

FOCAL POWER SYMMETRIC AMPLIFIERS

User manual

Français page 31

We thank you for choosing Focal amplifiers for your Car Audio system and for sharing our philosophy: "the Spirit of Sound". This product offers the latest advances in Focal amplifiers. In order to obtain the best results, we highly recommend you have your new amplifier installed by your local Focal distributor. To maximise the use all your amplifier functionalities and to fully enjoy its performance levels, we recommend you read the entire instructions in this booklet. We recommend you keep this manual for future reference. Any problem due to misapplication can lead to a guarantee invalidation.

The Focal Guarantee only applies if the last page is returned to us within 10 Days of purchase.



WARNING

This symbol denotes important instructions. Non respect of these instructions may lead to serious injuries and even fatal injuries.

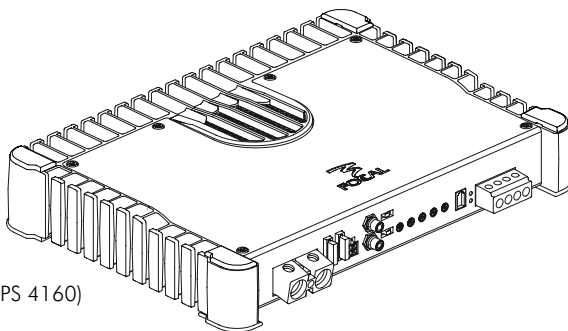


CAUTION

This symbol denotes important instructions. Non respect of these instructions may lead to injury or material damage.

Content of the packaging:

- 1 amplifier
- 1 user manual
- 4 fixing screws
- Fuses
- 1 remote control cable
(FPS 1500, FPS 3000, FPS 2300RX and FPS 4160)
- 1 remote control
(FPS 1500, FPS 3000, FPS 2300RX and FPS 4160)
- 1 hex key



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Due to constant technological advances, Focal reserves its right to modify specifications without notice. Images may not conform exactly to specific product..

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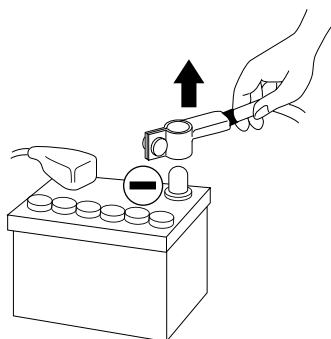
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WARNING

- **Do not turn on any function which may distract you while driving the vehicle.** Functions requiring sustained attention must only be used when the vehicle is at a complete standstill. Make sure to always stop your vehicle in a safe place before operating these functions. There is a risk of causing an accident.
- **Keep the volume at a low level to be able to hear exterior noises while driving the vehicle.** There is a risk of causing an accident.
- **Do not open the amplifier or undertake any modification of the product.** There is a risk of accident, fire or electric shock.
- **Only use this amplifier with 12V mobile applications.** Any other use other than the use for which this product has been designed may lead to fire, electric shock or injury.
- **Use fuses of the correct amperage.** There is a risk of fire or electrocution.
- **Do not obstruct radiators and/or vents.** Internal overheating may occur and cause a fire.
- **Ensure all connections are properly made.** Check the section of cable and the type of cable if it does not correspond with the use. There is a risk of fire, injury and/or damage to the product.
- **Do not use nuts or fasteners part of the steering or braking systems for ground connection.** The fasteners and nuts used for the brake and steering systems (or any other security system) as well as various tanks must never be used for grounding. Use of these parts as ground may deactivate the vehicle's control system and cause a fire or other technical problem.
- **Keep all small objects which could be swallowed, such as the fasteners and screws, out of the reach of children.** Swallowing such objects may cause serious injuries. In the event of swallowing any of these objects, immediately seek medical advice.
- **Before starting the installation, disconnect the negative terminal of the battery** to avoid any risk of injury, fire or damage to the equipment.



Pic. 1

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CAUTION

Listening for prolonged periods at a high sound level, over 110dB, can lead to permanent deterioration of your hearing. Listening at a level over 130dB, even for short periods of time, can cause incurable damage and injury to your hearing.

Stop operation in the event of a problem. Failure to heed this precaution may result in injuries or damage to the product. If a problem persists, return the product to your Focal distributor for repair.

Use the specified accessories and be sure to install them correctly. Only use the accessories specified in the user's manual and those which are supplied with the package. The use of other components could cause internal damage to the product, and their installation may not be correct. The parts being used risk becoming loose and causing damages or technical faults with the product.

Do not assemble in very humid or dusty places. Avoid assembling the product in places with high levels of humidity or an excessive presence of dust. Humidity or dust getting inside the product may cause a technical fault.

Installation of the amplifier

The installation of this product requires technical knowledge and experience. In case you are uncertain of your ability to correctly install the amplifier, we strongly recommend you contact your Focal retailer who will install it for you, so that you will be able to take full advantage of all the different possibilities of the amplifier.

Wiring of the amplifier

Only use the wires recommended in this manual. The loudspeaker wire must **ONLY** be used for connecting the amplifier to the loudspeakers. The section of power cables must correspond to the one detailed in the table (page 7) and correspond to the power of the amplifier and the length of the cable. Use double or triple shielded RCA cables to avoid any interference of the low level signal.

Duration of operation of the amplifier

Avoid using the amplifier for more than 10 minutes before starting the vehicle. This may cause the battery to go flat.

Progressive controlled cooling system

The cooling system only works when the amplifier temperature exceeds 50°C. The rotation speed of the cooling system depends on the amplifier temperature. You mustn't cover the amplifier as it could create overheating.

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Required material for installation:

- 2 suitable cross-section sheaths (1 sheath for the power supply cable), 1 sheath for the speaker cables, REMOTE, RCA signal and REMOTE CONTROL cables)
- Multimeter (voltage/amperage)
- Soldering iron + tin
- Crimping tool
- Stripping pliers
- Wire cutter
- Spanner for battery terminal
- Hand drill and assorted drills
- Heat sheaths of suitable diameter for the different cables
- Power cable of suitable length and section
- Remote turn on cable (REM input of amplifier) of suitable length and section
- Ground cable of suitable length and section
- Assorted connectors
- Fuse holder and suitable fuse
- Joint tag for the battery's positive (+) terminal
- Joint tag for the vehicle's chassis (-)
- Screw with minimum 6mm screw head and its nut for ground connection to the chassis of the vehicle

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Installation:

The below section deals with issues regarding the vehicle which are necessary to take into account for the installation of the amplifier. You'll save time by planning the system layout and wiring in advance. Please ensure during this preparatory time that the whole settings remain accessible once the installation is complete.

Before starting the installation, please follow these rules carefully:

- 1 - After reading the whole manual, be sure that you have understood all the instructions before installing the amplifier.
- 2 - Disconnect the battery's negative wire before starting the installation. (pic. 1).
- 3 - To facilitate the assembly, we strongly recommend you unwind all the wires before installing the amplifier.
- 4 - Put aside all the RCA cables, speakers, REM and REMOTE CONTROL {REMOTE CONTROL only with FPS 1500, FPS 3000, FPS 2300RX and FPS 4160}, far from the power cables in order to avoid any interference of the signal.
- 5 - Use quality connectors to ensure a reliable installation and to minimise any losses of signal or power.
- 6 - Think carefully before drilling anything. Be extremely careful not to cut or drill the petrol (fuel) tank, the fuel, brake, hydraulic or vacuum pipes, as well as the electrical wiring.
- 7 - Never route a wire under the vehicle. It is absolutely imperative to install them inside the vehicle for better protection. While routing the wires, verify that they do not impair the driving of the vehicle. Cables obstructing or routing through areas such as the steering wheel, pedals (brake, accelerator and clutch, etc.) may be extremely dangerous.
- 8 - Avoid routing wires above or through sharp rims. Any wire routed through metal must be protected with a grommet. Route the wires well away from mobile parts (seat rails,...) and from sharp or pointed cutting edges. This will avoid catching or damaging the wires.
- 9 - Always protect the battery and electrical circuit from potential damages with the help of fuses. Install a fuse holder and suitable fuses on the 12V positive (+) power cable at less than 40cm from the battery terminal. Ideally, this abovementioned distance should be the shortest as possible (pic. 4).
- 10 - Prepare the chassis ground by scraping any trace of paint on the metal surface in order to ensure correct grounding. The grounding connections should also be as short as possible and ALWAYS connected to the metal welded to the body or the chassis of the vehicle (pic. 4). The generally chosen ground point is the one that ensures the link between the negative terminal of the battery and the chassis of the vehicle.
- 11 - **NEVER** install this product in the engine compartment of the vehicle. This will cancel the guarantee.

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I - Set-up and wiring

Where to install the amplifier?

The amplifier power is such that substantial heat is generated when it is operation. This is why the amplifier has to be placed in a well-ventilated area of the car.

2 - Fixing the amplifier (pic. 2)

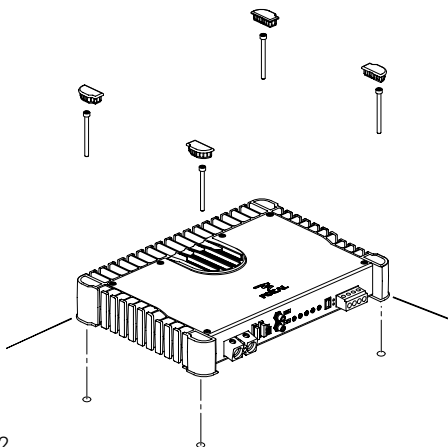
The surface onto which you want to attach the amplifier (boot of the car, etc.) may not be smooth enough (due to bumps, ribs, etc) to make it easy or even possible to fasten the amplifier. If this is the case, we recommend that you mount the amplifier and its attachment system on a wooden base – i.e. MDF, plywood – which itself is attached to the surface in question.

Position the amplifier at the desired location. Mark the location of attachment holes using appropriate means – i.e. an indelible marker, a screwdriver, etc. Make sure that there is nothing below the surface which could be damaged during drilling – i.e. tanks, bundles of cables, etc. Remove the amplifier, making sure that you are using a 3mm-diameter drill bit, and then drill. Put the amplifier back into the initial position you chose for it. Attach the amplifier using the four self-tapping screws supplied. For additional help, see the “General Installation Guidelines” section.



WARNING

Think carefully before drilling anything. Be extremely careful not to cut or drill the petrol (fuel) tank, the fuel, brake, hydraulic or vacuum pipes, as well as the electrical wiring.



Pic. 2

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3 - Wiring



WARNING

If there is a doubt about your ability to install the amplifier and to cable the system properly, get a Focal distributor to do it for you.



CAUTION

Avoid routing power supply cables close to low-level input cables (RCA), to your car's radio aerial, or to sensitive units. High-current power supply cables can cause static/interference that affects audiosignals.



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Avoid routing power supply cables close to low-level input cables (RCA), to your car's radio aerial, or to sensitive units. High-current power supply cables can cause static/interference that affects audio signals.



CAUTION

Before you begin the connection phase of set-up, remove the vehicle battery's negative (-) terminal (pic. 1).

3.1 - What power supply wire gauge should I use?

Amplifier	Amperage	Length of cable in metres						
		0-1 m	1-1,8 m	1,8-2,5 m	2,5-3,3 m	3,3-4,1 m	4,1-5,6 m	5,6-7,1 m
FPS 2160	60 A	16 mm ²	16 mm ²	25 mm ²	25 mm ²	35 mm ²	35 mm ²	53 mm ²
		5 AWG	5 AWG	3 AWG	3 AWG	2 AWG	2 AWG	0 AWG
FPS 2300 RX	100 A	25 mm ²	25 mm ²	25 mm ²	35 mm ²	53 mm ²	53 mm ²	53 mm ²
		3 AWG	3 AWG	3 AWG	2 AWG	0 AWG	0 AWG	0 AWG
FPS 4160	80 A	16 mm ²	16 mm ²	25 mm ²	25 mm ²	35 mm ²	35 mm ²	53 mm ²
		5 AWG	5 AWG	3 AWG	3 AWG	2 AWG	2 AWG	0 AWG
FPS 1500	80 A	16 mm ²	16 mm ²	25 mm ²	25 mm ²	35 mm ²	35 mm ²	53 mm ²
		5 AWG	5 AWG	3 AWG	3 AWG	2 AWG	2 AWG	0 AWG
FPS 3000	160 A	35 mm ²	35 mm ²	35 mm ²	35 mm ²	53 mm ²	53 mm ²	53 mm ²
		2 AWG	2 AWG	2 AWG	2 AWG	0 AWG	0 AWG	0 AWG

AWG : American Wire Gauge

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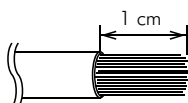
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3.2 - Route the low-level audio cables (RCA cable), the loudspeaker cables, the REMOTE cable, as well as the REMOTE CONTROL cable {REMOTE CONTROL only with the FPS 1500, FPS 3000, FPS 2300RX and FPS 4160 references} ensuring to isolate them from powerful automobile accessories, particularly electric motors (windshield wiper,...). Keep the whole length of the cables, which will be adjusted later on.

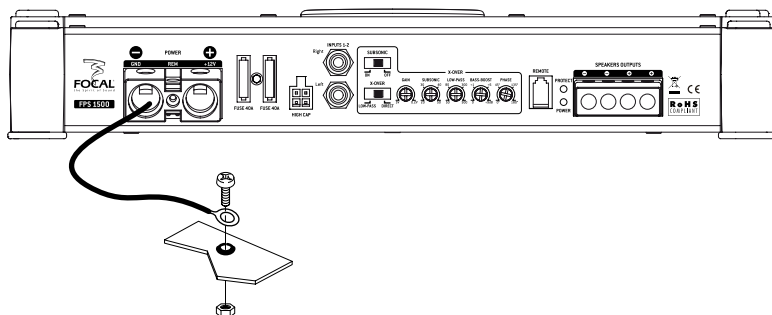
3.3 - Route the positive power cables (+). Make sure when doing so to route them opposite the cables that you have previously drawn – this is to avoid any interference. **DO NOT CONNECT THE CABLE YET.**

3.4 - Get hold of the negative power cable. This cable should be as short as possible and ideally should not be any longer than 1 metre, to ensure effective coupling between the amplifier and the car's chassis. The cable and its wire gauge should comply with the table on page 7. Find a suitable ground point, then sand it to remove any traces of paint or other covering and in so doing optimise the contact point. Pierce the metal that you have previously sanded, making a hole the same size as the screw you are using, making sure that there are no tank cables or any other sensitive vehicle devices nearby. Strip 1 cm of cable (pic. 3) and then tin it. Screw the cable firmly down onto the amplifier's GND terminal. Tin the other end of it and then crimp or weld it onto the terminal lug provided. Insert the terminal lug in the screw, and then put the screw and the nut in place and firmly screw-drive in.(pic. 4).

pic. 3



pic. 4

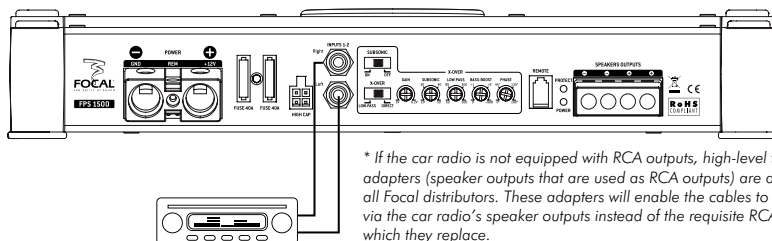


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3.5. You can now start the connection phase of the RCA, REMOTE and speaker cables. Connect the RCA cables to the amplifier (pic. 5). When connecting RCA, be careful to respect the polarities (INPUT Left = black or white, INPUT right = red). Then connect the cable(s) to the car radio.



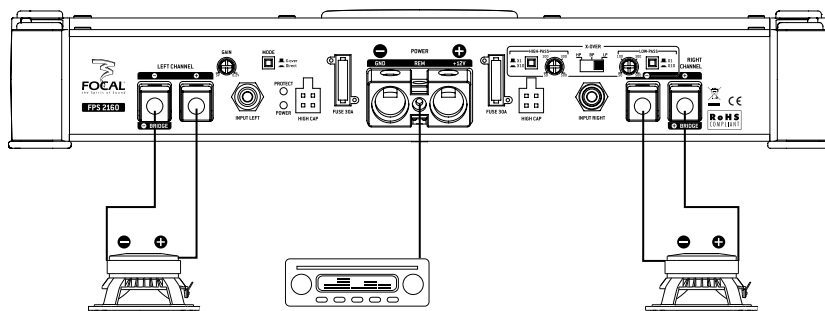
pic. 5

Now connect the REMOTE cable to the amplifier (REM terminal) screwing tightly. Connect the other end of the REMOTE cable to the car radio REMOTE terminal.

Finally, connect the speaker cables to the amplifier and make sure the polarities are correct (+ with + ; - with -) by stripping 1 cm of cable (pic. 3)

Connect the REMOTE CONTROL cable {only with the FPS 1500, FPS 3000, FPS 2300RX and FPS 4160 references} to the amplifier, then fix the remote control in the spot made for it (except for the FPS 2160 model).

3.6 - Get the positive (+) power supply cable ready for connection to the amplifier by removing 1 cm of the plastic coating from the end of it (pic. 3). Tin this part of the cable using a soldering iron and tin the wire. Insert the plastic-free tinned part of it in the amplifier's "+ BATT" terminal, then secure the cable in place by screwing it in tightly.



pic. 6

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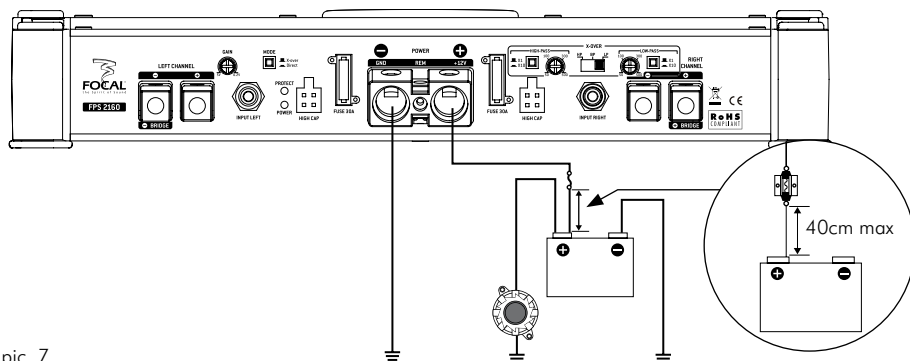
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WARNING

The cable that links the positive (+) terminal to the battery at the amplifier's "+ BATT" binding post terminal must ABSOLUTELY be fused (see current ratings listed in the table on page 30) not more than 40cm from the vehicle's battery. The connections on the fuse-holder must be fully insulated.

3.7 - The implementation phase of the fuse holder for a safe installation can now be started. The fuse holder should be linked at both end of the positive (+) power cable. It should be placed close to the battery {10 to 40cm. (pic. 7)}. Remove the fuse holder taking care to remove the fuse. Fix the fuse holder's base. Cut the red power cable between 10 and 40cm. (maximum) from the battery (pic. 7). Keep the remaining scrap cable that will be used to link the other fuse extremity to the positive terminal of the fuse holder (+) of the vehicle battery. Strip 1 cm (pic. 3), then tin it. Screw the cable to the other holder base terminal. Strip 1 cm (pic. 3), then tin it. Screw the cable to the other holder base terminal.



pic. 7

WARNING

Do not open the amplifier, nor make any modifications to the products. There's a risk of accident, fire or electric shock.

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3.8 - Tin the end of the power supply cable before you connect it to the battery's positive (+) terminal. Weld the end of the cable to the terminal lug that is going to be used for the battery's positive (+) terminal. Connect the terminal lug to the battery's positive terminal.

3.9 - Insert the fuse into the fuse-holder(s), and screw in tightly.

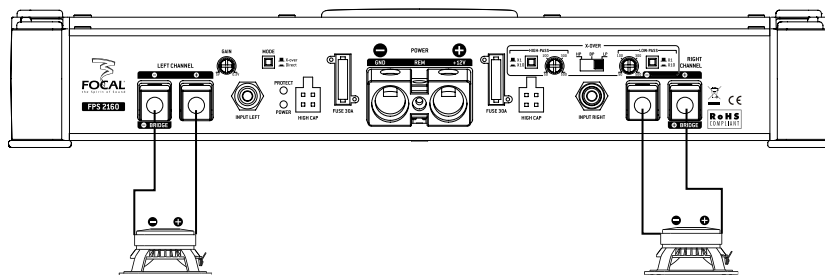
3.10 - Connect the loudspeaker cables to the right and left channel crossover networks, making sure that the polarities are the same (note: + = cable with a red border if you are using a Focal kit) as those used for standard wiring set-ups. Focal amplifiers can work in bridged mode (see product specifications page 29 to know the power delivered in bridged mode) for amplifying subwoofers. To do so, simply connect the positive (+) speaker cable to the BRIDGE (+) terminal and connect the negative (-) speaker cable to the related BRIDGE (-) terminal.



CAUTION

When connecting several subwoofers to the same output, check for the amplifier impedance compatibility. (page 29).

3.11 - The connection phase is now complete. But, you must check if the power supply is correct as well as the correct operation of the full system (car radio/amplifier/loudspeakers). Set all gains (source, amplifier) to their minimum. Turn on the different elements. Once all the elements are on, carry out a test at low volume, adjusting the various gains.



pic. 8

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High Cap:

The High-Cap is an external power supply module. Once connected to the amplifier, it increases regulation capacitance of rail's power supply. It brings high music performance, a very high performance maintaining and an extremely high-fidelity of the audio signal. The High-Cap module is sold separately.



WARNING

For your safety and in order not to damage the equipment, you **MUST** follow the steps below.



CAUTION

In the event of a wrong handling, an electric arc may occur.

4 - HIGH-CAP connection

4.1 - Turn off the car radio in order to shut down all the elements. Switch off the engine of your vehicle and remove the key.

4.2 - Unplug the negative cable of the battery before starting the installation. (pic. 1)

4.3 - Remove the fuse of the amplifier power cable being careful not to make the cable touch the main body.

4.4 - Unplug the power cable, the ground cable and the remote cable from the amplifier.

4.5 - Wait 30 seconds and then connect the HIGH-CAP(s).

4.6 - Plug the power cable, the ground cable and the remote cable to the amplifier through the adapted terminals.

4.7 - Plug the negative cable of the battery.



CAUTION: A small electric arc may occur.

4.8 - Insert the fuse into the fuse-holder(s), and screw in tightly.

4.9 - Turn on the different elements. Once all the elements are on, carry out a test at low volume.

5 - Unplug the HIGH-CAP

5.1 - Turn off the car radio in order to shut down all the elements. Switch off the engine of your vehicle and remove the key.

5.2 - Unplug the negative cable of the battery before starting the handling. (pic. 1)

5.3 - Remove the fuse of the amplifier power cable being careful not to make the cable touch the main body.

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5.4 - Unplug the power cable, the ground cable and the remote cable from the amplifier.

5.5 - Wait 30 seconds and then unplug the HIGH-CAP(s).

5.6 - Plug the power cable, the ground cable and the remote cable to the amplifier through the adapted terminals.

5.7 - Plug the negative cable of the battery.

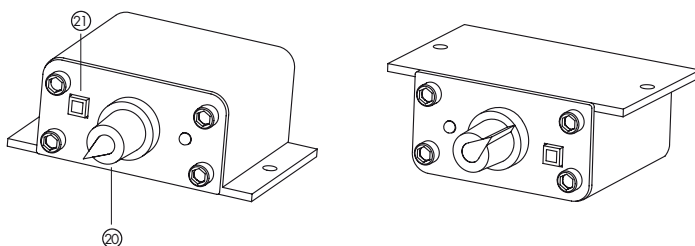


CAUTION: A small electric arc may occur.

5.8 - Insert the fuse into the fuse-holder(s), and screw in tightly.

5.9 - Turn on the different elements. Once all the elements are on, carry out a test at low volume.

Remote control :

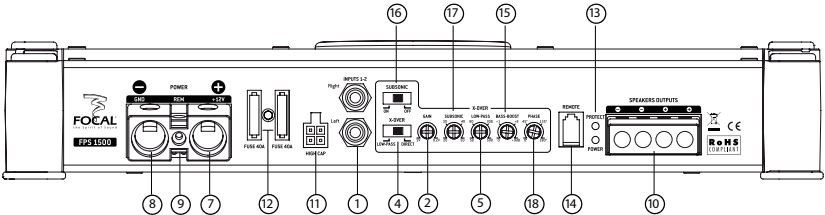


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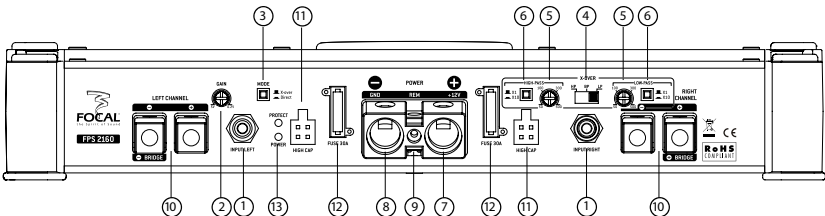
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Amplifiers:

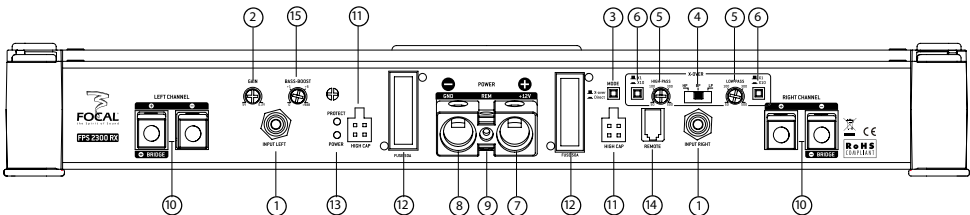
Focal Power Symmetric 1500



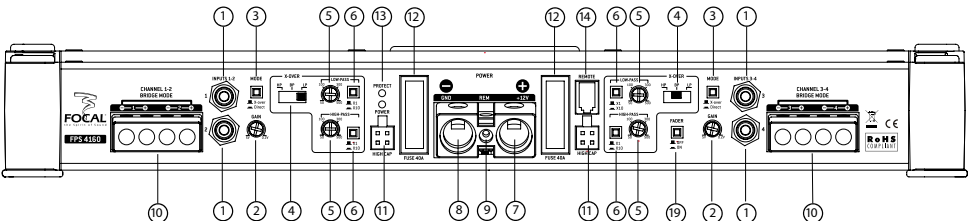
Focal Power Symmetric 2160



Focal Power Symmetric 2300RX



Focal Power Symmetric 4160

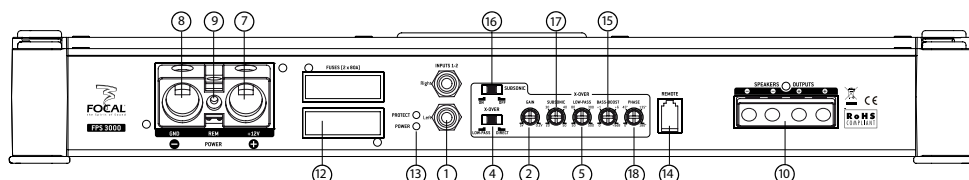


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Focal Power Symmetric 3000



6 - Connections, features and controls

6.1 - Connections, features

- ① **INPUT(S)**: the RCA sockets are dedicated to low level signal input.
- ② **GAIN**: the GAIN rotary potentiometer allows you to adjust the level of the input signal in the amplifier.
CAUTION: increasing the input gain does not mean more power, but more noise. The amplifier input accepts a signal with amplitude between 0.2 and 5V.

This potentiometer must be set according to the source level (line output level).

Start by putting the amplifier gain at its lowest level. Gradually turn up the level of the source up to the 3/4. Turn up the amplifier gain level up to the listening level wanted. Turn down the level if distortion occurs.

In the event of the amplifier use with one or several subwoofer(s), the "GAIN" setting will delimit the level of the subwoofer(s) according to the one of the kits amplified by the source (car radio) or another amplifier. Put the source at an average listening level, then adjust the amplifier gain to get a perfect coherence between the sound levels of the kits and the subwoofer(s).

- ③ **MODE**: The MODE switch permits to activate the (HPF) and (LPF) crossovers by the choice of the switch in X-OVER position or deactivate the crossover in the Direct position.
- ④ **X-OVER (crossover mode)**: the X-OVER switch permits to activate either a high-pass crossover (HP), a low-pass crossover (LP) or a bandpass crossover (BP). In the case of the FPS 1500, FPS 3000, the X-OVER switch only permits to choose between a LOW-PASS crossover and a DIRECT mode without crossover.
- ⑤ **LOW PASS and HIGH PASS**: the rotary potentiometers permit to adjust the value of the high-pass or low-pass filter. The chosen value defines the frequency up to which (or from which) the signal will be cut.
NOTE: For the FPS 2160, FPS 2300 RX and FPS 4160 amplifiers, the adjacent switch indicates how many times you have to multiply the LOW PASS or HIGH PASS potentiometer value. Thus, in "X1" mode, the potentiometer permits to choose a cut-off frequency between 50Hz and 500Hz or between 500Hz and 5000Hz in "X10" mode.
- ⑥ **X-SELECT**: the X-SELECT switch indicates how many times you have to multiply the LOW PASS or HIGH PASS potentiometer value.
- ⑦ **+12V**: the power supply switch +BATT is dedicated to receive the power supply cable ensuring the link between the amplifier and the battery positive (+) terminal.

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- ⑧ **GND:** the GND (ground) power connector receives the negative (-) cable providing the connection between the amplifier and the vehicle's chassis.
- ⑨ **REM:** the REM connector links the amplifier, an additional amplifier and the source (car radio) via a REM or REMOTE car radio output. This enables the automatic turn-on of the amplifier and the additional amplifier from the source (car radio).
- ⑩ **SPEAKERS:** the SPEAKERS connectors link the amplifier and the speaker crossovers (or the speakers in the case of active filtering). It is IMPERATIVE to respect the polarities. (+ amplifier + crossover or + speaker / - amplifier - crossover or - speaker).
NOTE: the SPEAKER output of the amplifiers FPS 1500 and FPS 3000 is ONLY dedicated to the connection of one or several subwoofer(s).
- ⑪ **HIGH CAP:** The HIGH CAP connectors ensure the link between the amplifier and the HIGH CAP modules
NOTE: Before any handling of the HIGH CAP modules, please refer to page 12.
- ⑫ **FUSE:** The FUSE connector is dedicated to receive the amplifier fuse(s). In case of replacement, make sure that the amperage is correct.
- ⑬ **WARNING LIGHTS:** The green LED "Power" means that the device is on and that the running is correct. The red LED "Protect" indicates that the amplification is under protection following any dysfunction, such as overheating, fault, ...
- ⑭ **REMOTE CONTROL: NOTE: DO NOT CONFUSE REMOTE AND REMOTE CONTROL.** The REMOTE CONTROL output is dedicated to the connection of the supplied remote control. This attachment permits the remote adjustment of the amplifier gain.
- ⑮ **0/9dB BASS BOOST:** the BASS BOOST rotary potentiometer permits to raise the sound level of 0 to 9dB at 45Hz for FPS 1500, FPS 3000 and at 95Hz for FPS 2300RX.
- ⑯ **SUBSONIC SWITCH:** Permits to activate or bypass the adjustable SUBSONIC crossover thanks to the subsonic potentiometer.
- ⑰ **SUBSONIC:** the SUBSONIC rotary potentiometer is the equivalent of a HIGH-PASS crossover ONLY dedicated to the amplifier subwoofer output (SPEAKER output for the FPS 1500 and FPS 3000 amplifiers). The chosen value defines the frequency from which the signal will be attenuated or cut. The crossover activation avoids distortion.
So, it's possible to choose a frequency between 20 and 50Hz, with a fixed filtering slope at 24dB/octave.
- ⑱ **PHASE:** the PHASE rotary potentiometer permits to adjust the channel phase setting according to the installation.
- ⑲ **FADER:** The FADER switch (only available with FPS 4160) enables the channels 3 and 4 to copy out the signals of the channels 1 and 2. So, if you only have a RCA output (one right and one left), you can still amplify the four channels by activating the FADER mode. If you want to use the FPS 4160 in a double bridged mode, you must connect the 4 RCA (the channels 1 and 2 for the left and the channels 3 and 4 for the right).
- ⑳ **GAIN POTENTIOMETER:** Permits to adjust the amplifier gain from -9dB to +9dB compared with the general GAIN of the amplifier. (This potentiometer works on the 2 channels of the FPS 2300RX, on the FPS 1500, FPS 3000 main level and on the channels 3 and 4 of the FPS 4160).
- ㉑ **MUTE:** The MUTE switch permits to soften the amplifier channels. (Only the channels 3 and 4 on the FPS 4160).

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⚠ WARNING: For any handling of the crossover and the different available settings, we strongly recommend that you turn off the amplifier in order to prevent any risks of damage or noise in the speakers.

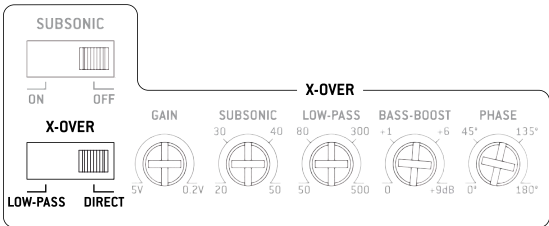
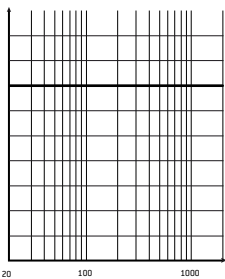
6.2 - Controls

In order to optimize the cross-check of the frequencies reproduced by the subwoofer and the coaxial or 2-way kit, we advise you to set the frequency of the HI PASS or LO PASS crossover thanks to a RTA (real time analyzer).

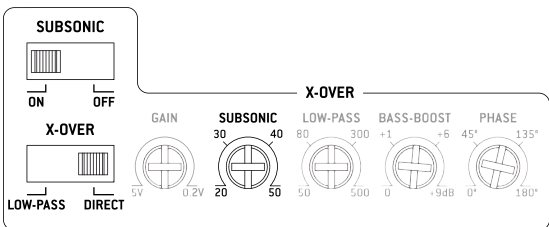
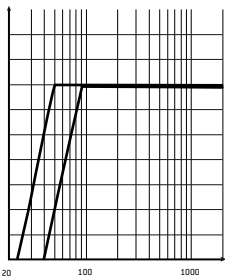
Another possibility consists in referring to the packaging of your kit or the user manual. If it's a Focal kit, the supplied measures concerning the frequency response consider the installation of the kit in a vehicle.

Focal Power Symmetric 1500 / 3000

Direct mode



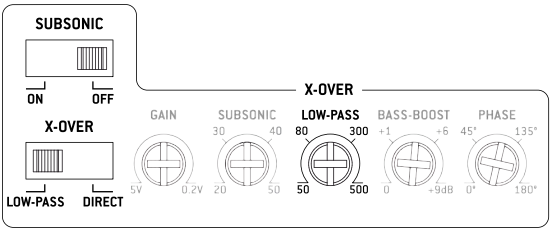
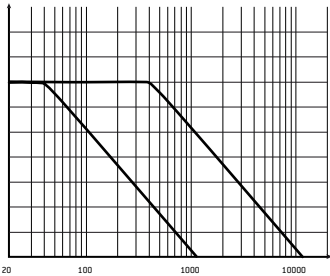
Subsonic crossover control between 20 and 50Hz



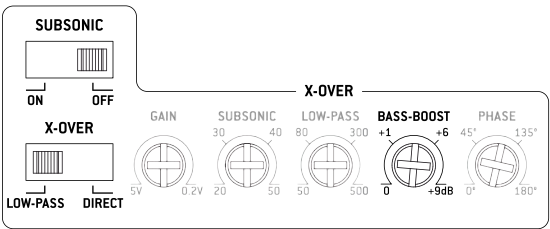
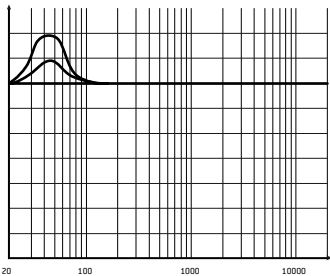
FOCAL POWER SYMMETRIC AMPLIFIERS

User manual

Low-pass control between 50 and 500Hz

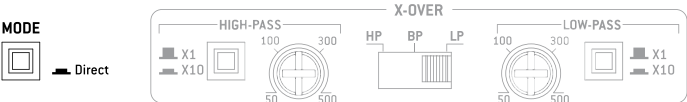
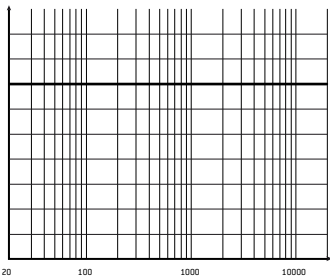


Bass Boost control



Focal Power Symmetric 2160

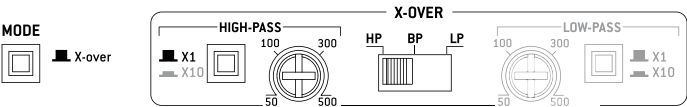
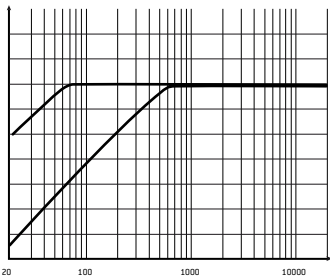
Direct mode



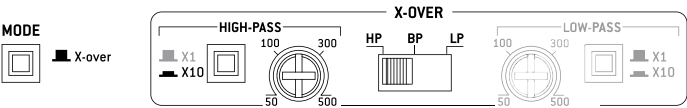
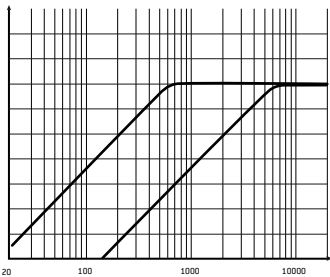
FOCAL POWER SYMMETRIC AMPLIFIERS

User manual

High-pass control between 50 and 500Hz



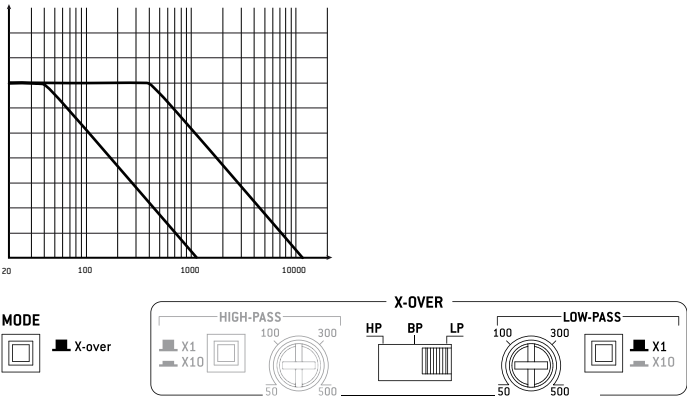
High-pass control between 500 and 5000Hz



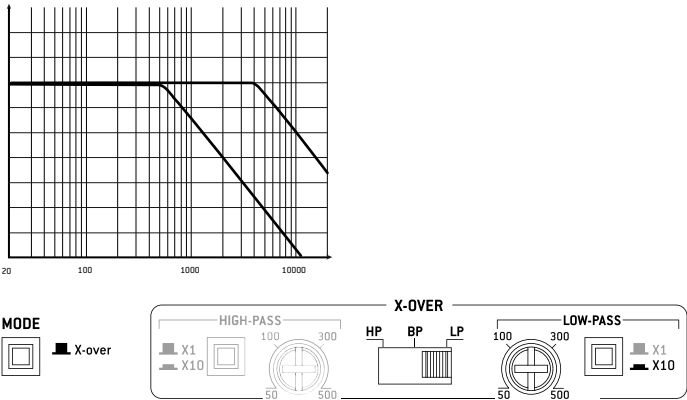
FOCAL POWER SYMMETRIC AMPLIFIERS

User manual

Low-pass control between 50 and 500Hz



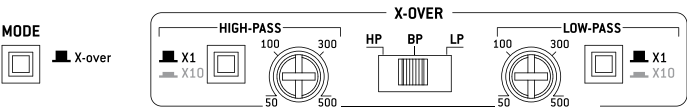
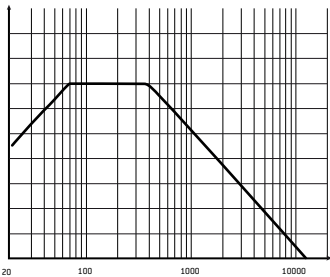
Low-pass control between 500 and 5000Hz



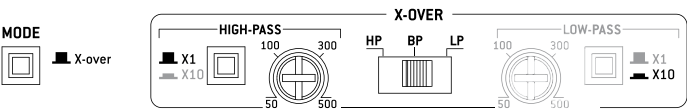
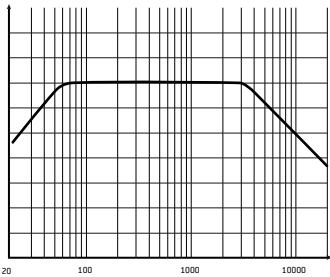
FOCAL POWER SYMMETRIC AMPLIFIERS

User manual

Bandpass control between 50 and 500Hz



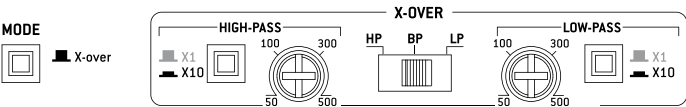
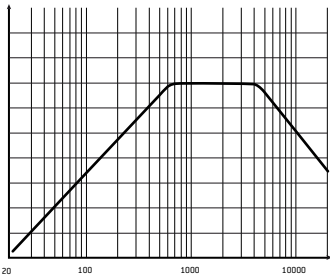
Bandpass control between 50 and 5000Hz



FOCAL POWER SYMMETRIC AMPLIFIERS

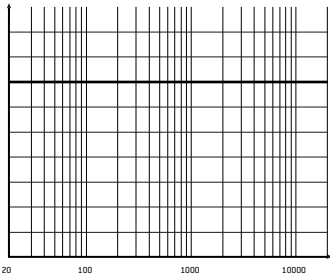
User manual

Bandpass control between 500 and 5000Hz

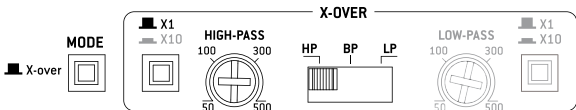
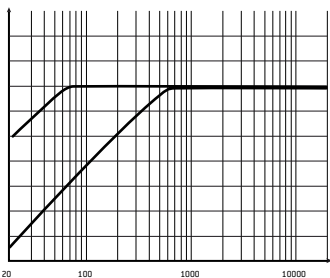


Focal Power Symmetric 2300RX

Direct mode



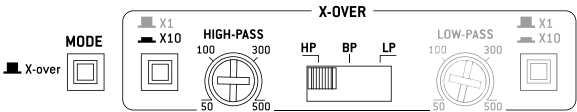
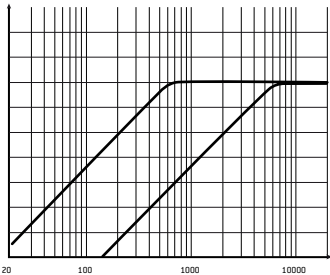
High-pass control between 50 and 500Hz



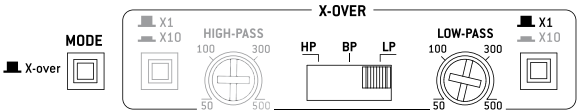
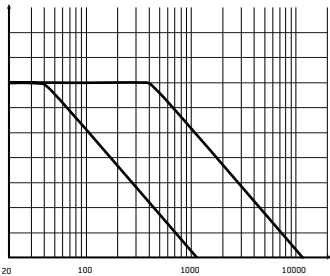
FOCAL POWER SYMMETRIC AMPLIFIERS

User manual

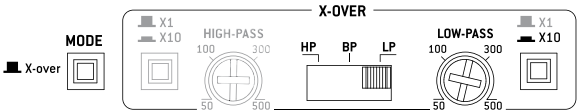
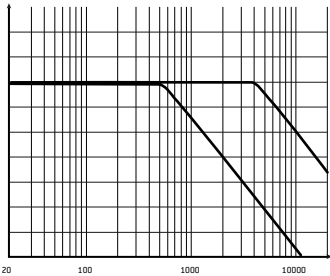
High-pass control between 500 and 5000Hz



Low-pass control between 50 and 500Hz



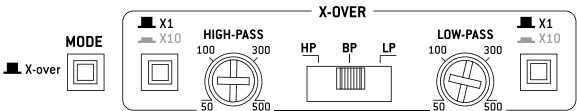
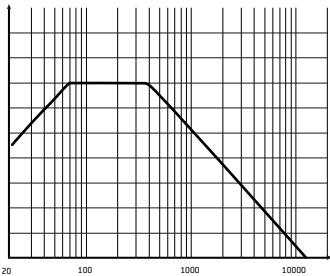
Low-pass control between 50 and 5000Hz



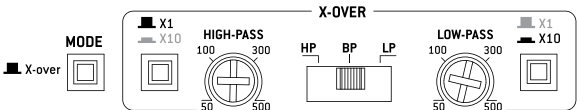
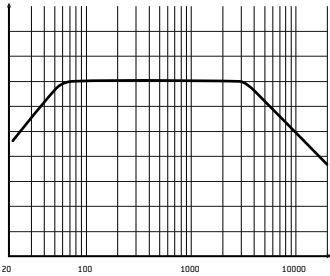
FOCAL POWER SYMMETRIC AMPLIFIERS

User manual

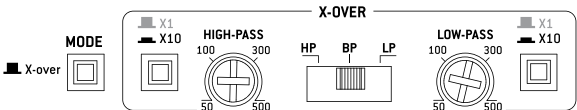
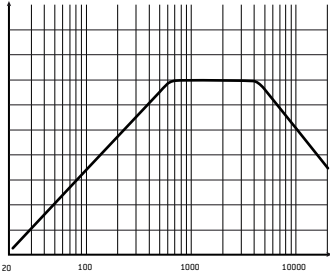
Bandpass control between 50 and 500Hz



Bandpass control between 50 and 5000Hz



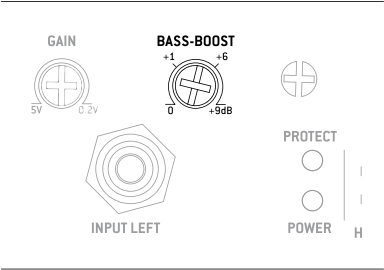
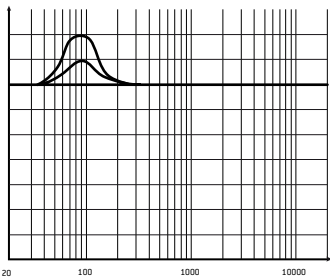
Bandpass control between 500 and 5000Hz



FOCAL POWER SYMMETRIC AMPLIFIERS

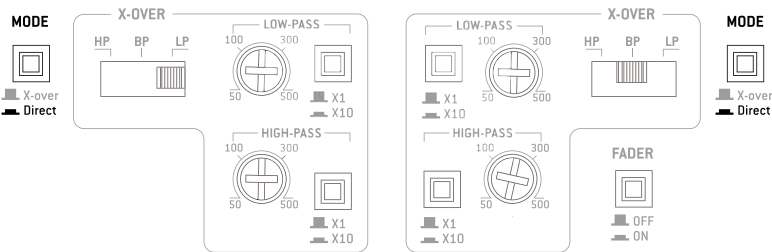
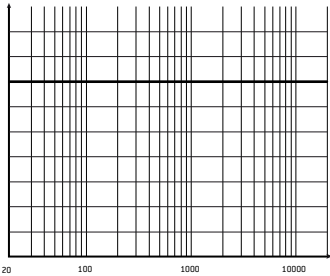
User manual

Bass Boost control



Focal Power Symmetric 4160

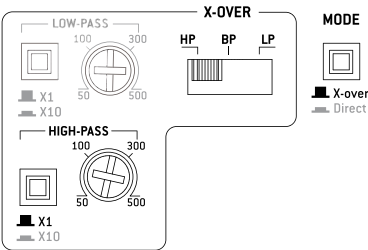
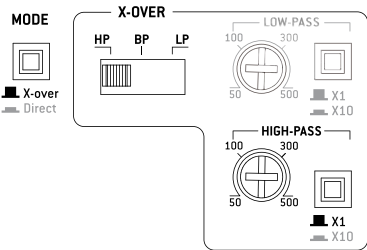
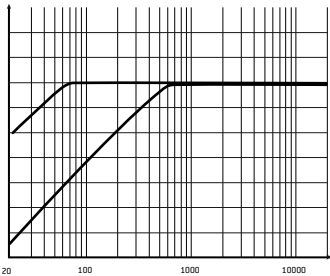
Direct mode



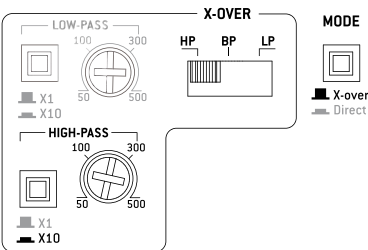
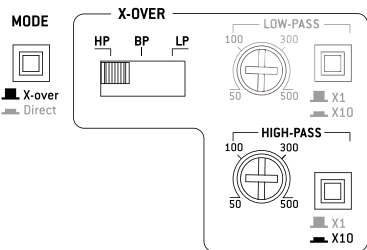
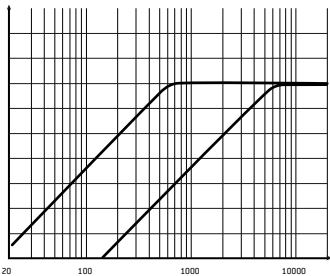
FOCAL POWER SYMMETRIC AMPLIFIERS

User manual

High-pass control between 50 and 500Hz



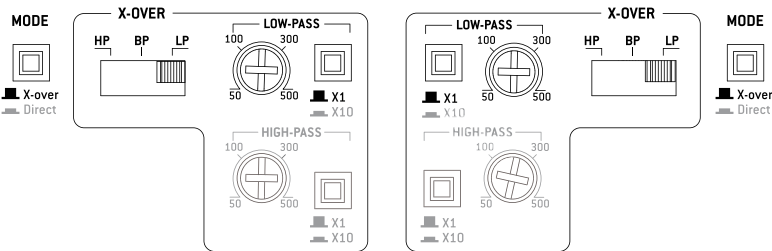
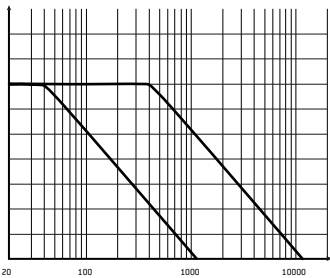
High-pass control between 500 and 5000Hz



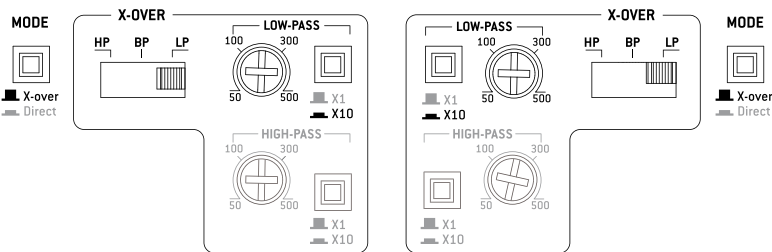
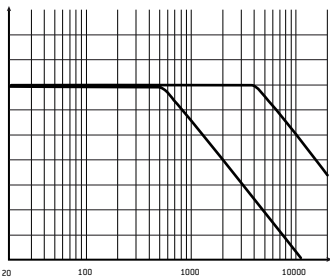
FOCAL POWER SYMMETRIC AMPLIFIERS

User manual

Low-pass control between 50 and 500Hz



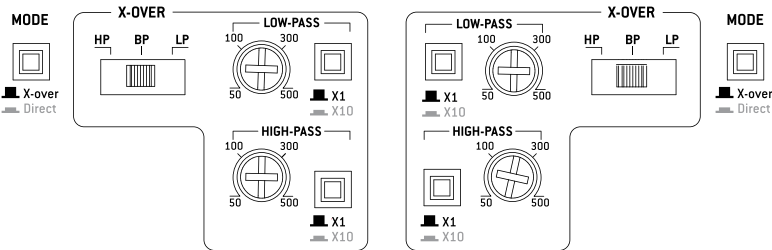
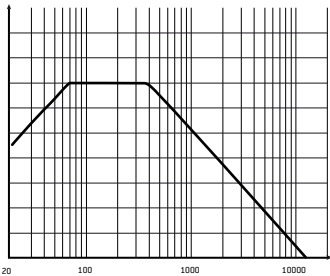
Low-pass control between 500 and 5000Hz



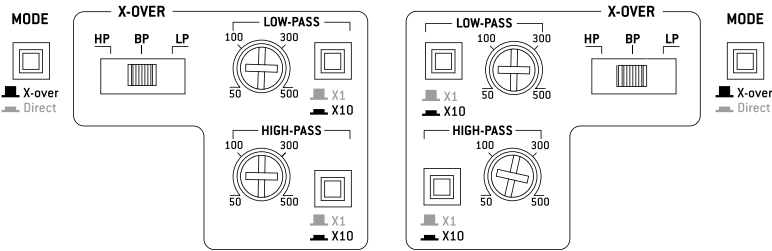
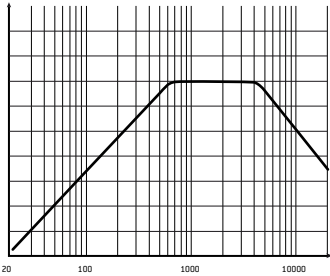
FOCAL POWER SYMMETRIC AMPLIFIERS

User manual

Bandpass control between 50 and 500Hz



Bandpass control between 500 and 5000Hz



FOCAL POWER SYMMETRIC AMPLIFIERS

User manual

	FPS 1500	FPS 2160	FPS 2300RX	FPS 4160	FPS 3000
RMS power - 14.4V 4Ω - THD+N < 1% (CEA 2006)	1 x 325W	2 x 105W	2 x 155W	4 x 120W	590 W
RMS power - 14.4V 2Ω - THD+N < 1%	1 x 550W	2 x 180W	2 x 265W	4 x 200W	1000 W
RMS power - 14.4V 1Ω - THD+N < 1%	1 x 800W	-	2 x 430W	-	1500 W
RMS power in bridged mode - 14.4V 4Ω - THD+N < 1%	-	1 x 360W	1 x 530W	2 x 380W	-
RMS power in bridged mode - 14.4V 2Ω - THD+N < 1%	-	-	1x 750W	-	-
Frequency response (-1dB) in direct mode	10Hz - 2.5kHz	10Hz - 52kHz	10Hz-25kHz	10Hz - 52kHz (channels 1-2)	10 Hz - 2.5 kHz
Signal/noise ratio (@ CEA power)	87dBA	92dBA	89dBA	92dBA	93dBA
Distortion into 4 Ohms @ 1kHz (with 22kHz low-pass)	-	< 0.05% between 10 and 95W	< 0.04% between 5 and 110W	< 0.05% between 5 and 110W	-
Distortion into 4 Ohms @ 100Hz (with 22kHz low-pass)	< 0.15% between 5 and 270W	-	-	-	< 0.2% from 3W to 400W
Crosstalk (@ 1kHz - 10V - 4 Ohms)	-	> 64dB	> 70dB	> 68dB	-
Damping factor into 4 Ω at 100Hz	220	250	250	250	300
Input impedance	35kΩ	13kΩ	13kΩ	13kΩ	47kΩ
Input sensitivity	0.2V - 5.2V	0.2V - 5.2V	0.2V - 4.8V	0.2V - 5.2V	0.2V - 4.6V
High-pass crossover	-	50Hz - 500Hz 500Hz - 5kHz-	50Hz - 500Hz 500Hz - 5kHz	50Hz - 500Hz 500Hz - 5kHz	-
Low-pass crossover	50Hz - 500Hz	50Hz - 500Hz 500Hz - 5kHz	50Hz - 500Hz 500Hz - 5kHz	50Hz - 500Hz 500Hz - 5kHz	50 Hz - 500 Hz
Bandpass crossover	-	50Hz - 500Hz 500Hz - 5kHz	50Hz - 500Hz 500Hz - 5kHz	50Hz - 500Hz 500Hz - 5kHz	-
Subsonic crossover	Variable from 20 to 50Hz (24dB/oct.) released	-	-	-	Variable from 20 to 50 Hz (24 dB/oct.) with bypass
Direct mode	Yes	Yes	Yes	Yes	Yes
Bass boost level	0/+9dB linear	-	0/+9dB linear	-	0/+9 dB linear

FOCAL POWER SYMMETRIC AMPLIFIERS

User manual

	FPS 1500	FPS 2160	FPS 2300RX	FPS 4160	FPS 3000
Bass Boost central frequency	45Hz	-	95Hz	-	45Hz
Variable phase (SUB)	0-180° linear	-	-	-	0-180° linear
Remote control	Yes	-	Yes	Yes (channels 3-4)	Yes
Maximum gauge of the power cables	35mm ²	35mm ²	35mm ²	35mm ²	107 mm ² / 0000 AWG
Standby consumption	1.2A	0.8A	1.3A	1.5A	2,2 A
Fuse(s)	2*40A	2*30A	2*50A	2*40A	2*80 A
Protections	Short-circuit Thermal overload (76°C) Soft clipping High voltage Polarity reversal	Short-circuit Thermal overload (78°C) Soft clipping High voltage Polarity reversal	Short-circuit Thermal overload (81°C) Soft clipping High voltage Polarity reversal	Short-circuit Thermal overload (80°C) High voltage Polarity reversal	Short-circuit Overheating (80°C) Soft clipping Overvoltage Reversal polarity
Low noise progressive controlled cooling system	Yes (start at 50°C)	Yes (start at 50°C)	Yes (start at 50°C)	Yes (start at 50°C)	yes (auto turn on at 50°C)
Dimensions (H x L x D)	59x353x 254mm	59x353x 254mm	59x429x 254mm	59x429x 254mm	59x429x 254mm

Conditions of Guarantee

All Focal loudspeakers are covered by guarantee drawn up by the official Focal distributor in your country. Your distributor can provide all details concerning the conditions of guarantee. Guarantee cover extends at least to that granted by the legal guarantee in force in the country where the original purchase invoice was issued.