SONY

3-862-334-11 (1)

Stereo Power Amplifier

Operating Instructions

Mode d'emploi

Owner's Record

The model and serial numbers are located on the bottom of the unit.
Record the serial number in the space provided below.
Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. XM-1002HX Serial No _____

XM-1002HX

 Printed in U.S.A.

Precaution

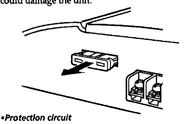
- This unit is designed for negative ground 12 V DC operation only.
- Use speakers with suitable impedance.
  — HI-CURRENT mode: 1 to 2 Ω.
  — HI-VOLTAGE mode: 2 to 4 Ω.
- Do not connect any active speakers (with built-in amplifiers) to the speaker terminals of the unit. Doing so may damage the active speakers.
- Avoid installing the unit where:
  — it would be subject to high temperatures such as from direct sunlight or hot air from the heater
  — it would be exposed to rain or moisture
  — it would be subject to dust or dirt.
- If your car is parked in direct sunlight and there is a considerable rise in temperature inside the car, allow the unit to cool down before use.
- When installing the unit horizontally, be sure not to cover the fins with the floor carpet etc.
- If this unit is placed too close to the car radio, interference may occur. In this case, relocate the amplifier away from the car radio.
- If no power is being supplied to the cassette player or tuner, check the connections.
- This power amplifier employs a protection circuit* to protect the transistors and speakers if the amplifier malfunctions. Do not attempt to test the protection circuits by covering the heat sink or connecting improper loads.
- Do not use the unit on a weak battery as its optimum performance depends on a good power supply.
- For safety reasons, keep your car audio volume moderate so that you can still hear sounds outside your car.

Fuse Replacement

If the fuse blows, check the power connection and replace the fuse. If the fuse blows again after replacement, there may be an internal malfunction. In such a case, consult your nearest Sony dealer.

Warning

When replacing the fuse, be sure to use one matching the amperage stated above the fuse holder. Never use a fuse with an amperage rating exceeding the one supplied with the unit as this could damage the unit.



***Protection circuit**

This amplifier is provided with a protection circuit that operates in the following cases:
— when the unit is overheated
— when a DC current is generated
— when the speaker terminals are short circuited.
The color of the POWER/PROTECTOR indicator will change from green to red, and the unit will shut down. If this happens, turn off the connected equipment, take out the cassette tape or disc, and determine the cause of the malfunction. If the amplifier has overheated, wait until the unit cools down before use.

If you have any questions or problems concerning your unit that are not covered in this manual, please consult your nearest Sony dealer.

Troubleshooting Guide

The following checklist will assist in the correction of most problems which you may encounter with your unit.
Before going through the checklist below, refer to the connection and operating procedures.

Problem	Cause/Solution
The POWER/PROTECTOR indicator does not light up.	The fuse is blown. → Replace the fuse with a new one.
	The ground lead is not securely connected. → Fasten the ground lead securely to a metal point of the car.
	The voltage going into the remote terminal is too low. • The connected master unit is not turned on. → Turn on the master unit. • The system employs too many amplifiers. → Use a relay.
	Check the battery voltage (10.5 – 16 V).
The OVER CURRENT indicator light up in amber.	Turn off the power switch. The speaker outputs are short-circuited. → Rectify the cause of the short-circuit.
The OFFSET indicator lights up in amber.	Turn off the power switch. Make sure the speaker cord and ground lead are securely connected.
The THERMAL indicator lights up in amber.	The unit heats up abnormally. • Use speakers with suitable impedance. – HI-CURRENT mode: 1 to 8 Ω. Use HI-CURRENT mode to reduce generated heat. • Make sure to place the unit in a well ventilated location.
Alternator noise is heard.	The power connecting leads are installed too close to the RCA pin cords. → Keep the leads away from the cords.
	The ground lead is not securely connected. → Fasten the ground lead securely to a metal point of the car.
	Negative speaker leads are touching the car chassis. → Keep the leads away from the car chassis.
The sound is muffled.	The FILTER selector switch is set to the "LPF" position.
The sound is too low.	The LEVEL adjustment control is set to the "MIN" position.

Specifications

AUDIO POWER SPECIFICATIONS

POWER OUTPUT AND TOTAL HARMONIC DISTORTION
100/50 watts per channel minimum continuous average power into 4 ohms, both channels driven from 20 Hz to 20 kHz with no more than 0.04% total harmonic distortion per Car Audio Ad Hoc Committee standards.

Other Specifications

Circuit system: OTL (output transformerless) circuit, Pulse power supply
Inputs: RCA pin jacks, High level input connector
Outputs: Speaker terminals, Through out pin jacks
Speaker impedance: 1* – 8 Ω (stereo), 2* – 8 Ω (when used as a bridging amplifier)
Maximum outputs (HI-CURRENT/HI-VOLTAGE): 120/230 W × 2 (at 4 Ω), 380/580 W (monaural) at 4 Ω
Rated outputs (HI-CURRENT/HI-VOLTAGE) (supply voltage at 14.4 V): 50/100 W × 2 (20 Hz – 20 kHz, 0.04 % THD, at 4 Ω), 70/140 W × 2 (20 Hz – 20 kHz, 0.1 % THD, at 2 Ω), 140/280 W (monaural) (20 Hz – 20 kHz, 0.1 % THD, at 4 Ω)
Frequency response: 5 Hz – 50 kHz (±3 dB)
Harmonic distortion: 0.005 % or less (at 1kHz, 4 Ω)
Input level adjustment range: 0.2 – 4.0 V (RCA pin jacks), 0.4 – 8.0 V (High level input)
High-pass filter: 50 – 200 Hz, –12 dB/oct
Low-pass filter: 50 – 200 Hz, –12 dB/oct
Low boost: 0 – 10 dB (40 Hz)
Power requirements: 12 V DC car battery (negative ground)
Power supply voltage: 10.5 – 16 V
Current drain: at rated output: 26 A (4Ω HI-VOLTAGE mode), Remote input: 2 mA
Dimensions: Approx. 258 × 50 × 320 mm (10 1/8 × 2 × 12 3/4 in.) (l/h/p) not incl. projecting parts and controls
Mass: Approx. 3.3 kg (7 lb. 4 oz.) not incl. accessories
Supplied accessories: Mounting screws (4), Terminal cap (1)
Optional accessories: Connecting cord for power amplifier RC-46

Design and specifications are subject to change without notice.

* HI-CURRENT only

Features

- Maximum power output of 230 watts per channel (at 4 Ω).
- This unit can be used as a bridging amplifier with a maximum output of 580 watts.
- Direct connection can be made with the speaker output of your car audio if it is not equipped with the line output (High level input connection).
- Built in variable LPF (Low-pass filter), HPF (High-pass filter) and low boost circuit.
- Dual mode connection possible for a multi-speaker system.
- Possible to switch between HI-CURRENT mode (1-2 Ω) and HI-VOLTAGE mode (2-4 Ω).
- Protection circuit and indicator provided.
- Pulse power supply* for stable, regulated output power.
- New circuit which removes the source resistance from the final MOS FET output stage, and drives the speaker directly.

***Pulse power supply**

This unit has a built-in power regulator which converts the power supplied by the DC 12 V car battery into high speed pulses using a semiconductor switch. These pulses are stepped up by the built-in pulse transformer and separated into both positive and negative power supplies before being converted into direct current again. This is to regulate fluctuating voltage from the car battery. This light weight power supply system provides a highly efficient power supply with a low impedance output.

Location and Function of Controls

1 MODE indicator
Indicates HI-CURRENT mode or HI-VOLTAGE mode.

2 POWER/PROTECTOR indicator
- OVER CURRENT lights up in green during normal operation. The color will change from green to amber when receiving a powerful signal.
- OFF SET lights up green during normal operation. The color will change from green to amber when the voltage going out to the Speaker terminal or the Pin Jack is too high .
- THERMAL lights up in green during normal operation. The color will change from green to amber when the temperature rises to an unsafe level. The color will return to green when the temperature returns to normal.

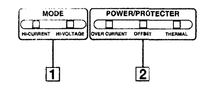
3 LEVEL adjustment control
The input level can be adjusted with this control when using source equipment made by other manufacturers. Turn it to MAX when the output level of the car audio seems low.

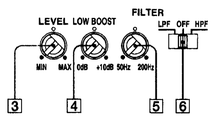
4 LOWBOOST level control
Turn this control to boost the frequencies around 40 Hz to a maximum of 10 dB.

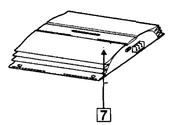
5 Cut-off frequency adjustment control
Sets the cut-off frequency (50–200 Hz) for the low-pass or high-pass filters.

6 FILTER selector switch
When the switch is in the LPF position, the filter is set to low-pass. When in the HPF position, the filter is set to high-pass.

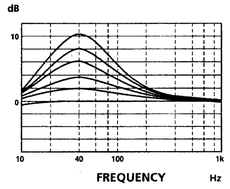
7 HI-CURRENT/HI-VOLTAGE mode switch (located on the bottom of the unit)
Remove the bottom cover to access the switch.
- In HI-CURRENT mode the speaker impedance is 1 to 2 Ω. This mode sends a signal via parallel circuits for a powerful sound
- In HI-VOLTAGE mode the speaker impedance is 2 to 4 Ω. In this mode you can enjoy clear sound with the dynamic range.



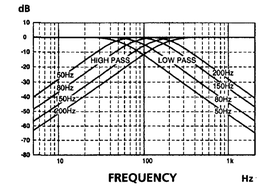




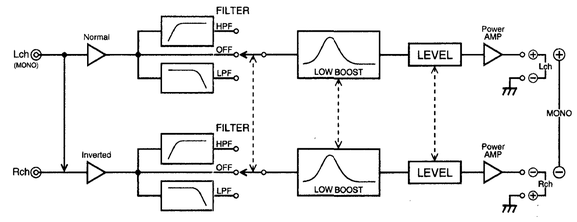
LOW BOOST



Cut-off frequency/Fréquence de coupure



Circuit Diagram / Schéma du circuit



Connections

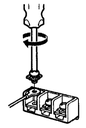
Caution

- Before making any connections, disconnect the ground terminal of the car battery to avoid short circuits.
- Be sure to use speakers with an adequate power rating. If you use small capacity speakers, they may be damaged.
- Do not connect the ⊖ terminal of the speaker system to the car chassis, and do not connect the ⊖ terminal of the right speaker with that of the left speaker.
- Install the input and output cords away from the power supply lead as running them close together can generate some interference noise.
- This unit is a high powered amplifier. Therefore, it may not perform to its full potential if used with the speaker cords supplied with the car.
- If your car is equipped with a computer system for navigation or some other purpose, do not to remove the ground wire from the car battery. If you disconnect the wire, the computer memory may be erased. To avoid short circuits when making connections, disconnect the +12 V power supply lead until all the other leads have been connected.

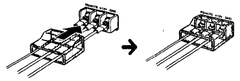
Make the terminal connections as illustrated below.

Note
When you tighten the screw, be careful not to apply too much torque as doing so may damage the screw.*

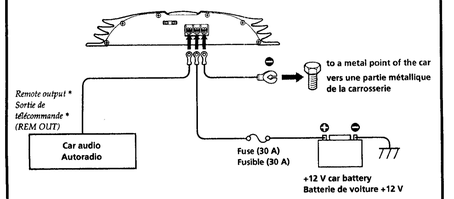
** The torque value should be less than 1 N•m.*



Pass the leads through the cap, connect the leads, then cover the terminals with the cap.



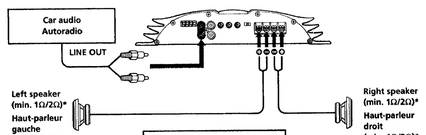
Power Connection Leads
Câbles d'alimentation



** If you have the factory original or some other car audio without a remote output on the amplifier, connect the remote input terminal (REMOTE) to the accessory power supply.*
** Si vous disposez du modèle d'origine ou d'un autre autoradio dont l'amplificateur ne comporte pas de sortie de télécommande, raccordez la borne d'entrée de télécommande (REMOTE) à la prise d'alimentation accessoires.*

Notes on the power supply
- *Connect the +12 V power supply lead only after all the other leads have been connected.*
- ***Be sure to connect the ground lead of the unit securely to a metal point of the car. A loose connection may cause a malfunction of the amplifier.***
- *Be sure to connect the remote control lead of the car audio to the remote terminal.*
- *When using a car audio without a remote output on the amplifier, connect the remote input terminal (REMOTE) to the accessory power supply.*
- *Use the power supply lead with a fuse attached (30 A).*
- *Place the fuse in the power supply lead as close as possible to the car battery.*
- *Make sure that the leads to be connected to the **+12 V** and **GND** terminals of this unit respectively must be larger than 10-Gauge (AWG-10) or with the sectional area of more than 5 mm².*
- *When using the optional RC-46 power amplifier connecting cord, consult that manual for proper use.*

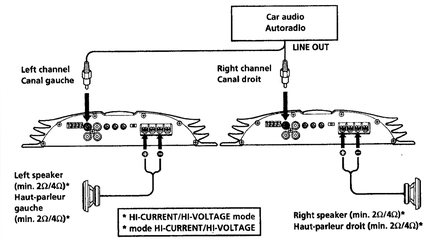
2-Speaker System
Système à 2 haut-parleurs



For details on the settings of switches and controls, refer to "Location and Function of Controls."

Pour plus de détails sur les réglages des commutateurs et commandes, reportez-vous à "Emplacement et fonction des commandes".

As a Monaural Amplifier
Comme amplificateur monaural



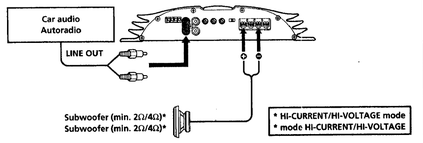
For details on the settings of switches and controls, refer to "Location and Function of Controls."

Note
Make sure that the line output from the car audio is connected to the jack marked "L (MONO)" on the unit.

Pour plus de détails sur les réglages des commutateurs et commandes, reportez-vous à "Emplacement et fonction des commandes.".

Remarque
Vérifiez que la sortie de ligne de l'autoradio est raccordée à la prise portant l'indication "L (MONO)" sur l'appareil.

As the Monaural Amplifier for a Subwoofer
Comme amplificateur monaural pour un haut-parleur d'extrêmes graves



For details on the settings of switches and controls, refer to "Location and Function of Controls."

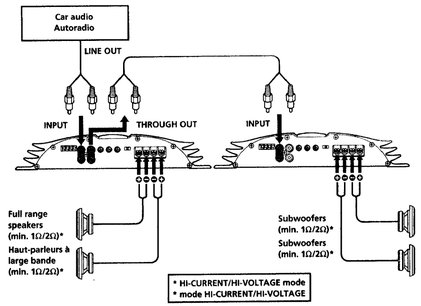
Note
If you wish to use a subwoofer as a monaural speaker, connect the speaker as illustrated above. The output signals to the subwoofer will be the combination of the both right and left output signals.

Pour plus de détails sur les réglages des commutateurs et commandes, reportez-vous à "Emplacement et fonction des commandes".

Remarque
Si vous désirez utiliser un haut-parleur d'extrêmes graves comme haut-parleur monaural, raccordez le haut-parleur comme illustré ci-dessus. Les signaux de sortie vers le haut-parleur d'extrêmes graves seront une combinaison des signaux de sortie droit et gauche.

2-way System
Système 2 voies

Two output channels
Duex canaux de sortie



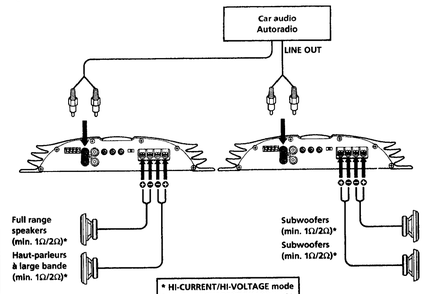
Use the THROUGH OUT terminal when you install more amplifiers. The signals are output as they were input. (LOW BOOST, HPF, LPF do not work.)

Notes
- *A maximum 3 amplifiers can be connected to the THROUGH OUT terminal. If you connect more than three amplifiers, it may cause problems such as sound dropout.*
- *High level input connection cannot use THROUGH OUT.*

Utilisez la borne THROUGH OUT lorsque vous installez plusieurs amplificateurs. Les signaux sont sortis comme ils sont entrés. (LOW BOOST, HPF, LPF ne fonctionnent pas.)

Remarques
- *Vous pouvez raccorder un maximum de 3 amplificateurs à la borne THROUGH OUT. Si vous raccordez plus de trois amplificateurs, cela peut provoquer des problèmes comme des baisses du son.*
- *Avec une connexion d'entrée de haut niveau, vous ne pouvez pas utiliser THROUGH OUT.*

Four output channels
Quatre canaux de sortie



For details on the settings of switches and controls, refer to "Location and Function of Controls."

Note
In this system, the volume of the subwoofers will be controlled by the car audio fader control.

Pour plus de détails sur les réglages des commutateurs et commandes, reportez-vous à "Emplacement et fonction des commandes".

Remarque
Dans ce système, le volume des haut-parleurs d'extrêmes graves est contrôlé par la commande de balance avant/arrière de l'autoradio.

Dual Mode System (With a Bridged Subwoofer)
Double mode de connexion (avec un haut-parleur d'extrêmes graves en pont)

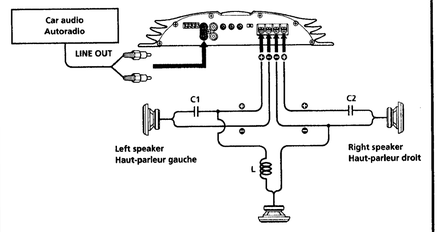


Table of crossover values for 6 dB/octave (4 ohms)

Crossover Frequency unit: Hz	L (coil)* unit: mH	C1/C2 (capacitor)* unit: µF
50	12.7	800
80	8.2	500
100	6.2	400
130	4.7	300
150	4.2	270
200	3.3	200
260	2.4	150
400	1.6	100
600	1.0	68
800	0.8	50
1000	0.6	39

* (not supplied)

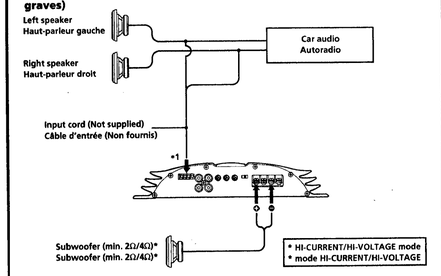
Tableau des valeurs de recoupement pour 6 dB/octave (4 ohms)

Fréquence de recoupement unité: Hz	L (bobine)* unité:mH	C1/C2 (condensateur)* unité:µF
50	12,7	800
80	8,2	500
100	6,2	400
130	4,7	300
150	4,2	270
200	3,3	200
260	2,4	150
400	1,6	100
600	1,0	68
800	0,8	50
1000	0,6	39

* (non fournis)

Notes
- *When using passive crossover networks in a multi-speaker system, care must be taken as the speaker system's impedance should not be lower than that of the suitable impedance for this unit.*
- *When you are installing a 12 decibels/octave system in your car, the following points must be considered. In a 12 decibels/octave system where both a choke and capacitor are used in series to form a circuit, a great care must be taken when they are connected. In such a circuit, there is going to be an increase in the current which by-passes the speaker with frequencies at around the crossover frequency. If audio signals are continued to be fed into the crossover frequency area, it may cause the amplifier to become abnormally hot or the fuse will be blown. Also if the speaker is disconnected, a series-resonant circuit will be formed by the choke and the capacitor. In this case, the impedance in the resonance area will decrease dramatically resulting in a short circuit like situation causing a damage to the amplifier. Therefore, make sure that a speaker is connected to such a circuit at all times.*

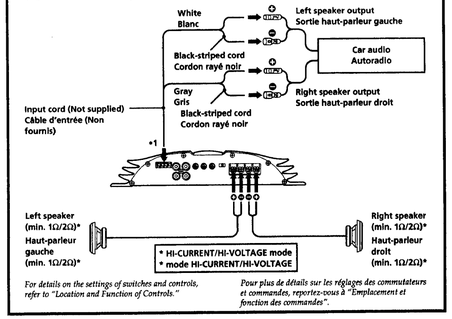
High Level Input Connection
(As a Monaural Amplifier for a Subwoofer)
Connexion d'entrée à haut niveau
(Comme amplificateur monaural pour un haut-parleur d'extrêmes graves)



For details on the settings of switches and controls, refer to "Location and Function of Controls."

Note
If you wish to use a subwoofer as a monaural speaker, connect the speaker as illustrated above. The output signals to the subwoofer will be the combination of both the right and left output signals.

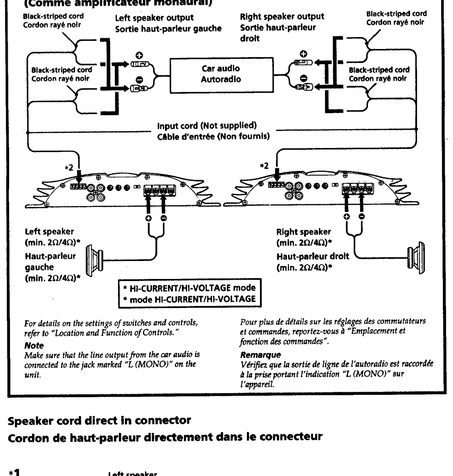
High Level Input Connection (2-Speaker System)
Connexion d'entrée à haut niveau
(Système à 2 haut-parleurs)



For details on the settings of switches and controls, refer to "Location and Function of Controls."

Pour plus de détails sur les réglages des commutateurs et commandes, reportez-vous à "Emplacement et fonction des commandes".

High Level Input Connection (As a Monaural Amplifier)
Connexion d'entrée à haut niveau
(Comme amplificateur monaural)



For details on the settings of switches and controls, refer to "Location and Function of Controls."

Note
Make sure that the line output from the car audio is connected to the jack marked "L (MONO)" on the unit.

Pour plus de détails sur les réglages des commutateurs et commandes, reportez-vous à "Emplacement et fonction des commandes".

Remarque
Vérifiez que la sortie de ligne de l'autoradio est raccordée à la prise portant l'indication "L (MONO)" sur l'appareil.

Speaker cord direct in connector
Cordon de haut-parleur directement dans le connecteur