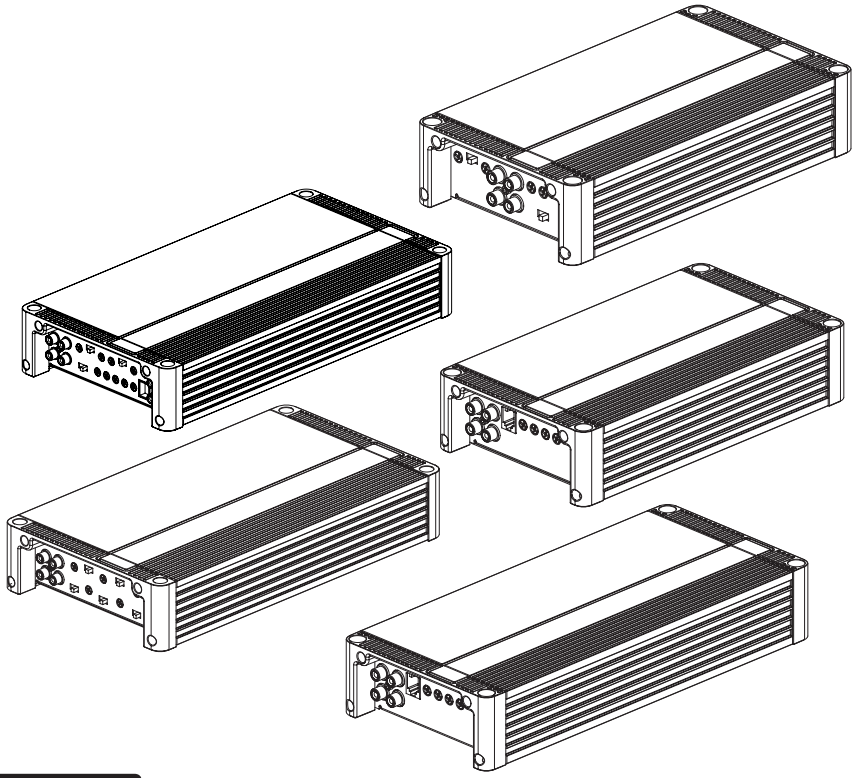
FPX
Premium amplifier

User manual / Manuel d'utilisation / Gebrauchsanleitung / 使用手册



FOCAL®
THE SPIRIT OF SOUND

FPX PREMIUM AMPLIFIER

User manual

English

Thank you for choosing Focal for your car audio system and for sharing in our philosophy.
This product is made with the best of Focal's technology.
For best results we recommend your FPX amplifier is installed by your Focal dealer. To make full use of its functionalities and, therefore, to enjoy its performance to the full, we advise you to carefully read all the instructions in this booklet and to keep it for future reference. Any problem due to non-compliance with the instructions for use may lead to invalidation of the warranty.

Please validate your Focal-JMlab warranty,
it is now possible to register your product online: www.focal.com/warranty

CAUTION
This symbol is used for important instructions. Failure to follow these instructions may lead to serious injury or damage to property.

Contents

- 1 FPX amplifier
- 1 User manual
- 1 Set of accessories
- 1 Remote control (FPX 1.1000, FPX 2.750, FPX 5.1200)

CAUTION

- **Do not activate any function that might distract you when driving the vehicle**. Functions and settings requiring prolonged attention should only be used when the vehicle is completely stopped. Always stop the vehicle in a safe location before accessing these functions. Risk of causing an accident.
- **When driving the vehicle, keep the volume low so that noises outside the vehicle can be heard. Risk of causing an accident.**
- **Do not open the casing of your FPX amplifier and do not modify it in any way. Risk of accident, fire or electric shock.**

Your Focal-JMlab product was developed and manufactured with high-quality materials and components which can be recycled and/or re-used. This symbol indicates that electrical and electronic equipment must be disposed of separately from normal garbage at the end of its operational lifetime.Please dispose of this product by bringing it to your local collection point or recycling centre for such equipment. This will help to protect the environment in which we all live.

CAUTION

- **Only use your FPX amplifier on mobile 12 volt applications.** Any other use than the designed application entails a risk of fire, electric shock or injury.
- **Use fuses of the correct amperage**. Risk of fire or electrical discharge.
- **Do not obstruct your FPX amplifier's heat sink.** It may overheat internally and cause a fire.
- Make connections properly. Check the gauge and type of cable. Risk of fire, injury and/or damage to the amplifier.
- **Do not use nuts or bolts from the steering or braking circuits, from tanks or reservoirs, seat belts or other safety equipment for making the ground (earth) connection.** The use of these items for grounding (earthing) could deactivate the vehicle control system and cause a fire or other damage.
- **Keep small items that may be swallowed, such as bolts, accessories or screws out of the reach of children**. Swallowing such items could lead to serious injury. If swallowed, consult a doctor.
- **Before beginning installation, disconnect the negative battery terminal to avoid risk of injury, fire or material damage.** ***(Fig. 1)***

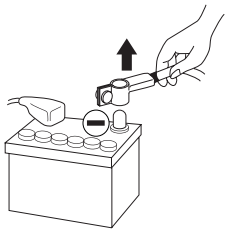


fig. 1

WARNING

Prolonged listening at high volume, above 110dB, can cause permanent hearing damage. Listening at volumes above 130 dB, even for short periods can lead to untreatable hearing damage.

Stop listening in the event of any problem. Failure to observe this precaution may lead to injury or damage to the equipment. If a malfunction persists, return the unit to your Focal dealer for repair.

Use the specified accessories and install them correctly. Use only the accessories specified in the user manual and those provided in the packaging. The use of other components may cause internal damage to the product, or may lead to its incorrect installation. Parts used may become loose and cause damage or the technical failure of the product. Risk of accident, fire or electric shock.

Do not install the unit in highly damp or dusty areas. Avoid installing the unit in parts of the vehicle subject to high damp or excessive dust. Penetration of the unit by moisture or dust could lead to a failure.

Installing your FPX amplifier

Installing this product requires technical skill and experience. If you are not sure of your ability to install the amplifier, entrust this task to a Focal dealer in order to take full advantage of everything your FPX amplifier can do.

Cabling your FPX amplifier

Only use the connection points specified in the user manual and the accessories supplied.
The speaker cable must ONLY be used to connect the amplifier to the speakers. The gauge of the power cables must match that shown in the table (paragraph 3.1). This gauge depends on the power of the amplifier and the cable length required. Use double or triple shielded RCA cables to prevent any interference to the low level signal.

Operating time for your FPX amplifier

Avoid using the amplifier for extended periods without starting the vehicle. This can lead to flattening the battery.

Ventilation

It is essential to leave the upper part of your FPX amplifier uncovered to prevent overheating.

Items required for installation (in addition to accessories provided)

- 2 appropriately sized cable sheaths (1 for the power cable and one for the set comprising speaker cables, remote, RCA modulation)
- Multimeter (volts/amps)
- Soldering iron and solder
- Crimping tool
- Wire stripper
- Wire cutter
- Battery terminal spanner
- Hand drill and drill bits
- Heat shrink sleeving in appropriate diameters for the different cables
- Power cable of appropriate length and gauge
- Remote switch-on wire of appropriate length and gauge (REM input on amplifier)
- Ground (earth) wire of appropriate length and gauge
- Fuse holder and suitable fuse
- Connector to positive (+) battery terminal
- Connector to vehicle chassis (-)
- Bolt with 6 mm head (minimum) with appropriate nut for grounding (earthing) to vehicle chassis

Installation

This section covers points relating to the vehicle that must be taken into account for the installation of your amplifier.
You will save time by planning the positioning of your system and its cabling in advance.
During this preparatory phase, ensure that all adjusters remain accessible once installation is complete.

Before commencing installation please scrupulously follow the following instructions:

1 - Read the instructions in full and be sure that you fully understand them before installing your amplifier.
2 - Disconnect the cable from the negative terminal on the vehicle battery before beginning installation ***(Fig. 1***).
3 - For ease of fitting we suggest you put all wires in position before installing your amplifier.
4 - Route the RCA, speaker and REM cables away from power cables to avoid any signal interference.
5 - Use good quality connectors/fittings or good quality soldered joints when connecting the amplifier to ensure a secure installation and to minimise signal or power losses.
6 - Before carrying out any operation ensure you are not cutting or drilling the fuel tank, any fuel, brake, hydraulic or vacuum line or any electrical wiring or safety-related item.
7 - Never run any wiring under the vehicle. It is essential to run wiring inside the vehicle. When running cables, ensure they do not interfere with operation of the vehicle. Cabling that obstructs or passes over such items as the steering wheel, the pedals (brake, accelerator and clutch, etc.) could be extremely dangerous.
8 - Avoid running wires over or through sharp edges. All wiring routed through metal must be protected by a grommet. Route wiring away from moving parts (e.g. seat rails) and sharp or pointed edges. This will also protect cables from being pinched or damaged with the consequent risk of an electrical short-circuit.
9 - Always use fuses to protect the battery and the electrical circuit from any potential damage. Install a fuse-holder and an appropriate fuse in the 12V+ power supply cable less than 40cm from the battery terminal. Ideally, this distance should be as short as possible ***(Fig. 7)***.
10 - Prepare the chassis ground (earth) by removing all traces of paint from the metal surface, thus ensuring a good ground (earth) contact. Ground (earth) connections should be as short as possible and **ALWAYS** connected to metal welded to the vehicle bodywork or chassis ***(Fig. 2)***. The grounding (earthing) point usually chosen is the one used to connect the negative terminal of the battery to the vehicle chassis.
11 - **NEVER** install this product in a vehicle's engine compartment. To do so would void the warranty.

1 - Positioning your FPX amplifier

Choosing a correct location for your FPX amplifier

Because of the amplifier's power, it needs heat dissipation for its operation. For this reason the amplifier must be mounted in a ventilated location, especially above it. Avoid fitting it into any location that is close-fitting or covers the amplifier in its immediate vicinity.

2 - Securing your FPX amplifier in place

Position your amplifier in the desired location and mark it.
Mark the attachment points in its support.
Use the mounting screws supplied (screws supplied are suitable for screwing into a wood base).

3 - Cabling your FPX amplifier

CAUTION

If you have any doubt over your ability to correctly install the amplifier and wiring, entrust this task to a Focal dealer/installer.

3 - Cabling your FPX amplifier

WARNING
Do not run the power cables near the low level inputs, high level inputs, antenna or sensitive equipment or cabling. The power cables carry a high current, capable of interfering with the audio signal.

WARNING
Use the shortest possible cable lengths to optimise the quality of the installation and limit signal losses.

WARNING
Before beginning the connection phase, remove the negative (-) terminal from the battery of the vehicle ***(fig.1)***.

3.1 Choosing cable of the correct gauge

Your FPX amplifier requires a power supply of the correct amperage.
The cable gauge to be used depends on the distance of the cable from the battery, as recommended in the following table:

Amplifier	Amperage	Length of cable (meters)		
		0-2m	2-4m	4-6m
FPX 4.800 and FPX 2.750	60A	16mm² / 5AWG	21mm² / 4AWG	35mm² / 2AWG
FPX 1.1000	90A	21mm² / 4AWG	35mm² / 2AWG	53mm² / 0AWG
FPX 4.400 SQ	50A	8mm² / 8AWG	16mm² / 5AWG	21mm² / 4AWG
FPX 5.1200	90A	21mm² / 4AWG	35mm² / 2AWG	53mm² / 0AWG

It is essential to scrupulously adhere to the recommendations in this table for the safety of your electrical system; it is also important to maintain the maximum performance of your FPX amplifier.

3.2 - Cabling your FPX amplifier's input signals

Route all the modulation cables (RCA), speaker cables, and the REM cable together, isolating them from other high-power consumption equipment in the vehicle and, in particular, electrical motors (e.g. windscreen wiper motor, etc.) Do not cut any cables down yet. You will do this later.

3.3 – Wiring your FPX amplifier's power supply

3.3.1 – Route the positive (+) power cable, taking care to keep it away from the cables you have already positioned, to avoid any interference. **DO NOT CONNECT THE CABLE YET.**

3.3.2 – Locate the negative (-) power cable. This cable should be as short as possible and ideally should not exceed 1 meter in length, in order to ensure an optimal connection between the amplifier and the vehicle chassis. The cable and its gauge must be in accordance with the table in 3.1. Locate an appropriate ground (earth) point, then sand it to remove all traces of paint or other finish, thus optimising the quality of the connection. Drill through the sheet metal you have previously sanded, making a hole to match the bolt you have chosen, ensuring you are well clear of all cable routes, reservoirs or tanks or other sensitive vehicle parts. Solder and insulate (using heat shrink sleeving) the earth cable to the FPX amplifier earth connector supplied ***(Fig. 2).***

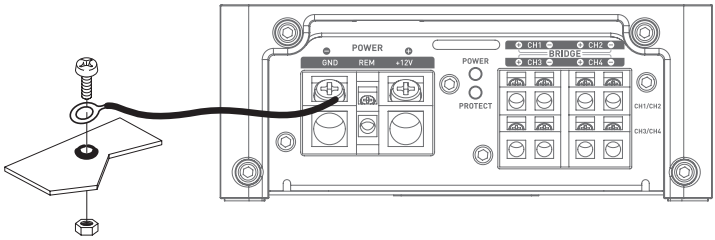


fig. 2

3.4 - Connecting input connectors to your FPX amplifier

You may now begin the input/output cable connection phase.

Connect the RCA connectors ***(Fig. 3)***, paying attention to polarity and distribution. Connect the other end to the amplifier's INPUTS connection panel.

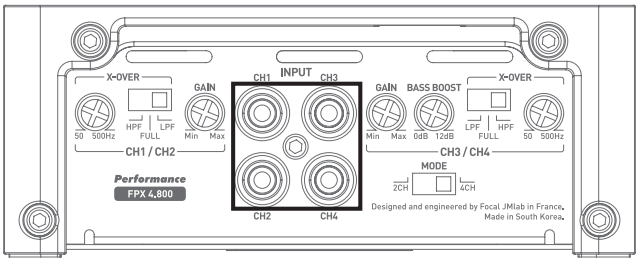


fig. 3

3.5 - Connecting the speakers and the remote to your FPX amplifier

Solder and insulate (using heat shrink sleeving) the REMOTE cable to the cable connector provided ***(Fig. 4).***
Connect the other end of the REMOTE cable to the REMOTE terminal on the head unit.

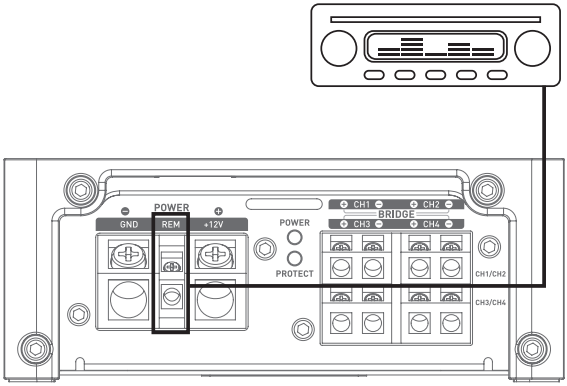


fig. 4

Finally, connect the speaker cables to the amplifier, taking care to match polarities (+ to +, - to -). ***(Fig. 5).***

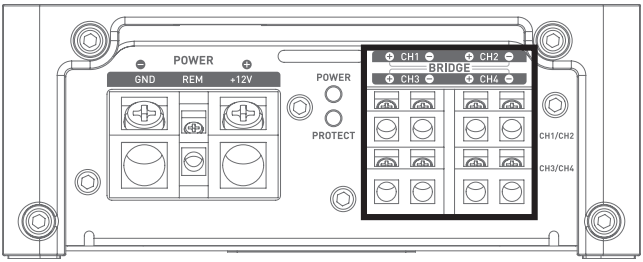


fig. 5

WARNING

All speakers or speaker sets cabled to your FPX 4.800, FPX 4.400 SQ, FPX 2.750, FPX 5.1200 amplifier must always have an impedance greater than 2 Ohms.

WARNING

All speakers or speaker sets cabled to your FPX 1.1000 amplifier must always have an impedance greater than 1 Ohm.

WARNING

In bridged mode, all speakers or speaker sets connected to your FPX 4.800, FPX 2.750, FPX 4.400 SQ, FPX 5.1200 must always have an impedance greater than 4 Ohms.
Any use of lower impedances would result in the voiding of the warranty.

To use a FPX amplifier in bridged mode and thus double the power available, observe the connections and polarities shown below in: "BRIDGE" ***(Fig. 6).***

FPX 5.1200

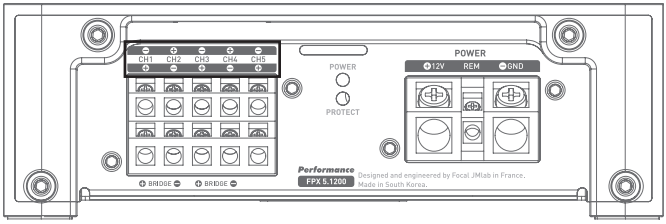


fig. 6

FPX 4.800

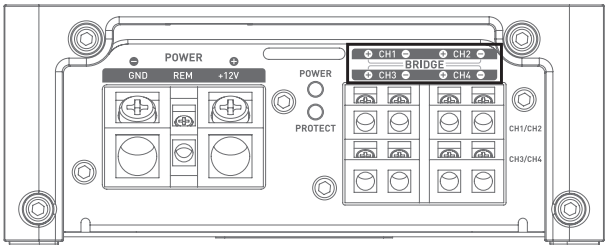


fig. 6

FPX 2.750

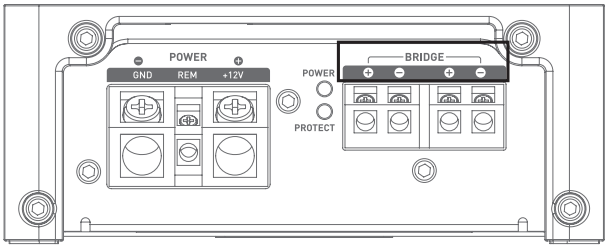


fig. 6

FPX 4.400

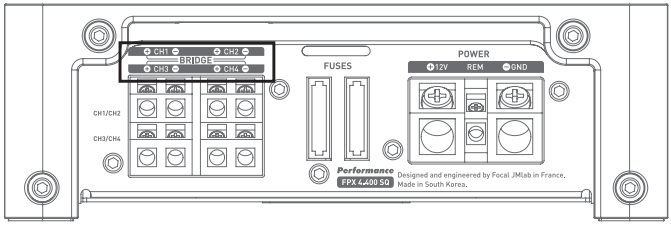


fig. 6

3.6 – Power supply wiring

WARNING

The cable connecting the positive (+) battery terminal to the "+BATT" terminal on the amplifier must ALWAYS have a fuse suitable for the power of your amplifier, positioned 40 cm or closer to your vehicle battery.
Fuse holder connections must be sealed.
Disassemble the fuse holder, taking care to remove the fuse. Secure the base of the fuse holder.
Cut a length of power cable between 10 and 40 cm (max.). Strip 1 cm and tin. Screw the cable into the terminal on the battery side of the fuse holder. Crimp the power cable into an appropriate connector and screw this to a source of battery power.
Strip 1 cm at the end of the remaining length of cable and tin. Screw the cable into the other terminal of the fuse holder.

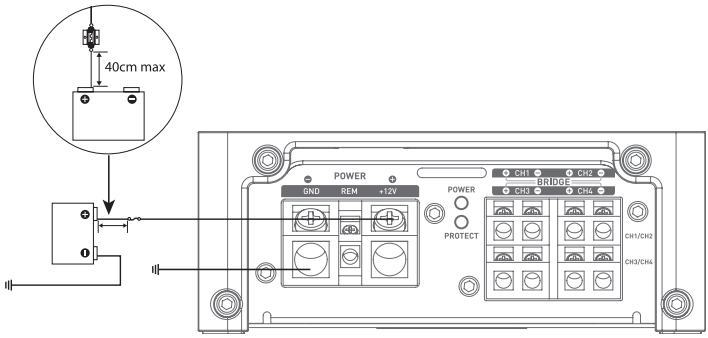


fig.7

Solder and insulate (using heat shrink sleeving) the positive (+) power cable to the FPX amplifier connector supplied ***(Fig. 7).***

3.7 – Start-up and checking

The connection phase is now complete. It now remains to check the power supply is good and the correct operation of the system (head unit/amplifier/speakers). Set the source gain to minimum. Set the gain on your amplifier at 1/3 of its total travel. Power up all the components. Once all components are switched on, test at low volume.

4 - Control panel and connections

FPX 4.800

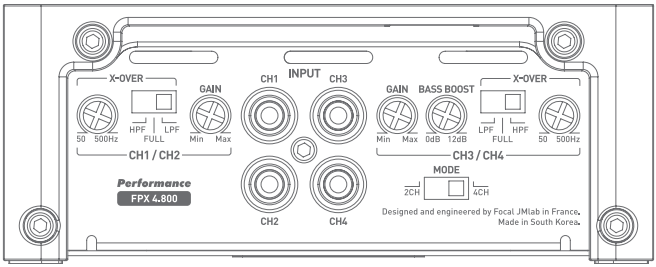
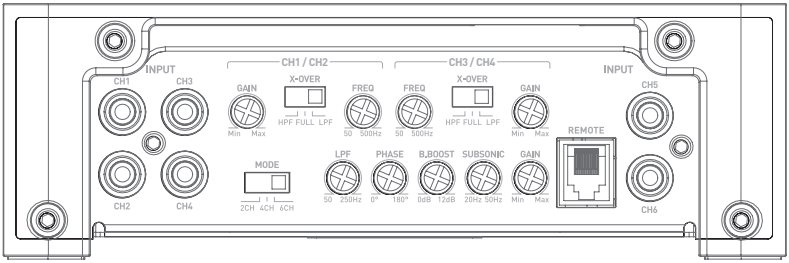


fig.8

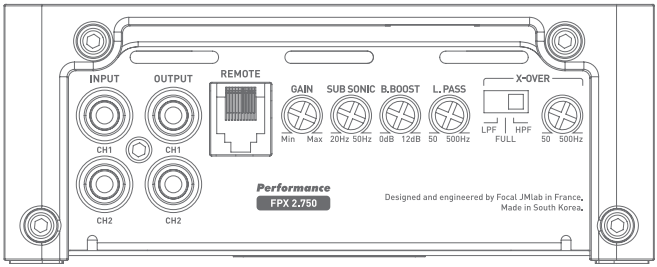
FPX PREMIUM AMPLIFIER

User manual

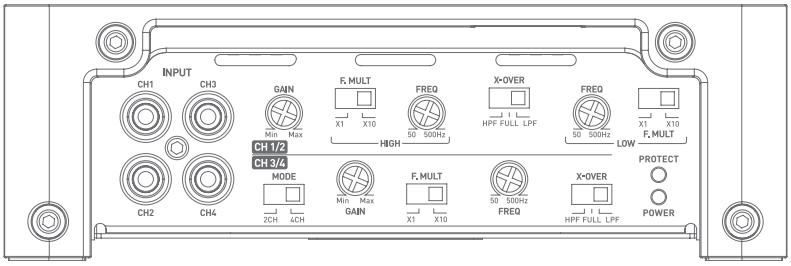
FPX 5.1200



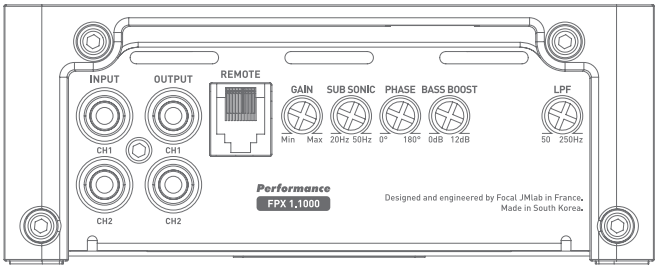
FPX 2.750



FPX 4.400 SQ



FPX 1.1000



INPUT: These connectors are for low level signal inputs.

OUTPUT: These connectors (FPX 1.1000 and FPX 2.750) allow mirroring.

REMOTE: This connector (FPX 1.1000, FPX 2.750, FPX 5.1200) is for connecting the accessory volume control.

GAIN: The rotary GAIN control is for adjusting the level of the signal entering the amplifier. Voltage gain varies from 0.2 to 5V. Optimisation of the performance of the audio system consists of applying the maximum gain upstream in the system and the lowest gain downstream.
This control should be adjusted to suit the level of the sound source (line output level).
Start by setting the amplifier gain at its lowest level. Gradually increase the level (volume) of the source up to 3/4. Increase the gain on the amplifier up to the maximum desired listening level. Reduce the level if distortion occurs.

MODE: This switch (FPX 4.800, FPX 4.400 SQ, et FPX 5.1200) allows channels 3 and 4 (3, 4, 5, 6 for FPX 5.1200) to mirror, if required, the signals from channels 1 and 2.
Thus, if you only have one stereo output (a right and a left), you can still amplify all four channels by activating 2CH mode. If you wish to use FPX in its four independent channel mode, select 4CH.
FPX 5.1200 4CH mode allows channels 3 and 4 to mirror channels 5 and 6.

PHASE (°): The rotary PHASE control is used to adjust channel phasing with the rest of the system.
A readjustment of the phase of the subwoofer makes it possible for the subwoofer and the rest of the speakers to play simultaneously at the crossover frequency. For a theoretical signal period, one of the sources is slightly shifted so that at the listening position the phasing is perfect.

X-OVER MODE: This switch enables users to choose between a high-pass filter (HPF), a low-pass filter (LPF) or non filtered mode (FULL).

X-OVER FREQ (Hz): Adjustment of the cross-over filter frequency. This rotary control adjusts the setting of the low-pass or high-pass filter. The value selected defines the frequency up to which or from which the signal will be cut.

F-MULT: This switch activates a 10X multiplier for the setting value of the cut-off frequency.

SUBSONIC: This rotary control is used to remove sub-bass frequencies below a selected frequency.

BASS BOOST: This rotary control is used to raise the bass sound level from 0 to 12 dB.

FPX 4.800

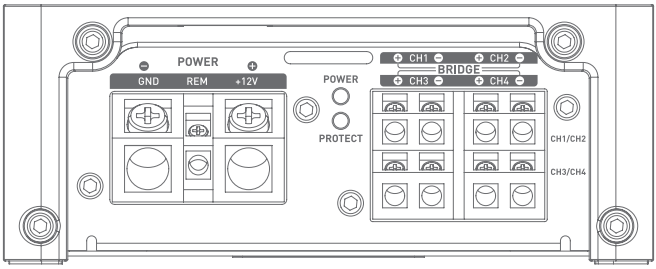
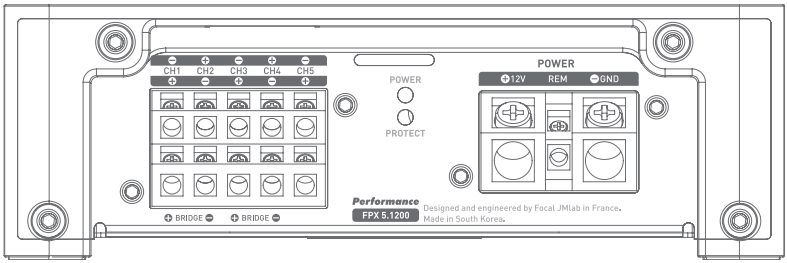


fig.9

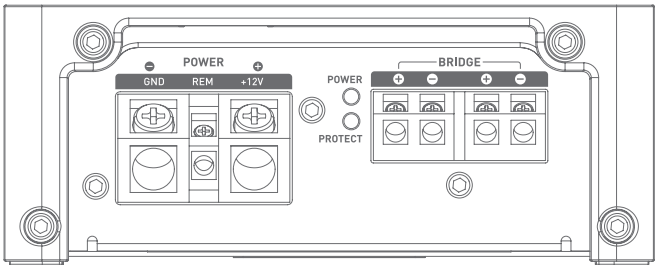
FPX PREMIUM AMPLIFIER

User manual

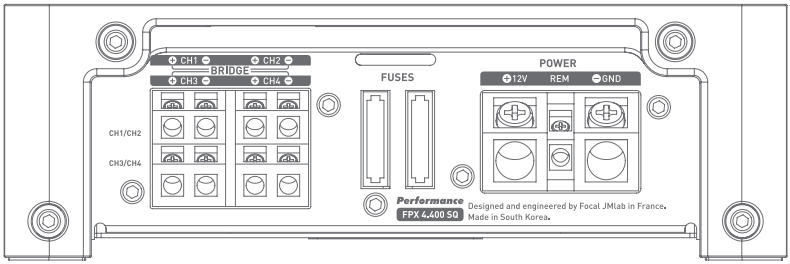
FPX 5.1200



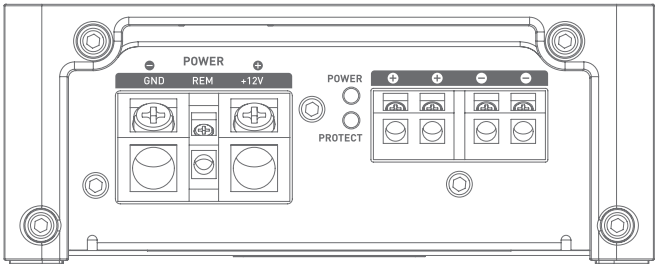
FPX 2.750



FPX 4.400SQ



FPX 1.1000



+12V: The +BATT connector is designed to accept the power cable that connects the amplifier with the positive (+) terminal on the vehicle battery.

GND: The GND (ground) connector is designed to accept the negative (-) power cable that connects the amplifier to the vehicle chassis.

REM: The REM connector is for the connection between the amplifier and the source (head unit) via a REM or REMOTE output on the head unit. This switches the amplifier on automatically when the source (head unit) is switched on.

POWER and PROTECT: These indicator lights are for checking that the amplifier is working correctly.
The POWER light, continuously lit, indicates that the unit is working correctly.
The PROTECT light, continuously or intermittently lit, indicates that the product is working abnormally. Refer to troubleshooting in 5.

FUSES: The FUSES connector is for holding the amplifier fuses. Ensure that any replacement fuses perfectly match the amperage of the originals.

5 - Troubleshooting

The statuses of the various LEDs are used to indicate certain failure modes or causes of breakdowns.
Check all possible cases below. If, after these checks, normal operation is not regained, please refer the issue to your FPX amplifier's installer or dealer.

Status of Indicator LEDs	Presence of sound	Possible origin	Action
PROTECT red	NO	Output short circuit	Turn audio system off Check speakers, minimum impedance of speakers, speaker connections and cables
Off	NO	No power or poor power	Turn audio system off Check presence of 12 V Check power cables and their polarity Check fuses
PROTECT Flashing red	Distorted, intermittent or no sound	Overheating	Turn head unit off Allow your amplifier to cool before resuming use
Off	NO	No REM signal	Turn head unit on Check for voltage at REM terminal
Off	NO	Fuse failure	Turn head unit off Check fuses and replace if necessary
POWER Flashing green	YES/NO or distorted	Ground (earth) problem	Turn head unit off Check continuity of connection between GND terminal and vehicle chassis

6 – Technical specifications

	FPX 4.800 Class D 4/3/2 channel amplifier	FPX 2.750 Class D 2 channel/mono amplifier	FPX 4.400SQ Class AB 4/3/2 channel amplifier	FPX 1.1000 Class D mono amplifier	FPX 5.1200 amplifier Class D - 5 channels
CEA power (4 ohms)	4x120WRMS	2x220WRMS	4x70WRMS	1x420WRMS	4 x 75WRMS + 1 x 420WRMS
Max. power (2 ohms)	4x185WRMS	2x385WRMS	4x100WRMS	1x700WRMS	4 x 120W + 1 x 720W
Max. power (4 ohms bridged)	2x370WRMS	1x770WRMS	2x200WRMS	1x1000WRMS	2 x 240 + 720WRMS (channel 5 : 2Ohms)
Bandwidth	10Hz – 20KHz	20Hz – 20KHz	10Hz – 22KHz	15Hz – 250Hz	10Hz - 20kHz
Minimum total harmonic distortion	0.01%	0.01%	0.04 %	0.08 %	0,03%
Crosstalk (1 KHz)	> 55dB	> 72dB	> 54dB	-	> 65dB
SNR (1W/A)	> 76dBA	> 76dBA	> 77dBA	> 76dBA	> 76dB
Subsonic filter	-	20Hz-50Hz (12dB/oct)	-	10Hz-50Hz (24dB/oct)	20Hz - 50Hz
High-pass/low-pass filter	Configurable High-pass/low-pass 50Hz-500Hz	Configurable High-pass/low-pass 50Hz-500Hz	Configurable High-pass/low-pass 40Hz-5000Hz	Low-pass 50Hz-250Hz (24dB/oct)	Configurable High-pass/ low-pass 50Hz-500Hz. Chanel 5 : low-pass filter 50Hz - 250Hz
Bass Boost	0 to12 dB linear (¾)	0 to 12dB linear	-	0 to 12dB linear	Channel 5 : 0 to 12 dB linear
Phase	-	-	-	0 to 180° linear	0 to 180 ° linear
Full-range function	✓	✓	✓	-	Channels 1/2 and 3/4
Mirror mode	✓	-	✓	-	✓
Standby current (A)	1.1 A	0.95 A	0.6 A	1.75 A	1,75A
Fuses	2x30 A	2x30 A	2x30 A	3x30 A	3 x 30A
Remote control	-	✓	-	✓	✓
Protection	Short circuit/low impedance/reverse polarity /DC/voltage drop/overheat protection				
Dimensions (LxWxH)	$9^{21/64}$x$5^{13/64}$x$2^{3/32}$" (237x132x53mm)	$9^{21/64}$x$5^{13/64}$x$2^{3/32}$" (237x132x53mm)	$12^{23/64}$x$6^{57/64}$x$2^{1/4}$" (314x175x57mm)	$11^{11/16}$x$5^{13/64}$x$2^{3/32}$" (297x132x53mm)	$11^{13/16}$x$6^{57/64}$x $2^{1/4}$ (300x175x57mm)
Weight (kg)	4.40lbs (2kg)	4.40lbs (2kg)	8.16lbs (3.7kg)	5.62lbs (2.55kg)	9.03lbs (4,1kg)

Warranty conditions

In the event of a problem, please contact your Focal dealer. The warranty for France for all Focal equipment is 2 years. In case of faulty equipment, this must be sent at your expense, in its original packaging, to the dealer, who will test the equipment and determine the nature of the fault. If the equipment is under warranty, it will be returned to you or replaced with pre-paid shipping. If not under warranty, you will be given an estimate for repair. The warranty does not cover damage arising from improper use or incorrect wiring.
Outside France, Focal equipment is covered by a guarantee with terms and conditions set locally by each country's official Focal distributor in accordance with laws in force in the territory in question.

FOCAL®
THE SPIRIT OF SOUND

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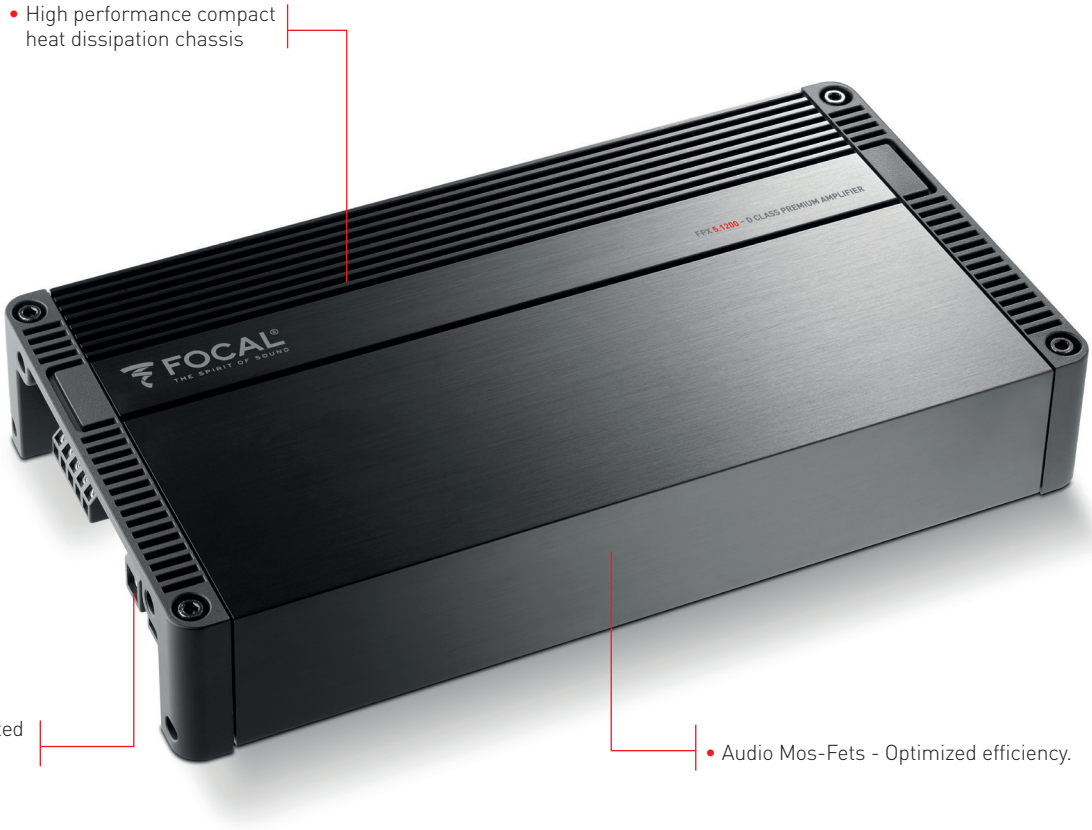
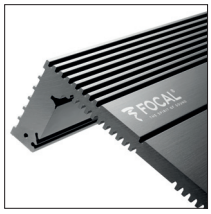
D CLASS PREMIUM AMPLIFIER
FPX 5.1200

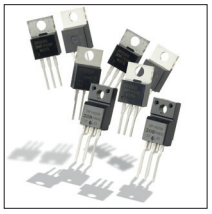
MODE 5/4/3 CHANNELS - POWERFUL AND COMPACT



KEY POINTS

- D Class amplifier - 5 output channels
- Stable under 2 ohms
- High power and dynamic reserve (1 200W max.)
- Audio Mos-Fets - Optimized efficiency
- Subwoofer remote control supplied





TECHNICAL SPECIFICATIONS

Class D amplifier - 5/4/3 channels
CEA power (4 ohms):
4 x 75Wrms + 1 x 420Wrms
Power max (2 ohms):
4 x 120Wrms + 1 x 720Wrms
Power max (channels 1 to 4 bridged at 4 ohms) + channel 5 at 2 ohms: 2 x 240Wrms + 720Wrms
Bandwidth: 10Hz - 20kHz
Total harmonic distortion: < 0.03%

SNR (1W/A): > 75 dB
High-Pass / Low-Pass filters channels 1 to 4: 50Hz – 500Hz
Channel 5 (Subwoofer): Subsonic filter (High-pass) 10Hz - 50Hz +
Low-pass filter 50Hz - 250Hz
Channel 5 Bass-Boost : 45Hz / 0 to 12dB
Phase adjustable from 0 to 180° for channel 5
Copy mode: (6 CH/4 CH/2 CH)

Full range mode
Protection: Short circuit / low impedance / reverse polarity / DC / power drop / heat protection
Dimensions (L x H x W): $13^{17/64}$" x $2^{1/4}$" x $6^{57/64}$" (337 x 175 x 57mm)
Weight: 9 lbs (4,1kg)

Performance
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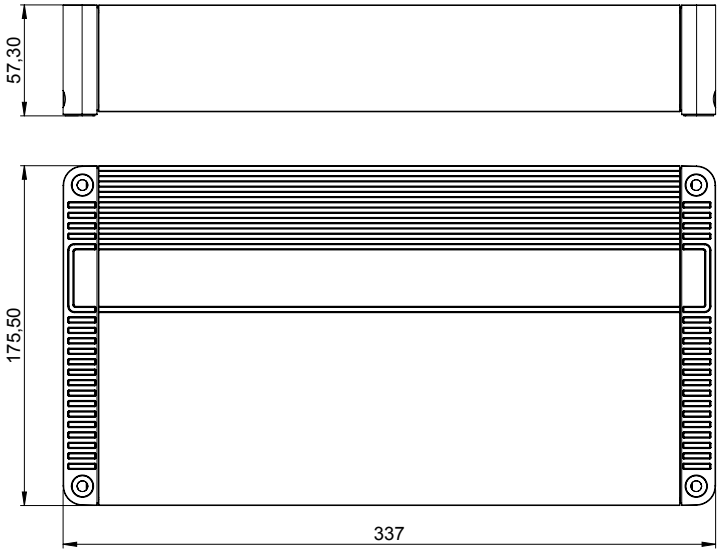
D CLASS PREMIUM AMPLIFIER
FPX 5.1200

MODE 5/4/3 CHANNELS
Powerful and compact

- D Class amplifier - 5 output channels
- Copy mode: 6/4/2 inputs
- Stable under 2 ohms
- High power and current dynamic reserve (1 200W max.)
- Audio Mos-Fets - Optimized efficiency
- Subwoofer remote control supplied

MECHANICAL DRAWING



SPECIFICATIONS

AUDIO SPECIFICATIONS	
CEA power (4 ohms)	4 x 75 Wrms + 1 x 420 Wrms
Max. power (2 ohms)	4 x 120 Wrms + 1 x 720 Wrms
Power max (channels 1 to 4 bridged at 4 ohms) + channel 5 at 2 ohms	2 x 240 Wrms + 1 x 720 Wrms
Bandwidth (-3dB)	10 Hz - 20 kHz
THD	0,03%
SNR (1W/A)	> 75 dB
GENERAL FEATURES	
Subsonic filter	10Hz-50Hz (24dB/oct)
High-pass/low-pass filter	50 Hz – 500 Hz
Bass boost	0 to 12 dB linear
Phase	0 to 180° linear
Full-range function	✓
Mirror mode	✓
Standby current (A)	1,7
Protections	Short circuit/low impedance/reverse polarity/ DC/voltage drop/overheat protection
Dimensions (LxWxH)	$13^{17/64}$" x $6^{57/64}$" x $2^{1/4}$" (337 x 175 x 57 mm)
Weight (kg)	9lbs (4.1kg)

Performance
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