wire to the battery using a fuse capable of handling the total current load of all amplifiers connected. Do not install the fuse at this point. Wait until indicated. Position the fuse as close as possible to the battery. If the distance from the battery exceeds 18 inches (wire length), it is advisable to reassess both the wire and fuse placement.**
4. **Find the closest clear metal area to the amp for a ground. Sand, grind or scrape all paint and undercoating from the body and screw the ground securely in place. It is advisable to test the ground with an ohmmeter between the ground cable and the negative battery cable to ensure a good low resistance connection. Some alloys used in some modern cars do not offer the best ground.**
5. **Run the speaker wire to the speakers. it is advised that you leave some extra wire at this point! You can clean it up later.**
6. **If you haven't already done so, mount the amp now.**
7. **Connect the power and ground to the amplifier (only after this step should you install the fuse to the positive battery terminal and the negative battery terminal cable to its correct terminal.)**
8. **Connect the remote wire from the head unit to the amplifier. Now is a good time to turn on the amplifier for the first time and make sure it turns on properly and does not go into protection.**
9. **Connect the speaker wires to the amp and speakers (make sure the amp is off first) make sure the polarity (+ and -) are correct.**
10. **Connect the RCA's to the amp.**
11. **Double check the amplifier's control at this time. Make sure everything is set correctly for your system.**
12. **Now you are ready to play it for the first time. It is best to leave the gain all the way down at first. Start with the head unit volume low and make your way up.**
13. **Now you can tune the amp. Take your time and make only one adjustment at a time. It may take some time to get the system fully adjusted. During this time the amp is drawing current from the battery. You should check the battery voltage from time to time and recharge it if it gets low . That's it . You are done, have fun!**



SPEAKER CONNECTION

FRP-2.5K / **FRP-3.5K** / **FRP-5K**



SPECIFICATIONS

FRP-2.5K

POWER

RMS Power @ 4 OHM / 700W
RMS Power @ 2 OHM / 1300W
RMS Power @ 1 OHM / 2500W
MAX Power @ 1 OHM (BURST) / 2800W

AUDIO

Frequency Response / 10Hz-20KHz
Signal to Noise Ratio / 83dB
Efficiency @ 4 ohm / 85.6%
Damping Factor / 90
Input Impedance / 10KΩ
Total Harmonic Distortion (THD) / 0.5%

Low Level Input Range / 400mv-3.6V
Selectable X-Over / Fixed Band-Pass
X-Over Filter Range / HP: 10Hz-2KHz / LP: 40Hz-20KHz
Bass Boost Range / 0-12dB
Bass Boost Frequency / 50Hz

FEATURES

Amplifier Class / Digital
Amplifier Type / Full-Range Monoblock
Number of Channels / 1CH
Minimum Impedance / 1 OHM
LED Indicator / Power / Protect / Clipping
Power Input Terminal Size / 0Ga
Fuse Size / 200A
Remote Level Control with Clip Indicator / Yes
Cooling Fan / Yes (Smart Cooling x 2)
Thermal Protection / Yes
Over-Load Protection / Yes
Short Circuit Output Protection / Yes
Voltage Input Protection / Yes
Clipping Protection / Yes
Compact Size for an Easy Installation in any Application / Yes
Stable/Reliable Four Layers Traces PCB Design Yes
Surface Mount Component Technology Yes
Quality Control Verification using Audio Precision Instruments Yes
Tiffany RCA Terminal / Yes
LED Clip Indicator / Yes
Metal Knobs with Click Steps / Yes
Remote Level Control with Clip Indicator and Voltmeter (sold separately)
Body Color / FRP-2.5K/BL – Blue
FRP-2.5K/TI – Titanium
FRP-2.5K/RD – Red

MEASUREMENTS

Overall Length / 8.85″ / 225mm
Overall Wide / 5.5″ / 140mm
Overall Height / 2.36″ / 60mm
Heatsink Lenght / 7.6″ / 193mm
Gross Single Unit Weight / 4.6 lbs / 2.1kg

FRP-3.5K

POWER

RMS Power @ 4 OHM / 1000W
RMS Power @ 2 OHM / 2000W
RMS Power @ 1 OHM / 3500W
MAX Power @ 1 OHM (BURST) / 4000W

AUDIO

Frequency Response / 10Hz-20KHz
Signal to Noise Ratio / 83dB

Efficiency @ 4 ohm / 80.9%
Damping Factor / 90
Input Impedance / 10KΩ
Total Harmonic Distortion (THD) / 0.5%
Low Level Input Range / 400mv-3.6V
Selectable X-Over / Fixed Band-Pass
X-Over Filter Range / HP: 10Hz-2KHz / LP: 40Hz-20KHz
Bass Boost Range / 0-12dB
Bass Boost Frequency / 50Hz

FEATURES

Amplifier Class / Digital
Amplifier Type / Full-Range Monoblock
Number of Channels / 1CH
Minimum Impedance / 1 OHM
LED Indicator / Power / Protect / Clipping
Power Input Terminal Size / 0Ga
Fuse Size / 300A
Remote Level Control with Clip Indicator / Yes
Cooling Fan / Yes (Smart Cooling x 2)
Thermal Protection / Yes
Over-Load Protection / Yes
Short Circuit Output Protection / Yes
Voltage Input Protection / Yes
Clipping Protection / Yes
Compact Size for an Easy Installation in any Application Yes
Stable/Reliable Four Layers Traces PCB Design Yes
Surface Mount Component Technology Yes
Quality Control Verification using Audio Precision Instruments Yes
Tiffany RCA Terminal / Yes
LED Clip Indicator / Yes
Metal Knobs with Click Steps / Yes
Remote Level Control with Clip Indicator and Voltmeter (sold separately)
Body Color / FRP-3.5K/BL – Blue
FRP-3.5K/TI – Titanium
FRP-3.5K/RD – Red

MEASUREMENTS

Overall Length / 10.2″ / 260mm
Overall Wide / 5.5″ / 140mm
Overall Height / 2.36″ / 60mm
Heatsink Lenght / 9″ / 228mm
Gross Single Unit Weight / 5.8lbs / 2.64kg

FRP-5K

POWER

RMS Power @ 4 OHM / 1500W
RMS Power @ 2 OHM / 2900W
RMS Power @ 1 OHM / 5000W
MAX Power @ 1 OHM (BURST) / 5600W

AUDIO

Frequency Response / 10Hz-15KHz
Signal to Noise Ratio / 83dB
Efficiency @ 4 ohm / 92%
Damping Factor / 90
Input Impedance / 10KΩ
Total Harmonic Distortion (THD) / 0.5%
Low Level Input Range / 400mv-3.6V
Selectable X-Over / Fixed Band-Pass
X-Over Filter Range / HP: 10Hz-2KHz / LP: 40Hz-20KHz
Bass Boost Range / 0-12dB
Bass Boost Frequency / 50Hz

FEATURES

Amplifier Class / Digital
Amplifier Type / Full-Range Monoblock
Number of Channels / 1CH
Minimum Impedance / 1 OHM
LED Indicator / Power / Protect / Clipping
Power Input Terminal Size / 0Ga
Fuse Size / 500A
Remote Level Control with Clip Indicator / Yes
Cooling Fan / Yes (Smart Cooling x 2)
Thermal Protection / Yes
Over-Load Protection / Yes
Short Circuit Output Protection / Yes
Voltage Input Protection / Yes
Clipping Protection / Yes
Compact Size for an Easy Installation in any Application Yes
Stable/Reliable Four Layers Traces PCB Design Yes
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Tiffany RCA Terminal / Yes
LED Clip Indicator / Yes
Metal Knobs with Click Steps / Yes
Remote Level Control with Clip Indicator and Voltmeter (sold separately)
Body Color / FRP-5K/BL – Blue
FRP-5K/TI – Titanium
FRP-5K/RD – Red

MEASUREMENTS

Overall Length / 12.2″ / 310mm
Overall Wide / 5.5″ / 140mm
Overall Height / 2.36″ / 60mm
Heatsink Lenght / 11″ / 278mm
Gross Single Unit Weight / 7.3lbs / 3.3kg

TROUBLESHOOTING

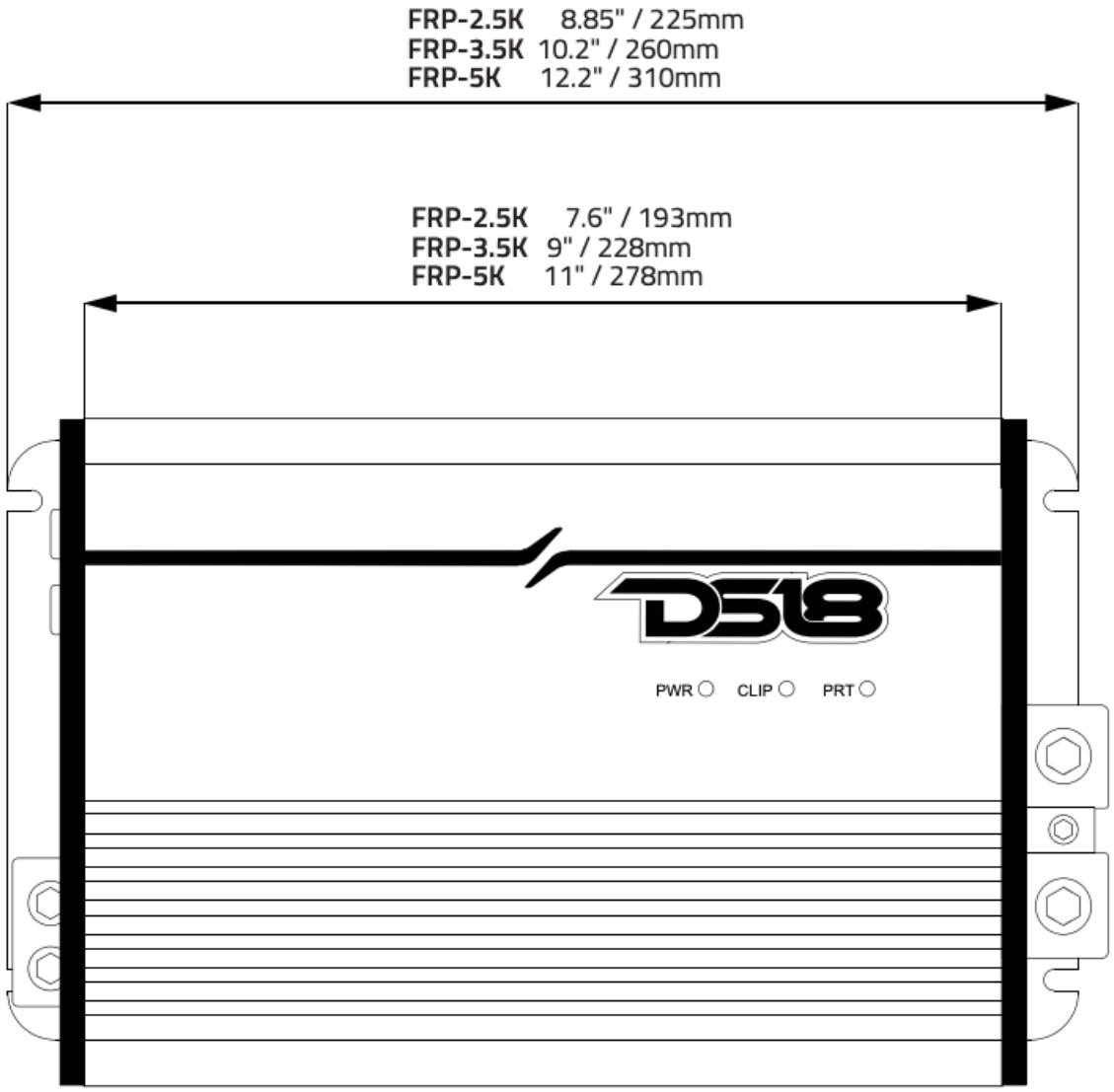
Symptom Síntoma	**Possible Cause** Causa posible	**Action to Take** Acción a tomar
No Output Sin Salida	**Low or no remote turn-on input** Entrada de encendido remoto baja o nula	**Check remote turn-on voltage output at amplifier and correct as needed** Verifique la salida de voltaje de encendido remoto en el amplificador y corríjala según sea necesario.
	Fuse blown Fusible quemado	**Check power wire integrity and reversed polarity ,repair as needed and replace fuse** Verifique la integridad del cable de alimentación y la polaridad invertida, repárelo según sea necesario y reemplace el fusible.
	Power wires not connected Cables de alimentación no conectados	**Check power wire and ground connections and repair of replace as needed** Verifique el cable de alimentación y las conexiones a tierra y repare o reemplace según sea necesario.
	Audio input not connected or no output from source Entrada de audio no conectada o no hay salida de la fuente	**Check input connections and signal integrity, repair or replace as needed** Verifique las conexiones de entrada y la integridad de la señal, repare o reemplace
	Speaker wires not connected Cables de altavoz no conectados	**Check speaker wires and repair or replace as needed** Verifique los cables de los altavoces y repare o reemplace según sea necesario
Audio cycles on and off Ciclos de audio activados y fuera	**Speakers are blown** Los parlantes están volados	**Check system with known working speaker and repair or replace speakers as needed** Verifique el sistema con un altavoz que funcione y repare o reemplace los altavoces según sea necesario
	Thermal protection engages when amplifier heatsink temperature exceeds 90°C La protección térmica se activa cuando el amplificador disipador de calor la temperatura supera los 90°C	**Make sure there is proper ventilation for amplifier and improve ventilation as needed** Asegúrese de que haya una ventilación adecuada para el amplificador y mejore la ventilación según sea necesario
	Loose or poor audio input Entrada de audio suelta o deficiente	**Check input connections and repair or replace as needed** Verifique las conexiones de entrada y repárelas o reemplácelas según sea necesario.

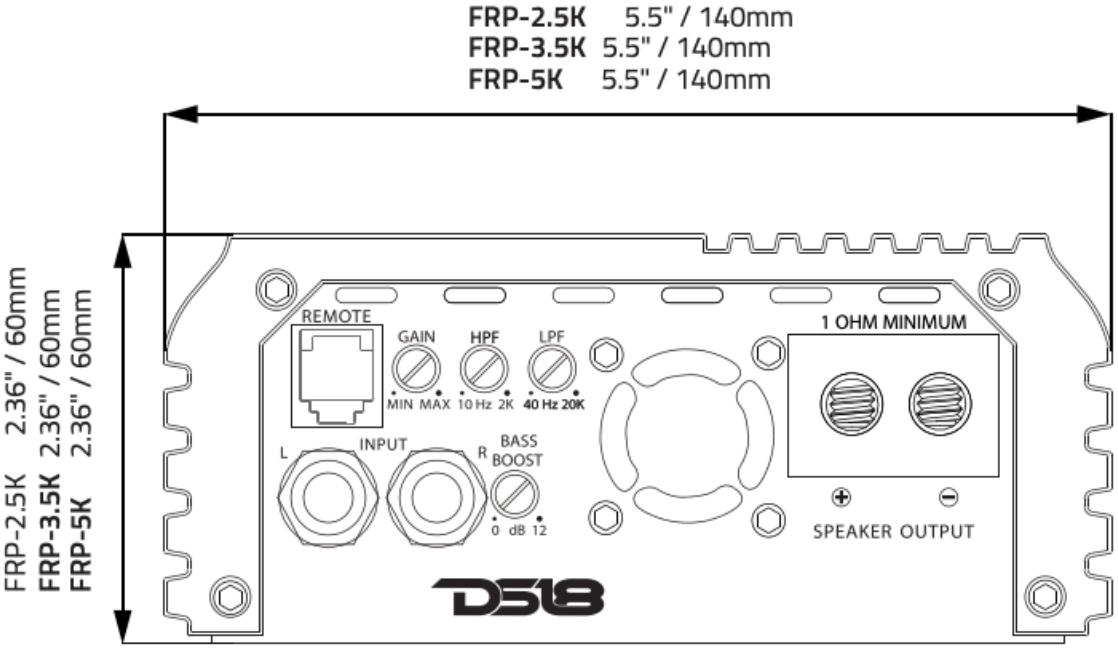
Symptom Síntoma	**Possible Cause** Causa posible	**Action to Take** Acción a tomar
Distorted output Salida distorsionada	**Amplifier level sensitivity set too high; exceeding maximum output capability of amplifier** Conjunto de sensibilidad del nivel del amplificador demasiado alto; superando el máximo capacidad de salida del amplificador	**Reset gain referring to the tuning section of the manual for detailed instructions** Restablezca la ganancia consultando la sección de sintonización del manual para obtener instrucciones detalladas.
	Impedance load to amplifier too low Carga de impedancia al amplificador demasiado baja	**Check speaker impedance load if below 2 OHM stereo or 4 OHM mono rewire speakers to achieve a higher impedance** Compruebe la carga de impedancia del altavoz si es inferior a 2 ohmios estéreo o 4 ohmios mono, vuelva a cablear los altavoces para lograr una impedancia más alta.
	Shorted speaker wires Cables de altavoz en cortocircuito	**Check speaker wire connections and repair or replace as needed** Verifique las conexiones de los cables de los altavoces y repárelos o reemplácelos según sea necesario
	Speaker not connected to amplifier properly Altavoz no conectado a amplificador correctamente	**Check speaker wiring and repair of replace as needed refer to the installation section of this manual for detailed instructions** Verifique el cableado de los altavoces y repare o reemplace según sea necesario. Consulte la sección de instalación de este manual para obtener instrucciones detalladas.
	Speakers are blown Los parlantes están volados	**Check system with known working speakers and repair or replace as needed** Verifique el sistema con conocimiento parlantes que funcionan y reparación o reemplazar según sea necesario

Symptom Síntoma	**Possible Cause** Causa posible	**Action to Take** Acción a tomar
Poor bass response Mala respuesta de graves	**Speakers wired wrong polarity causing cancellation at low frequencies** Altavoces mal conectados polaridad que causa cancelación en bajas frecuencias	**Check speaker polarity and repair as needed** Verifique la polaridad del altavoz y reparar según sea necesario
	Crossover set incorrectly Cruce configurado incorrectamente	**Reset crossovers referring to the multi-cross crossover configuration section of this manual for detailed instructions** Restablecer cruces haciendo referencia a el cruce multicruzado sección de configuración de este manual para instrucciones detalladas
Battery fuse blowing Fusible de batería fundido	**Impedance load to amplifier too low** Carga de impedancia al amplificador demasiado baja	**Check speaker impedance load if below 2 OHM stereo or 4 OHM mono rewire speakers to achieve a higher impedance** Verifique la carga de impedancia del altavoz si está por debajo de 2 ohmios estéreo o 4 ohmios mono, vuelva a cablear los altavoces para lograr una mayor impedancia
	Short in power wire or incorrect power connestions Cortocircuito en el cable de alimentación o conexiones de alimentación incorrectas	**Check power and ground connections and repair as needed** Verifique las conexiones de alimentación y tierra y repárelas según sea necesario.
	Fuse used is smaller than recommended El fusible utilizado es más pequeño que recomendado	**Replace with proper fuse size** Reemplace con el tamaño de fusible adecuado

Symptom Síntoma	**Possible Cause** Causa posible	**Action to Take** Acción a tomar
Battery fuse blowing Fusible de batería fundido	**Too much current being drawn** Se está consumiendo demasiada corriente	**Check speaker impedance load if below 2 OHM stereo or 4 OHM mono rewire speakers to achieve a higher impedance** Verifique la carga de impedancia del altavoz si está por debajo de 2 OHM estéreo o 4 OHM mono, vuelva a cablear los altavoces para lograr un mayor impedancia
	Short in power wire or incorrect Cortocircuito en el cable de alimentación o incorrecto	**Check power and ground connections and repair as needed** Verifique la energía y la tierra conexiones y reparación según sea necesario
	Too much current being drawn Se está consumiendo demasiada corriente	**Check speaker impedance load, if below 2 OHM stereo or 4 OHM mono rewire speakers to achieve a higher impedance and replace with recommended fuse size** Verifique la carga de impedancia del altavoz, si está por debajo de 2 OHM estéreo o 4 OHM mono, vuelva a cablear los altavoces para lograr una impedancia más alta y reemplace con tamaño de fusible recomendado
	Fuse used is smaller than recommended El fusible utilizado es más pequeño que recomendado	**Replace with proper fuse size** Reemplace con el tamaño de fusible adecuado

DIMENSIONS





WARRANTY

Please visit our website DS18.com for more information on our warranty policy.

We reserve the right to change products and specifications at any time without notice. Images may or may

not include optional equipment.

WARNING:

Cancer and Reproductive Harm.
www.P65Warning.ca.gov

Documents / Resources

	**DS18 FRP-2.5K FRP Compact Full-Range Class D 1-Channel Amplifier** [pdf] Owner's Manual FRP-2.5K FRP Compact Full-Range Class D 1-Channel Amplifier, FRP-2.5K, FRP Compact Full-Range Class D 1-Channel Amplifier, Full-Range Class D 1-Channel Amplifier, Class D 1-Channel Amplifier, 1-Channel Amplifier, Amplifier

References

- **Official DS18 Pro Audio Store - Speakers, Subwoofers, Amps & More!**
- **User Manual**