



TX-108/88

Computer Controlled Tuner Amplifier

Instruction Manual

- *Thank you for purchasing the ONKYO INTEGRA TX-108/88 Tuner-Amplifier.*
- *Please read this manual thoroughly before connecting up your new tuner-amplifier, and turning it on.*
- *Following the instructions in this manual will enable you to obtain the utmost listening enjoyment from your new TX-108/88.*
- *Please keep the manual for later reference.*

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FEATURES

The Integra Series brings together all of ONKYO's innovative technology and experience to deliver audio excellence, the Integra Series TX-108/88 Tuner Amplifiers combine the best features of stand-alone tuners and amplifiers to produce the ultimate in livelike sound reproduction.

The TX-108/88 features:

- **Microcomputer controlled functions**

- * A logic circuitry controls the APR (Automatic Precision Reception) system, to obtain the best possible sound quality from FM broadcasts. ONKYO's exclusive APR system automatically selects the optimum combination of RF sensitivity, Hi-blend, mode and noise reduction for superb reception.
- * The same processor also controls the random access, random program 16 station memory, and the tuning and input selectors, for true ease of use.

- **Control center of your audio visual system**

The Real Phase Amp offers a complete range of user-selectable functions to make the TX-108/88 the central controlling unit of a complete home entertainment system.

- * **Sound Processor:**

Simulated Stereo Imager (SSI), to broaden the stereo effect and sense of space. Dynamic Bass Expander (DBE), to dynamically boost the bass according to the input signal level. Dynamic Transient Expander (DTE), to enhance the gain for more dramatic sound (TX-108).

- * **Multiple Inputs:**

Seven input terminals for full source versatility, including direct connection for CD player, two video cassette recorders or video disk player to VCR (direct A/V dubbing capability), two tape recorders, tuner and turntable.

- * **Remote Control:**

The remote control allows precise adjustment of the volume level from the listening position. An LED in the control knob gives a visual indication of the volume setting, even from the other side of the room. The remote control is capable of selecting any connected equipment, including all inputs, all pre-set stations, CD player controls, tape controls, and muting and power switches. The ultimate in user-convenience.

- **High Power Output with Real Phase**

The TX-108 and TX-88 deliver plenty of clean power even into low impedance loads, and have lots to spare for effortless handling of instantaneous signal peaks, making the amplifier sections truly the equal of even much more expensive integrated amps. Both also feature Onkyo's exclusive Real Phase for clear, accurate stereo imaging and extra definition. A special "In-Phase" transformer (in addition to the power transformer) "flattens out" the charging currents in the power supply. Since the currents are no longer modulated by very low frequency input out-of-phase signals that could muddy the sound. As an added convenience, the back panel is equipped with heavy-duty speaker terminals, specially designed to accommodate both single and parallel banana plugs (TX-108).

"WARNING"

"TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE."

CAUTION

"TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL."



- The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



- The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



- For models having power cords with a polarized plug.

CAUTION: TO PREVENT ELECTRIC SHOCK. DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

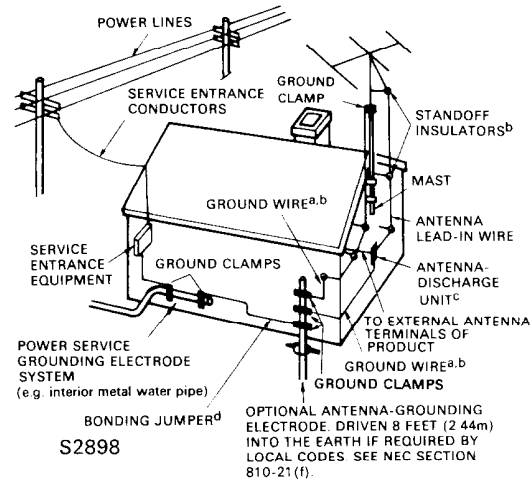
- Sur les modèles dont la fiche est polarisée.

ATTENTION: POUR PRÉVENIR LES CHOCS ÉLECTRIQUES NE PAS UTILISER CETTE FICHE POLARISÉE AVEC UN PROLONGATEUR. UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ÊTRE INSÉRÉES À FOND SANS EN LAISSER AUCUNE PARTIE À DÉCOUVERT.

IMPORTANT SAFEGUARDS

1. **Read Instructions** – All the safety and operating instructions should be read before the appliance is operated.
2. **Retain Instructions** – The safety and operating instructions should be retained for future reference.
3. **Heed Warnings** – All warnings on the appliance and in the operating instructions should be adhered to.
4. **Follow Instructions** – All operating and use instructions should be followed.
5. **Water and Moisture** – The appliance should not be used near water – for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, and the like.
6. **Carts and Stands** – The appliance should be used only with a cart or stand that is recommended by the manufacturer.
7. **Wall or Ceiling Mounting** – The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
8. **Ventilation** – The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
9. **Heat** – The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
10. **Power Sources** – The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
11. **Grounding or Polarization** – The precautions that should be taken so that the grounding or polarization means of an appliance is not defeated.
12. **Power-Cord Protection** – Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
13. **Cleaning** – The appliance should be cleaned only as recommended by the manufacturer.
14. **Power Lines** – An outdoor antenna should be located away from power lines.
15. **Outdoor Antenna Grounding** – If an outside antenna is connected to the receiver, be sure the antenna system is grounded so as to provide some protection against voltage surges and built up static charges. Section 810 of the National Electrical Code, ANSI/NFPA No. 70-1984, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of the antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See Figure 65.1.

FIGURE 65.1:
EXAMPLE OF ANTENNA GROUNDING ACCORDING TO NATIONAL ELECTRICAL CODE INSTRUCTIONS CONTAINED IN ARTICLE 810 – “RADIO AND TELEVISION EQUIPMENT”



^a Use No. 10 AWG (5.3 mm²) copper, No. 8 AWG (8.4 mm²) aluminum, No. 17 AWG (1.0 mm²) copper-clad steel or bronze wire, or larger, as a ground wire.

^b Secure antenna lead-in and ground wires to house with stand-off insulators spaced from 4–6 feet (1.22–1.82 m) apart.

^c Mount antenna discharge unit as close as possible to where lead-in enters house.

^d Use jumper wire not smaller than No. 6 AWG (13.3 mm²) copper, or the equivalent, when a separate antenna-grounding electrode is used. See NEC Section 810-21 (j).

Figure 65.1 revised August 24, 1984

16. **Nonuse Periods** – The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
17. **Object and Liquid Entry** – Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
18. **Damage Requiring Service** – The appliance should be serviced by qualified service personnel when:
 - A. The power-supply cord or the plug has been damaged; or
 - B. Objects have fallen, or liquid has been spilled into the appliance; or
 - C. The appliance has been exposed to rain; or
 - D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
 - E. The appliance has been dropped or the enclosure damaged.
19. **Servicing** – The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

PRECAUTION

1. Warranty Card

The serial number is written on the rear panel of this unit. Copy the serial number and model number onto your warranty card and keep it in a safe place.

2. Cabinet Materials

The Side Panel of this unit is vinyl overlay particle board; TX-108 only.

3. Recording Copyright

Recording of copyrighted material for other than personal use is illegal without permission of the copyright holder.

4. Power

WARNING

BEFORE TURNING ON POWER FOR THE FIRST TIME, READ THE FOLLOWING SECTION CAREFULLY.

- Some models are designed for use only with the power supply voltage of the region where they are sold.

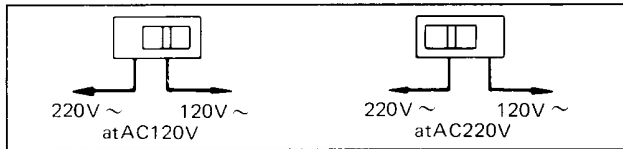
USA & Canadian models: AC120V, 60Hz

Worldwide models: AC 120V, 60Hz/

220V, 50Hz switchable,

- **Voltage Selector (Rear Panel)**

Worldwide models are equipped with a voltage selector to conform with local power supplies. Be sure to set this switch to match the voltage of the power supply in your area before turning the power switch on. Voltage is changed by sliding the groove in the switch with a screwdriver to the right or left. Confirm that the switch has been moved all the way to the right or left before turning the power switch on. Models without a voltage selector can only be used in areas where the power supply is the same as that of the unit.



- **5. AC Fuse**

The fuses are located inside the chassis and are not user serviceable. If power does not come on, contact your Onkyo dealer.

- **6. Remote Controller**

- If you have any questions concerning remote control operation of an Onkyo CD player, cassette deck or turntable connected to the TX-108/88, contact your Onkyo dealer.

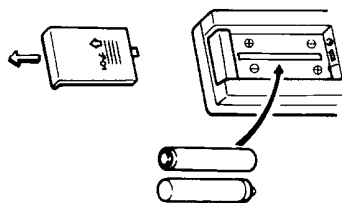
- **Batteries**

The remote controller is powered by two batteries. Before using this unit for the first time, insert the two batteries (included) as shown in the diagram. The remote controller has no on/off switch. Average battery life is one year. This period may be shorter depending on the frequency of use and environment (temperature and humidity) in which the remote controller is used. If the remote controller does not operate even though front panel controls function normally, the batteries should be replaced. Use only batteries listed in the following chart.

Type	Voltage	Size
Manganese	1.5V	AA R6 UM-3

Note

1. The battery life is influenced by the way they are used, temperature, humidity and many other factors. On the average, they should last for about one year.
2. Do not leave an expired battery in the case as it may leak or damage the battery case.
3. When inserting the batteries, be sure the (+) and (-) ends are properly aligned.
4. Do not use nickel-cadmium (rechargeable) batteries.
5. Do not use one specified (manganese) battery and one alkaline battery at the same time.
6. Replace both batteries at once; do not use one old and one new battery together.



- **De-Emphasis and Tuning Step Frequency Switch (Bottom)**

Some models are equipped with a switch that controls both de-emphasis (50 μsec – 75 μsec) and the AM (9kHz/10kHz) and FM (50kHz/200kHz) band tuning steps.

Be sure to set this switch to match the De-Emphasis and tuning step frequency in your area.

U.S.A	75μsec	10kHz/200kHz
Other areas	50μsec	9kHz/50kHz

- **“Note to CATV system installer:**

This reminder is provided to call the CATV system installer’s attention to Article 820-22 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.”

SYSTEM CONNECTIONS

NOTE:

Remote control operation of a cassette deck (or turntable) is not possible when only the remote control DIN cable is connected. The in and out pin cables for the signal must also be connected before remote control operation functions. Be sure that both cables are firmly inserted before using the cassette deck (or turntable) remote control function. The DIN cord (for cassette deck and turntable) can be found in the bag containing the instruction manual.

General

Switch the main power switch off before performing connections. Also be sure to perform left and right channel connections properly.

AC Outlets

UNSWITCHED: Power is supplied to this outlet regardless of the position of the front panel system and main power switches. Capacity is 100 watts.

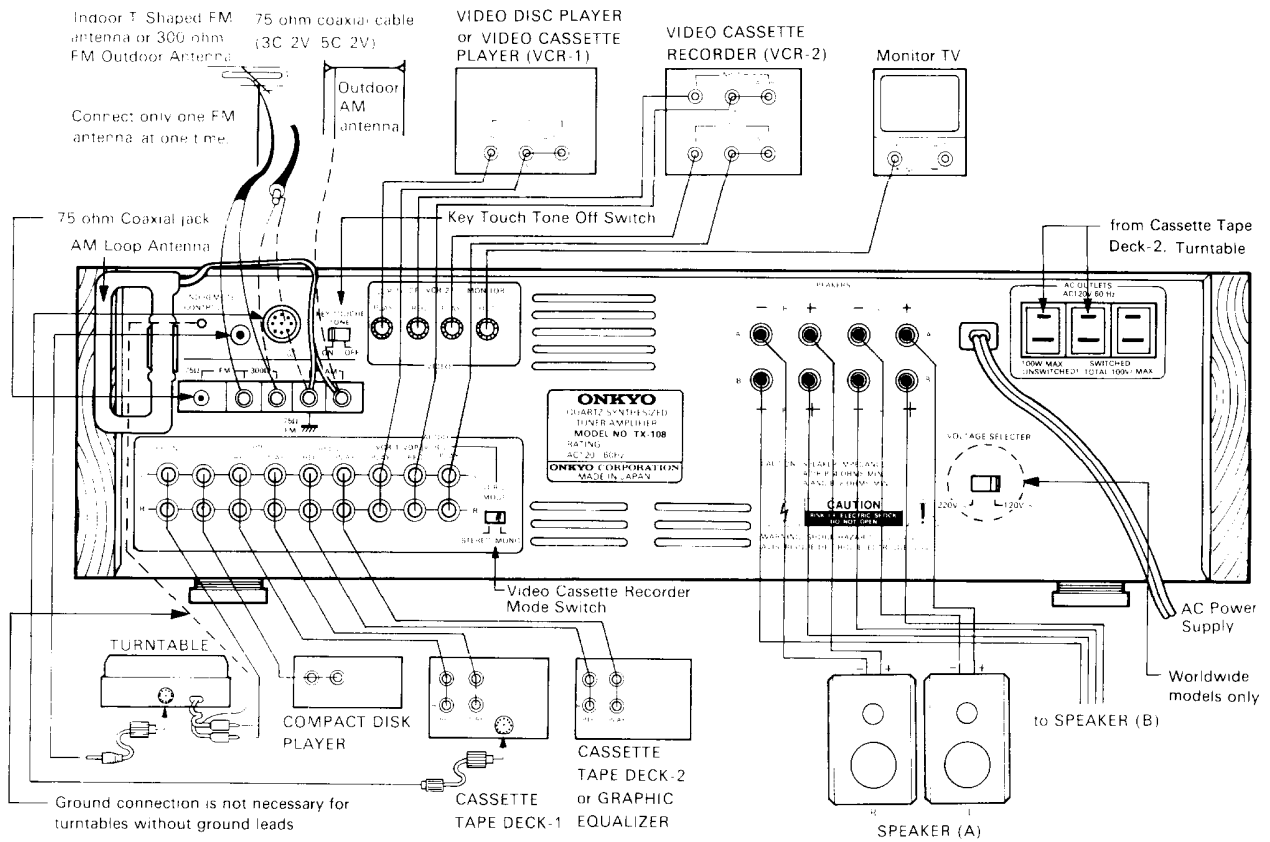
SWITCHED: These two outlets are switched on and off together with the front panel system power switch and remote control power key. Consequently, these outlets are suitable for use with a remote controlled cassette deck (deck-1) and turntable. Total capacity of all two outlets is 100 watts.

Key Touch Tone Off Switch (KEY TOUCH TONE)

Set the switch to the OFF position to switch off the soft beep that is produced each time a tuning or input selector setting is changed.

Video Cassette Recorder Mode Switch (VCR-2 MODE)

Set this switch to match the type of audio output provided by VCR-2. When using a hi-fi (stereo) VCR, set to STEREO and connect the VCR audio output to the corresponding L and R audio input jacks. When using a monaural VCR, set to MONO and connect the VCR audio output to either the L or R audio input jack. If a switch is set to mono when using a hi-fi VCR, sound will be heard in the monaural mode from both speaker systems.

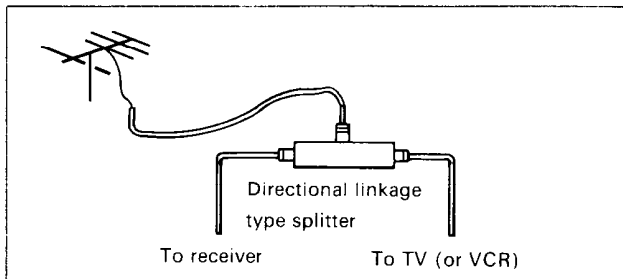


FM Antennas

The T-shaped antenna is included in the installation instructions bag. Use the T-shaped antenna if you live in an area where signal strength of FM broadcasts is high. Connect the antenna to the FM 300 ohm terminals and place the antenna on a wall or other surface in the position in which reception is best. If signal strength is low in your area, use a multi-element FM outdoor antenna and connect to this unit using 75 ohm coaxial cable because this type of cable is more resistant to interference than 300 ohm cable. If the coaxial cable has an F type plug, insert it in the 75 ohm coaxial jack. Consult your Onkyo dealer about the right type of antenna for your area.

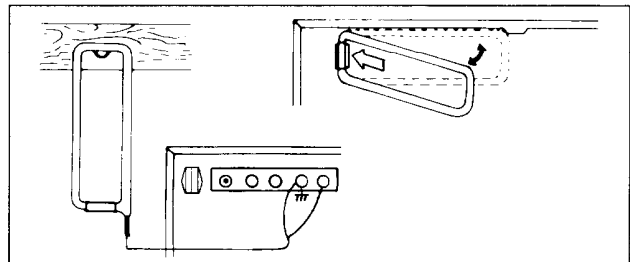
NOTE:

Do not use the same antenna for both FM and TV (or VCR) reception since the FM and TV (or VCR) signals can interfere with each other. If you must use a common FM/TV (or VCR) antenna, use a directional linkage type splitter.



AM Antenna

An AM loop antenna is included in the installation instructions bag. Insert it into the holder on the rear panel. Swing one end of the antenna away from the rear panel to the position that gives the best reception. If reception is still unsatisfactory, completely remove the loop antenna from the rear panel and hang it on a wall or other surface in the position that gives the best reception. Be sure the antenna is not near speakers, power cords, television sets, VCR's, and motorized appliances. When using an outdoor AM antenna, do not remove the loop antenna. Connect both antennas to the AM antenna terminals.



NOTE:

AM reception is easily affected by television sets and VCRs. Therefore, AM reception may be poor if this unit is placed too close to a TV or VCR.

Speaker Connections

When connecting speakers, proper polarity is important. Always connect the (+) terminal (red) on the amplifier to the (+) terminal on the speaker and the (-) terminal (black) on the amplifier to the (-) terminal on the speaker.

- Speaker load impedance is very important. Only speaker systems rated at 8 ohms or more should be used with this unit. If only one pair of speakers is used, the load impedance must be at least 4 ohms.

- Do not connect a single speaker in parallel to the right and left channel outputs.
- Use speaker cables that have a low impedance and that are as short as possible.
- Attach speaker cables to the rear panel speaker terminals with care, being sure that connections are made firmly and that there is no possibility of a short circuit occurring.

Turntable Connections

Connect the output leads of the turntable to the PHONO jacks.

Be sure to connect the ground (earth) lead wire from the turntable to the ground terminal (GND). Lack of proper ground connection will cause hum. Turntables not provided with GND wires do not need to be connected.

1. Place the turntable on a firm shelf or deck free from vibrations (especially those generated by the speaker system). If the turntable is permitted to pick up such unwanted vibrations, not only will the performance of the unit drop, but distortion in the bass frequencies and howling in the speakers may also occur.
2. Check the turntable instruction manual for any other precautions.
3. The loud noises that occur when connecting and disconnecting the turntable leads, replacing the cartridge or lowering the tonearm could damage the speakers. Always turn the power switch off before making connections.
4. If a compatible Onkyo remote control turntable is used with this unit, the TX-108/88 remote controller can also be used to start and stop turntable operation. In this case, connect the supplied phono DIN cord plug to the DIN type remote control jack on the turntable and the turntable remote control jack on the rear panel of TX-108/88. Then plug the turntable power cord plug into one of the rear panel switched outlets.

NOTE:

Before starting record play using remote control, confirm that there is record on the platter. If there is no record, the stylus will be lowered to the platter, resulting in serious damage to the stylus.

Compatible Onkyo Remote Control Turntables	
CP-1057F	CP-1044F
CP-1055F II	CP-1055F
CP-1046F	⋮

Compact Disc Player or Other Component

Connect the output leads of the CD player or an additional audio component to the CD jacks. An Onkyo CD player with remote control can be operated by the TX-108/88's RC-108X remote control transmitter. For more details, refer to your CD player instruction manual.

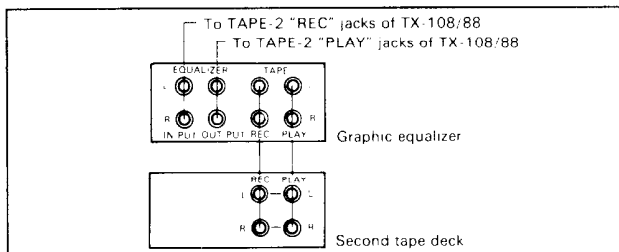
Onkyo CD players that can be operated by the RC-108X remote control transmitter:	
DX-200	•
DX-320	•
DX-220	•

Tape Deck and Graphic Equalizer

1. This unit has facilities for two tape deck. However, only the tape deck connected to the TAPE-1 jacks can be used by remote control. Therefore, if you have two decks, connect the remote control compatible one to the

TAPE-1 jacks and the other deck to the TAPE-2 jacks. If you want to perform off-the-tape monitoring during recording using a 3-head deck, it should be connected to the TAPE-2 jacks because this type of monitoring is not possible on the TAPE-1 side. To connect a graphic equalizer as well, use the TAPE-2 jacks and connect the second tape deck to the tape jacks of the equalizer.

To connect a graphic equalizer and second tape deck to the TAPE-2 side.



Compatible Onkyo Remote Control Cassette Decks	
TA-2028	TA-2036
TA-2090 (3-head)	TA-2048 (3-head)
TA-2056 (3-head)	TA-2058 (3-head)

2. Connect the outputs of each deck to the TAPE-1 and TAPE-2 PLAY jacks. Then connect the inputs to the TAPE-1 and TAPE-2 REC jacks, if tape deck 1 is remote control compatible, connect the supplied tape deck DIN cord plug to the DIN type remote control jack on the Tape Deck and the tape deck remote control DIN jack on the rear panel of TX-108/88. Then plug the cassette deck power cord plug into one of the rear panel switched outlets. To have the second tape deck and graphic equalizer switched on and off with the TX108/88, connect the equalizer to another of the switched outlets. For more details, refer to the tape deck instruction manual.

Video Disc Player (or Video Cassette Player)

Connect the "VIDEO" output of the video disc player to the TX-108/88 VCR-1/VDP "PLAY" jack and the "AUDIO" output to the VCR-1/VDP PLAY (AUDIO) jack. When connecting a monaural VCR to the VCR-1/VDP jack, connect the VCR's audio output to either the L or R VCR-1/VDP "PLAY" audio input jack of the TX-108/88. Then set the TX-108/88's mode switch (MODE) [17] to "MONO". If this is not done, sound will be output from only one speaker, the right or the left. The VCR-1/VDP jack is only for playback, there is no REC jack. For more details, refer to the video disc player instruction manual.

Video Cassette Recorder

1. Connect the "VIDEO" output of VCR to the rear panel VCR-2 PLAY jacks and the "VIDEO" input of VCR to the rear panel VCR-2 REC jacks. Then connect the "AUDIO" output of VCR to the VCR-2 L and R PLAY (AUDIO) jacks. Finally, connect the "AUDIO" input of VCR to the VCR-2 L and R REC (AUDIO) jacks.
2. When using a monaural VCR (having a single audio input and output), set the corresponding VCR mode switch "VCR-2 MODE" on the rear panel to MONO and use either the R or L audio jack. If the switch is in the STEREO position, sound will be heard from only the right or left speaker system.
3. When using a playback-only VCR, only the output connections need to be performed.

5. For more details, refer to the VCR instruction manual.

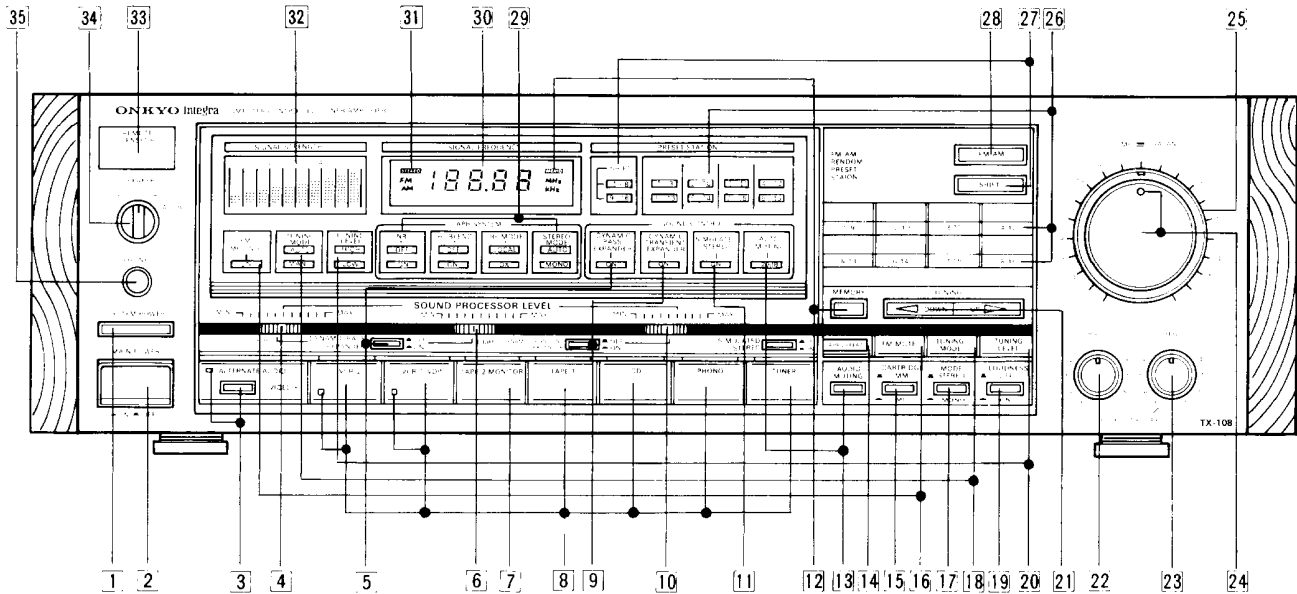
Monitor TV

1. Connect the TV VIDEO input to the TX-108/88 MONITOR "OUT" jack. There is no need to perform an audio connection since sound will be sent directly from the TX-108/88 to the speaker systems.

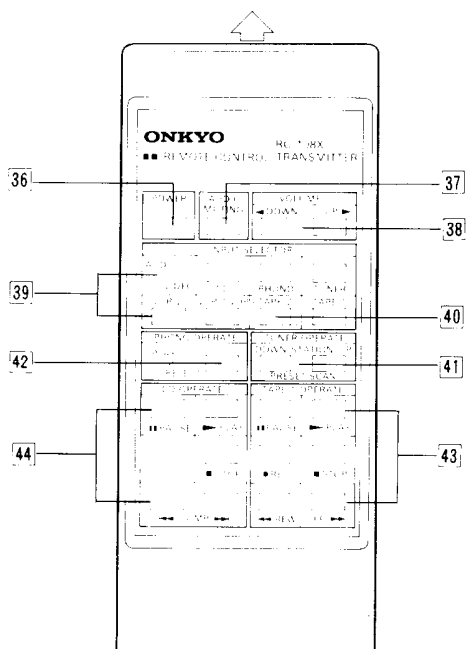
2. The TX-108/88 does not have an RF modulator. Therefore, it can be used with only a monitor TV equipped with a video input jack.

3. Since the television set, tuner (FM/AM) section of this unit can cause interference that may disrupt sound and/or picture quality, the TV and TX-108/88 and their respective connection cables should be placed as far apart as possible. The use of a common TV/FM antenna is not recommended (see antenna section).

FRONT PANEL FACILITIES



NOTE:
The features and specifications partially differ between the TX-108/88. The features vary according to countries of destination.



1 System Power Switch (SYSTEM POWER)
Press this switch to turn on power when the unit is in the standby mode. Power can also be turned on by using the remote control power key.

2 Main Power Switch (MAIN POWER)
Press this switch to set this unit to the standby mode in which power can be switched on and off by the front panel system power switch and remote control power key. The power indicator above the main power switch lights when the unit is in standby mode and during operation.

3 Alternate Audio Key and Indicator (ALTERNATE AUDIO)
Use this key to switch to a different audio source (TUNER/PHONO/CD/TAPE-1) while viewing either of the sources controlled by the video selectors VCR-1/VDP, VCR-2. Examples of how this function can be used include listening to a record while watching a camera recording or listening to an FM broadcast along with a CATV program. This key can be used only when the VCR-1/VDP or VCR-2 input selector is depressed. To use, first press this key and then press the audio input selector of the desired audio source. Note that it is not possible to switch video sources while using the alternate audio function. To switch from VCR-1/VDP to VCR-2, for example, first press this key to switch off the alternate audio function and then press the VCR-2 key.

- 4] Dynamic Bass Expander Level Control**
Adjust this control to raise and lower the amount of the dynamic bass expander effect.
This volume controls the dynamic bass expander's ultra-low range level. Use it to give a rich low range during playback. Sliding the control to the right gives maximum effects.
- 5] Dynamic Bass Expander Switch and Indicator**
Use this switch to turn the dynamic bass expander circuit on and off. The dynamic bass expander is used to add an extra feeling of power and realism to the low range. In addition, a delay effect is used to add still more richness to low range sound. Its function is unlike that of the conventional bass and loudness controls.
- 6] Dynamic Bass Expander Level Control (TX-108 only)**
Adjust this control to raise or lower the amount of the dynamic bass expander effect. This volume controls the low range level of the dynamic bass expander. Use it for powerful low-range playback. Sliding the control to the right gives maximum effects.
- 7] Tape Monitor Switch and Indicator (TAPE-2 MONITOR)**
Press this switch to use the tape deck connected to the TAPE-2 PLAY/ REC jacks for recording, playback or dubbing. Note that dubbing can only be performed from tape deck 1 to tape deck 2. If tape deck 2 is a 3-head model, the just-recorded signal can be monitored as a recording is being made.

NOTE:

Tape monitor ON/OFF can also be performed using the remote control Tape Monitor Key (TAPE-2) [40].

- 8] Input Selector and Indicators**
- **Audio Selectors**
TUNER: Press to listen to an AM or FM broadcast.
PHONO: Press to listen to the turntable.
CD: Press to listen to the compact disc player.
TAPE-1: Press to use tape deck 1 for playback. When recording on tape deck 1, the just-recorded signal cannot be monitored even if tape deck 1 is a 3-head model.
 - **Video Selectors (Controls audio and video signals)**
When the alternate audio switch [3] is off (indicator is not lit):
VCR-1/VDP: Press to obtain the video and audio signals from the video cassette player or Video Disc Player connected to the VCR-1/VDP jacks.
VCR-2: Press to obtain the video and audio signals from the video cassette recorder connected to the VCR-2 jacks.
On the remote control transmitter, use the input selector keys [39] to perform input selection.

NOTE:

- It is possible to dub the video disc player output signal on VCR-2.
- Dubbing from VCR-1 to VCR-2 is possible.

- 9] Dynamic Transient Expander Switch and Indicator (TX-108 only)**
This switch turns the dynamic transient expander ON or OFF. The dynamic transient expander is a newly-developed circuit by Onkyo. It produces a powerful

and realistic sound by modulating hollow and cloudy sounds into sounds that are clear, vivid and transparent.

- 10] Dynamic Transient Expander Level Control**
Adjust this control to raise and lower the amount of Dynamic Transient Expander effect.
- 11] Simulated Stereo Switch and Indicator**
Press this switch to activate the simulated stereo effect that gives monaural sources (TV, video recordings, AM radio, etc.) a stereo-like feeling of width and depth. This mode is particularly good for enjoying more lifelike sound with TV programs and other mono video programs. It is also possible to use simulated stereo with a stereo program to create a still stronger sensation of sound staging width and depth.
- 12] Memory Key (MEMORY) and Indicator**
Press this key to place a station in the memory using the FM/AM preset keys [26]. When this key is pressed, the "MEMO" indicator in the frequency display [12] lights for about 5 seconds. While this indicator is lit, press one of the preset keys to store the presently tuned station in the memory. The indicator of the pressed preset key will go out to indicate that memory operation has been completed.
- 13] Audio Muting Switch and Indicator (AUDIO MUTING)**
Placing this switch in the -20dB setting reduces the volume to about one-tenth the volume level set by the volume control. Use this for eliminating the loud noise that occurs when the stylus first contacts a record or for reducing other momentary noises. On the remote controller, audio muting is switched on and off by the AUDIO muting key [37].
- 14] APR Switch (APR DEFEAT)**
The APR system is alternately turned off and on each time this switch is pressed. Turn the APR system off (all APR indicators [29] go out) to hear a radio broadcast in its unaltered form when desired. When APR is off, weak stations will be very noisy. This switch should normally be left in the on mode.
- 15] Cartridge Selector (CARTRIDGE) (TX-108 only)**
MM: When a turntable with an MM cartridge is being used.
MC: When a turntable with an MC cartridge is being used.
- 16] FM Mute Switch and Indicator (FM MUTE)**
FM muting is alternately turned off and on each time this switch is pressed and the FM mute indicator is turned off and on. When FM muting is on, weak FM broadcasts and interstation noise will not be heard.
- 17] Mode Switch (MODE)**
STEREO: Normal stereo reproduction; monaural broadcasts will be heard in mono.
MONO: Both stereo and mono broadcasts will be heard in mono. During FM stereo reception, the stereo indicator will not light. Setting the mode switch to this position switches all other sources to monaural reproduction, too. APR. IND. "MONO" will light too.
- 18] Auto/Manual Tuning Mode Switch and Indicator (TUNING MODE)**
The tuning mode is alternately switched between auto and manual each time this switch is pressed. The mode

currently selected is shown by the tuning mode indicator.

19) Loudness Control (LOUDNESS)

When listening at low volume levels, depress this button to boost the very high and very low frequencies to provide a more natural sound.

20) FM Tuning Level Switch and Indicator (TUNING LEVEL)

This switch sets the FM muting level and Auto Stop level to the high or low level. It should be set to the position that gives the best results in your area.

HIGH: Only local stations will be heard.

LOW: Stations of lower signal strength will also be heard.

To tune in stations suppressed even by the low setting, switch the FM mute switch [16] to the OFF setting. FM Tuning Level is alternately switched between HIGH and LOW each time this Switch is pressed.

21) Tuning Selectors (TUNING)

Press the UP selector to raise the tuned frequency and the DOWN selector to lower the tuned frequency.

• **Using the Tuning Selectors (Manual Mode)**

First, set the Auto/Manual tuning mode switch [18] to the manual tuning mode. Now, when the UP or DOWN tuning selector is held down, the tuned frequency will increase or decrease continuously. To tune in a station, press either the UP or DOWN tuning selector until you are near the frequency of the desired station. Then, after releasing the tuning selector, press again to change the frequency in single steps until the desired station is precisely tuned. Pressing once changes the frequency by 200kHz steps in the FM band and by 10kHz steps in the AM band.

• **Using the Tuning Selectors (Auto Mode)**

Set the Auto/Manual tuning mode switch [18] to the auto tuning mode. Then press the UP or DOWN tuning selector; there is no need to keep the selector depressed as in the manual tuning mode. The tuned frequency will continue to increase or decrease until a broadcast of sufficient strength is reached. To move on to the next broadcast, press the UP or DOWN tuning selector again. When the upper or lower end of the frequency range is reached, the displayed frequency will automatically switch back to the other end of the range and continue to increase or decrease as before. For example, when the DOWN tuning selector is pressed, the frequency will decrease until the lowest frequency is reached. The displayed frequency will then switch back to the highest frequency and continue to decrease as before.

1. When the DOWN tuning selector is pressed, the tuned frequency will decrease until the lower limit is reached.
2. At this point, the frequency will automatically switch back to the upper limit and continue to decrease as before.

Scanning will not stop for broadcasts weak enough to be suppressed by the muting circuit. To receive a weak FM broadcast, set the FM Mute switch [16] to the OFF position (FM mute indicator goes out) and tune in the FM broadcast using the manual tuning mode.

• **Using the Remote Control Transmitter**

When the UP or DOWN remote control tuner key [41] is pressed, the next higher or lower memory channel is recalled. Each time UP or DOWN key is pressed, the following memory channel in the corresponding direction is recalled. If the tuner key [41] is held down for more than one second, the unit will switch to the auto memory scan mode in which each broadcast in the memory is recalled for about five seconds. During auto memory scan, the preset station indicator [26] of the broadcast currently being heard flashes on and off. To stop scanning at a particular broadcast, press the tuner operator up or down key once. There is no need to use the shift key [27] to switch between the 1-8 and 9-16 memory channel modes during auto scan operation.

22) Bass Control (BASS)

Adjust to strengthen or weaken bass response. In the center defeat position, the bass tone control circuitry is completely bypassed.

23) Treble Control (TREBLE)

Adjust to strengthen or weaken treble response. In the center defeat position, the treble tone control circuitry is completely bypassed. When the treble control is turned all the way to the left, a high cut filter is activated.

24) Volume Control and Indicator (VOLUME)

Used to adjust the overall sound level. Besides controlling the volume manually, it can also be controlled by the remote controller's volume (UP-DOWN) key [38]. When the volume UP (or DOWN) key is pressed, the volume control knob will rotate clockwise (or counterclockwise), increasing (or decreasing) the volume. The LED on the volume control knob LED one to see the volume level from a distance.

25) Balance Control (BALANCE)

Use this control to adjust the relative volume levels of the left and right speaker systems.

26) FM/AM Preset Keys and Indicators (FM/AM RANDOM PRESET STATION)

Use these keys to recall an FM or AM station or to store a station in the memory. The corresponding preset station indicator will light to show switch key has been used. Refer to the memory function section for details.

27) Shift Key and Indicator (SHIFT)

The FM/AM preset keys [26] can be used to store a total of 16 radio stations. Use this key to switch the preset keys between the memory channel 1-8 and 9-16 modes. The setting alternates between 1-8 and 9-16 each time this key is pressed. When power is turned on, the setting is the same as when power was last turned off.

28) FM/AM Selector Switch (FM/AM)

The unit is alternately switched between FM and AM reception each time this switch is pressed.

NOTE:

Keys [12], [14], [18], [20], [21], [26], [27] and [28] operate only when the input selector [8] is set to "TUNER".

29) APR Indicator

30) Frequency Display

The frequency recalled by the FM/AM preset keys [26] or tuned by the tuning selectors [21] is displayed

here in digital form when the unit is in the tuner mode. Note that even though the frequency display remains lit when the PHONO, CD, TAPE-1, TAPE-2, VCR-1/VDP or VCR-2 input selector is pressed, reception is not possible. To return to the tuner mode, the TUNER input selector must be pressed.

31 Stereo Indicator (STEREO)

This indicator lights when an FM stereo broadcast is being received. It does not light when the mode switch [17] is in the MONO position or when a weak FM stereo broadcast is being received.

32 Signal Strength Indicator (SIGNAL STRENGTH)

33 Remote Control Sensor

34 Speaker Selector (SPEAKERS)

This unit can drive two pairs of speakers in pairs (A or B) or fours (A + B).

OFF: All speakers off—only headphones are operating.

A: Speakers A operating.

B: Speakers B operating.

A + B: Both A and B pairs of speakers operating.

35 Headphone Jack (PHONES)

Stereo headphones with a standard binaural plug can be connected here.

NOTE:

A soft beep is heard to confirm when the system power [1], FM/AM selector [28], FM/AM preset station key [26], tuning selector [21], input selector [8] (including tape-2/monitor) and alternate audio keys have been used.

Remote Control Transmitter Controls

The RC-108X remote control transmitter included with this unit controls not only the amplifier and tuner functions of the TX-108/88, but also major functions of the cassette deck (only tape 1) and turntable connected to the TX-108/88).

The RC-108X remote controller can also control an Onkyo compact disc player.

The remote controller also has a switch that turns power on and off to the AC outlets on the rear panel of the TX-108/88. A beep is heard from the main unit when the power key, an input selector key or a tuner operation key is pressed.

If the main power switch [2] is not ON, remote control operation is not possible.

36 Power Key

This key has the same function as that of the system power switch [1]. Remember that the main power switch [2] must be on before this key can be used.

37 Audio Muting Key

The key has the same function as that of the audio muting switch [13]. Use to quickly lower the volume level.

38 Volume Key (DOWN-UP)

This key has the same function as that of the volume control [24]. The volume level can be adjusted by pressing the UP or DOWN key, with the volume control knob rotating simultaneously.

39 Input Selector Keys

These keys have the same function as that of the input selector keys [8]. Use them to select the audio or video source to be used.

40 Tape Monitor Keys (TAPE-2)

This key has the same function as that of the Tape Monitor switch (TAPE-2 MONITOR) [7].

41 Tuner Operation Key

This key is used to recall stations in the TX-108/88 tuner memory. Press the UP side of the key to recall the station in the next higher memory channel and the DOWN side to recall the next lower memory channel. If either key is held down for more than one second, each memory channel in ascending or descending order will be recalled for about five seconds (auto preset scan). To stop auto memory scan at a particular station, press the UP or DOWN tuner key one more time. Refer to the remote control section of the front panel facilities section. The tuner operation key can be used only when the TUNER input selector key [8] has been pressed.

42 Phono Operation Key (PLAY/REJECT)

This key is used to operate the turntable connected to the rear panel phono jacks. Compatible Onkyo turntables are listed in the turntable section of the connections explanation. Consult your Onkyo dealer for further details. The phono operation key can be used only when the PHONO input selector key [8] has been pressed. Each time the phono operation key is pressed, the remote controller alternately emits the play or reject command. Refer to the turntable instruction manual for additional instructions on operating the turntable.

NOTE:

Before starting record play using remote control, confirm that there is a record on the platter. If there is no record, the stylus will be lowered to the platter, resulting in serious damage to the stylus.

43 Tape-1 Operation Keys (TAPE-1 OPERATE)

These keys are used to operate the tape deck connected to the rear panel tape 1 jacks. Compatible Onkyo cassette decks are listed in the tape deck section of the connections explanation. Consult your Onkyo dealer for further details.

■ PAUSE: Press to activate the pause mode.

▶ PLAY: Press to begin playback.

● REC: While hold this key down, press the play key to start recording. Recording is not started when the rec key alone is pressed.

■ STOP: Press to stop recording, playback, rewind or fast forward.

◀ REW: Press to rewind a tape.

▶ FF: Press to rapidly wind a tape forward.

Refer to the cassette deck instruction manual for additional instructions on operating the deck.

44 CD Operation Key (CD OPERATE)

The TX-108/88 does not have a lead wire for CD player remote control operation. By pressing this key, the CD player can be directly controlled. Without using the CD player's supplied remote controller, the RC-108X remote controller for the TX-108/88 can control the CD player, and the tape deck or turntable connected to it. This applies only to Onkyo CD players.

- || PAUSE: Press to activate the Pause mode.
- ▶ PLAY: Press to begin playback.
- STOP: Press to stop playback.
- ◀◀ JUMP: Press this key to play soundtracks before the one being played.
- ▶▶ JUMP: Press this key to play soundtracks after the one being played.

Refer to the CD Player instruction manual for additional instruction to operate the CD player.

Note:

Point the remote control transmitter (RC-108X) in the direction of the CD player when using it. The distance of use of the transmitter may be different for TX-108/88 and the CD player.

OPERATIONS

NOTE:

- Before turning power on, confirm that all connections have been made properly.
- For remote control operations, refer to the remote control section.

Standby Mode

The standby position of controls and switches serves as the starting point for all modes of operation. When the system power switch is then turned on (while the main power switch is also on), all controls except the speaker selector, simulated stereo, Dynamic Transient expander, dynamic bass expander, Cartridge Selector, Mode Switch, Loudness, bass, treble, volume, balance controls, APR Switch, FM Mute Switch are in the same setting as when the system power switch was last switched off. Be sure that the APR switch and the FM mute switch are ON.

[34]	Speaker Selector	As appropriate
[15]	Cartridge Selector (TX-108 only)	As appropriate
[17]	Mode Switch	STEREO
[19]	Loudness Control	OFF
[22]	Bass Control	Center
[23]	Treble Control	Center
[24]	Volume Control	Minimum
[25]	Balance Control	Center
[5]	Dynamic Bass Expander	OFF
[4]	Dynamic Bass Expander Level Control (50Hz)	Minimum
[6]	Dynamic Bass Expander Level Control (100Hz) (TX-108 only)	Minimum
[9]	Dynamic Transient Expander Switch (TX-108 only)	OFF
[10]	Dynamic Transient Expander Level Control (TX-108 only)	Minimum
[11]	Simulated Stereo Switch	OFF
—	Key Touch Tone Switch (Rear Panel)	ON
—	VCR-2 Mode Switch (Rear Panel)	As appropriate
[2]	Main Power Switch	ON
[1]	System Power Switch	ON

Tuner Reception

To listen to an FM or AM broadcast, press the TUNER input selector [8] and confirm that the TAPE-2 monitor [7] is off.

FM Reception (Manual Mode)

1. Set the FM/AM selector switch [28] to the FM mode.
2. Set the tuning mode switch [18] to the MANUAL mode.
3. To tune in an FM station not stored in the memory, press the UP or DOWN tuning selector [21] until the frequency display approaches the frequency of the desired station. Then release the tuning selector and press it again in single steps until the desired frequency is tuned precisely. Note that the frequency is changed in 200 kHz (or 50 kHz) steps when either tuning selector is pressed in single steps.
4. To recall a station stored in the memory, simply press the preset key [26] corresponding to the desired station. Be sure to set the shift key [27] to the mode (1-8 or 9-16) for the memory channel to be recalled. Since this is a random FM/AM memory, an AM station will be tuned in if you recall a memory channel in which an AM station is stored.
5. The stereo indicator [31] will light if the broadcast is being received in stereo. The stereo indicator will not light if the broadcast is monaural or too weak to be received in stereo.
6. Adjust the volume, tone and other controls as desired.

FM Reception (Auto Mode)

1. Set the FM/AM selector switch [28] to the FM mode.
2. Set the tuning mode switch [18] to the AUTO mode.
3. Press the UP or DOWN tuning selector [21]. The tuned frequency will continue to increase or decrease until a sufficiently strong broadcast is reached. To move on to the next broadcast, press either tuning selector again depending on the direction in which you want to go.
4. To stop scanning during automatic tuning, press the tuning mode switch [18] to return to the manual mode. The frequency display will immediately stop increasing or decreasing.

AM Reception (Manual Mode)

1. Set the FM/AM selector switch [28] to the AM mode.
2. Set the tuning mode switch [18] to the MANUAL mode.
3. To tune in an AM station not stored in the memory, press the UP or DOWN tuning selector [21] in the manner described in the FM section. Note that the frequency is changed in 10 kHz (or 9 kHz) steps when either tuning selector is pressed in single steps.
4. To recall a station stored in the memory, simply press the preset key [26] corresponding to the desired station. Be sure to set the shift key [27] to the mode (1-8 or 9-16) for the memory channel to be recalled. Since this is a random FM/AM memory, an FM station will be tuned in if you recall a memory channel in which an FM station is stored.

AM Reception (Auto Mode)

1. Set the FM/AM selector switch [28] to the AM mode.
2. Set the tuning mode switch [18] to the AUTO mode.
3. Press the UP or DOWN tuning selector [21]. The tuned frequency will continue to increase or decrease until a sufficiently strong broadcast is reached. To move on to the next broadcast, press either tuning selector again depending on the direction in which you want to go.
4. To stop scanning during automatic tuning, press the tuning mode switch [18] to return to the manual mode.

The frequency display will immediately stop increasing or decreasing.

● Key Touch Tone

A soft beep is emitted each time an input selector, tuning operation key is used or power is switched on (and system power is switched off). A rear panel key touch tone on/off switch is provided to allow switching this function off if desired.

Memory Function

This unit can store a total of 16 FM and AM stations in the memory for instant recall at any time without using the Tuning selector. The stations can be any combination of FM and AM broadcasts. Read the following directions carefully to avoid mistaken operations.

1. Confirm that both Tape Monitor switches [7] are off, press the TUNER Input Selector switch [8], press the FM/AM Selector switch [28] of the band of the station to be placed in the memory and set the Shift key [27] to the 1-8 or 9-16 range, depending on which memory channel is to be used.
2. Tune in the broadcast to be placed in the memory using the Tuning selector [21].
3. Depress the Memory key [12] and, while the Memory indicator remains lit (about 5 seconds), depress one of the Preset keys [26].
4. When the Preset key is depressed, the Memory indicator will go out and the indicator above the depressed Preset key will light. The frequency currently shown in the frequency display is now stored in the memory.
5. If the Memory indicator goes out before you have depressed one of the Preset keys, simply press the Memory key [12] again to give yourself another 5 seconds.
6. Placing another broadcast in the same memory channel automatically cancels the station previously stored in that channel.

Notes

Preset frequencies can be transferred to other channels. For example, the FM station stored on Preset key number 6 can be transferred to Preset key number 1 in the following manner:

- 1) Press the FM Selector switch [28].
- 2) Press Preset key number 6
- 3) Press the Memory key [12]. (The Memory indicator lights.)
- 4) Press Preset key number 1.
- 5) The same station is now stored on both preset keys 1 and 6.

Memory Preservation

This unit does not require memory preservation batteries. A built-in memory power back-up system preserves the contents of the memory during power failures and even when the unit is unplugged. The unit must be plugged in and the Power switch turned on and off once in order to charge the back-up system. Note that since this is not a permanent memory, the Power switch must be turned on and off a few times each month to keep the back-up system operative.

The memory preservation period after power has last been turned off varies depending on climate and placement of the unit. On the average, memory contents are protected over a period of 3 to 4 weeks after the last time power has been turned off. This period is shorter when the unit is exposed to high humidity climate.

Compact Disc Player

1. Connect the CD player to the CD inputs.

2. Press the CD Input Selectors switches [8], and confirm that the Tape-2 Monitor switch [7] are off.
3. Follow the operating instructions for the CD player.

Phonograph Records

1. Connect the turntable to the PHONO inputs. Turntables provided with GND wires shall be connected to the ground terminal.
2. Press the PHONO Input Selector switch [8], and confirm that the Tape-2 Monitor switch [7] are off.
3. Follow turntable operating instructions.

Tape Playback

1. Connect the output leads from the tape deck to the TAPE-1 or 2 PLAY inputs.
2. Press the TAPE-1 Input Selector-Switch [8] or TAPE-2 Monitor switch [7] depending on which pair of TAPE PLAY inputs the deck is connected to.
3. Follow tape deck operating instructions for playback.

Tape Recording

1. Make all connections between the tape deck and the unit as shown in the System Connections diagram.
2. Radio: Press the TUNER Input Selector switch [8], and set the FM/AM Selector switch [28] to FM or AM.
Records: Press the PHONO Input Selector switch [8].
CD: Press the CD Input Selector switch [8].
VCR-1/VDP: Press VCR-1/VDP Input Selector switch [8].
VCR-2: Press the VCR-2 Input Selector switch [8].
3. Put the tape deck in the recording mode. The recording can be monitored through the speakers or headphones as desired. When recording on tape deck 2, press the TAPE-2 monitor switch [7] to hear the signal that, having been recorded, is returned from the deck to the TX-108/88 (if the deck has three heads).
4. Set the proper recording level using the controls on the tape deck used for recording. Also, during recording and dubbing operations, never change the positions of any controls (bass, treble, etc.) on this unit.

Tape-to-Tape Dubbing

1. Connect the two tape decks to this unit as shown in the System Connections diagram.
2. Load the original tape in tape deck 1 and the blank tape in tape deck 2.
3. Press the TAPE-1 Input Selector-Switch [8] and TAPE-2 Monitor switches [7] (both indicators light)
4. Put tape deck 1 in the playback mode and tape deck 2 in the recording mode. Follow tape deck operating instructions.
5. The source signal can be monitored through the speakers or headphones, when TAPE-2 monitor switch [7] is in OFF position. If tape deck-2 has three heads, the just-recorded signal can be monitored (when TAPE-2 monitor switch [7] is in "ON" position).

Graphic Equalizer

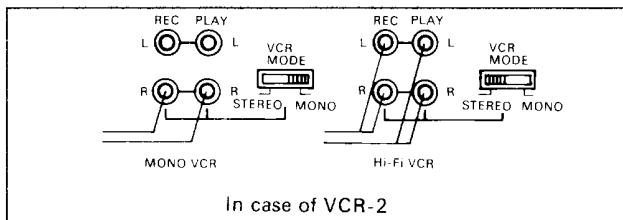
1. Connect the graphic equalizer to the TAPE-2 jacks.
2. If a second tape deck is used, connect it to the tape jacks on the graphic equalizer.
3. Press the TAPE-2 Monitor switch [7].
4. Follow the graphic equalizer operating instructions.
5. To record an equalized signal, use tape deck 2 (connected to the equalizer) for recording.

Video Disc Player (or Video Cassette Player: VCR-1) Playback

1. Connect the video disc player to the TX-108/88 as shown in the System Connections diagram. Then connect a monitor or TV having a video input jack to the TX-108/88 video "MONITOR OUT" jack.
2. Press the VCR-1/VDP Input Selector switch [8].
3. Switch on the monitor TV, and start playback of the video disc player. The picture will be sent to the monitor TV and sound to the speakers connected to the TX-108/88.
4. Refer to the video disc player instruction manual for additional information.

Video Cassette Recorder (VCR-2) Playback

1. Connect the VCR to the TX-108/88 as shown in the System Connections diagram. Remember to switch the VCR mode switch to MONO when using a monaural VCR-2. If this is not done, sound will be heard from only one speaker. If the MONO setting is used with a hi-fi (stereo) VCR, even stereo sound will be heard in the monaural mode. Then connect a monitor or TV having a video input jack to the TX-108/88 video "MONITOR OUT" jack.
2. Press the VCR-2 Input Selector switch [8].
3. Switch on the monitor TV, and start playback of the VCR. The picture will be sent to the monitor TV and sound to the speakers connected to the TX-108/88. To listen to sound from a record, tape or other source instead of the sound from the VCR, set the alternate audio key [3] to the on mode. Then press the audio input selector [8] of the desired source.
4. Refer to the video cassette recorder instruction manual for additional information.



Video Disc Player to VCR Dubbing

Video disc programs can be recorded onto a VCR-2.

1. Load a disc in the video disc player, and a blank tape in the VCR-2.
2. Press the VCR-1/VDP Input Selector switch [8].
3. Begin playback of the video disc player and recording of the VCR-2.
4. During duplication, the picture is sent to the monitor TV and sound to the speakers connected to the TX-108/88.
5. The VCR-1 to VCR-2 duplication is possible when a second VCR output are connected to the VCR-1/VDP terminals.
6. Refer to the video disc player and VCR instruction manuals for additional information.

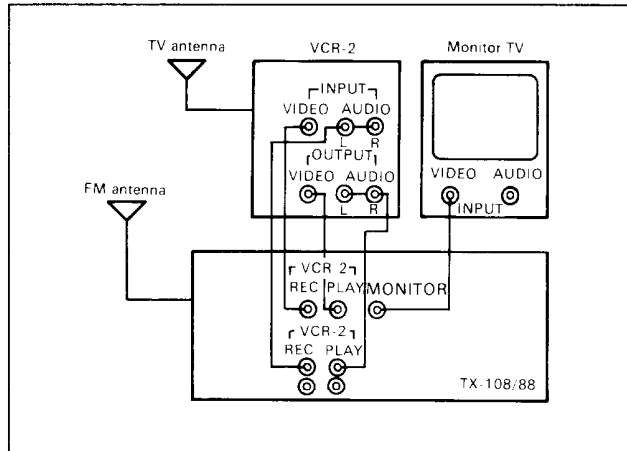
NOTE:

Dubbing can be done only from VCR-1/VDP to VCR-2 (not vice versa). When dubbing from a monaural VCR to a hi-fi VCR, the sound will be monaural.

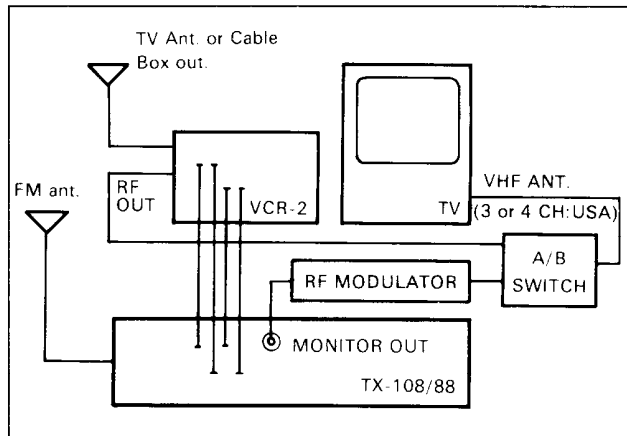
Video Cassette Recorder Recording

When using a VCR-2 with a built-in TV tuner, it is possible to record a TV broadcast while watching it on the monitor.

1. Perform connections as shown in the System Connections diagram.
2. Receive the desired TV broadcast using the VCR-2.
3. Press the VCR-2 input selector [8].
4. Put the VCR-2 in the recording mode and switch on the monitor TV. During recording, the picture is sent to the monitor TV and sound to the speakers connected to the TX-108/88.
5. Refer to the video cassette recorder instruction manual for information concerning VCR-monitor TV and antenna connections.



—If the television has no video input terminal, make the connections as shown below:—



- The "A/B switch" may also be built-in the RF modulator.
- The VCR-1/VDP jack of the TX-108/88 is for playback, so use the VCR-2 jack.
- Use an unused television channel (channel 3 or 4 in the U.S.A.).

Using the Alternate Audio Key

This key is used to hear a different audio source during playback or recording of a video source (video tape or video disc).

• Alternate Audio Playback

Alternate audio playback is described in the VCR playback sections.

• Alternate Audio Duplicating

Use this mode to record an alternate audio source together with the picture from the original tape.

1. Place the original tape in VCR-1/VDP, press the VCR-1/VDP input selector [8] and start playback.
2. Set the alternate audio key to ON and press the input selector [8] of the desired source. The copy of the ori-

ginal tape will contain the original picture but the sound of the alternate audio source.

- Place a blank tape in VCR-2 and start recording.

● Playback and Recording of TV Picture and FM Sound

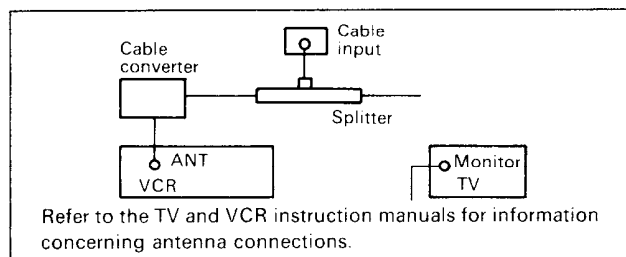
Recording of a TV broadcast and FM broadcast (simulcast) is possible when two VCRs are used.

- Receive the TV broadcast using the VCR-1 tuner.
- Press the VCR-1/VDP input selector [8].
- Set the alternate audio key to ON and press the TUNER input selector [8]. Then set the FM/AM selector switch [28] to the FM mode and tune in the FM simulcast using a preset key [26] or the tuning selectors [21]. The picture will be sent to the monitor TV and the FM stereo sound to the speakers connected to the TX-108/88.
- To record the TV picture and FM sound, use VCR-2. Receive the TV broadcast using VCR-1 and begin recording of VCR-2. The program can be monitored during recording.
- VCR-1/VDP is only for playback; there is no REC jack. Thus, connect only the VCR's output lead to VCR-1/VDP.

● CATV/FM Simulcast Reception

This function can also be used to receive or record an FM simulcast of a CATV program being received by the VCR and/or TV. In this case, however, a cable ready VCR (or TV) as well as a cable converter unit are necessary. Refer to the VCR, TV, cable converter and other instruction manuals for directions.

- Connect the VCR as shown in the System Connections diagram, the cable TV input and any other equipment.
- Receive the CATV signal through the VCR's tuner.
- Press the VCR-2 input selector [8].
- Set the alternate audio key to ON and press the TUNER input selector [8]. Then set the FM/AM selector switch [28] to the FM mode and tune in the FM simulcast using a preset key [26] or the tuning selectors [21]. The picture will be sent to the monitor TV and the FM stereo sound to the speakers connected to the TX-108/88.
- To record CATV program with the FM simulcast sound, use VCR-1 to receive the program and VCR-2 for recording.



Using the Remote Control Transmitter (RC-108X)

● Precautions

- Remove the batteries if the remote controller is not going to be used for a long time.
- This unit uses infrared light. Therefore, commands may not be received properly if the front panel of the TX-108/88 is exposed to a bright incandescent light, fluorescent light, sunlight or other powerful light rays. To prevent this from occurring, place the TX-108/88 so that it is not directly exposed to a bright light.
- The batteries of the remote control unit must be replaced periodically (see battery section). Remember, however, that commands will be received only when the main power switch of the TX-108/88 is on.

- The transmitter operates up to a distance of about five meters (16 feet). The transmitting window must always be pointed at the reception window when a command is sent to the receiver.
- If the TX-108/88 is placed inside an audio rack behind a glass door, the door should not use colored glass or have any decorations on it since this could shorten the range or prevent commands from being received.
- If this remote controller does not operate properly, confirm that system connections are correct and that the batteries are not dead. If the problem persists, contact your Onkyo dealer.

● Operation

- Place all TX-108/88 front panel controls in the standby mode.
- Switch the main power switch on and press the power key [36] of the remote controller to switch on system power to the TX-108/88. The remote controller can now be used.
- The volume (up/down) [38], Audio Muting [37], Input selectors (TUNER/PHONO/CD/TAPE-1/VCR-1, VDP/VCR-2) [39] and Tape Monitor (TAPE-2) [40] keys are used in the same manner as the corresponding front panel controls.

- Tuner Operation (DOWN-STATION-UP) [41] The tuner UP and DOWN keys are used to recall stations stored in the memory. Each time the UP or DOWN key is pressed, the next higher or lower memory channel is recalled. If either key is held down for more than one second each memory channel in ascending or descending order will be recalled for about five seconds (auto preset scan). To stop auto memory scan at a particular station, press the UP or DOWN tuner key one more time. Refer to the remote control section of the front panel facilities section for details.

- Tape Operation (II PAUSE/ ► PLAY / ● REC/ ■ STOP/ ◀◀ REW/ ▶▶ FF) [43]

These keys are used to control a remote control compatible cassette deck connected to the rear panel of the TX-108/88 as shown in the system connections diagram.

- STOP: Press to stop playback or recording.
- ◀◀ REW: Press to rewind the tape.
- ▶ FF: Press to wind a tape rapidly forward.
- REC: While hold this key down, press the PLAY key to start recording. Recording will not start if the REC button is pressed after the PLAY button. The PLAY button should be pressed less than one second after the REC button to start recording.
- II PAUSE: Press to temporarily halt tape travel. To put the deck in the REC/PAUSE mode, first press the REC button and then the PAUSE button immediately afterward (within one second).

The basic function of all tape operation buttons is the same as the corresponding front panel controls on the deck. Refer to the deck instruction manual for additional information.

- Phono Operation (PLAY/REJECT) This key is used to control a remote control compatible turntable connected to the rear panel of the TX-108/88 as shown in the system connections diagram. The function of the PLAY/REJECT key alternates between play (start) and reject (stop) each time this key is pressed. Refer to the turntable instruction manual for additional information.

- CD Operation (**II** PAUSE/ **▶** PLAY/ **■** STOP/ **◀◀** JUMP/ **▶▶** JUMP) 44

II PAUSE:

Press this key to briefly interrupt disc play. If this key is pressed while a track is being accessed after pressing the UP or DOWN key the player will switch to the pause mode after the pickup has moved to the specified track, index or point. To resume disc play, press the PLAY key.

▶ PLAY:

Press this key to begin disc play. If there is no disc in the tray, the tray will open when this key is pressed.

■ STOP:

Press this key to stop disc play.

◀◀ JUMP:

Press during disc play to return to the beginning of the current tack. Press twice to return to the beginning of the previous track, three times for the track before that, and so on.

▶▶ JUMP:

Press during disk play to advance to the beginning of one of the following tracks. The number of times this key is pressed determined how many tracks are skipper.

Refer to the CD player instruction manual for additional information.

TROUBLE-SHOOTING GUIDE

NOTE:

If a problem occurs, first operate the unit using the front panel controls to confirm that it is not due to a malfunction (or worn out batteries) of the remote control transmitter.

Trouble	Cause	Remedy
No power.	<ul style="list-style-type: none"> ● AC fuse blown. ● System power switch is not depressed. 	<ul style="list-style-type: none"> ● Contact Onkyo dealer. ● Depress system power switch.
Power but no sound.	<ul style="list-style-type: none"> ● Tape monitor on. ● Bad connections. ● Amplifier protection circuitry has been activated. 	<ul style="list-style-type: none"> ● Switch to off. ● Check input leads, speaker leads, pin plugs, etc. ● Contact Onkyo dealer.
Hum, low frequency noise.	<ul style="list-style-type: none"> ● Poor or no input ground. ● Poor or no phono motor ground. 	<ul style="list-style-type: none"> ● Check outer conductor of input plugs. ● Check for proper ground connection.
Howling when the volume is turned up.	<ul style="list-style-type: none"> ● Turntable and speakers are too close together. 	<ul style="list-style-type: none"> ● Move them farther apart.
Rough or scratchy sound. High range is not clear.	<ul style="list-style-type: none"> ● Stylus of pick-up is worn. ● Stylus tip is dirty. ● Treble control too high. 	<ul style="list-style-type: none"> ● Replace. ● Clean. ● Turn treble control down.
Buzzing noise on AM (particularly conspicuous at night or with weak stations).	<ul style="list-style-type: none"> ● Noise from electrical apparatus such as fluorescent lamp. 	<ul style="list-style-type: none"> ● Move unit to different position. ● Set up outdoor AM antenna.
High pitched noise or buzzing noise on TV.	<ul style="list-style-type: none"> ● Noise from TV. 	<ul style="list-style-type: none"> ● Place the AM loop antenna as far as possible from the TV. ● Move unit away from TV set.
Crackling noise on AM and FM.	<ul style="list-style-type: none"> ● Noise caused by turning fluorescent lamp on and off. ● Noise from automobile ignition. 	<ul style="list-style-type: none"> ● Move antenna as far as possible from the fluorescent lamp. ● Install and FM outdoor antenna as far as possible from the road. ● Change the position or direction of the outdoor antenna.
FM Signal Strength Indicator and stereo indicators light but sound is distorted and separation is bad.	<ul style="list-style-type: none"> ● Station is too strong. ● Multiple reflection of the radio waves because of tall buildings or mountains. 	<ul style="list-style-type: none"> ● Change to T-shaped antenna. ● Use antenna which has better directivity and select a point where the distortion is least.
FM Signal Strength Indicator and stereo indicators flicker and hiss is heard on FM.	<ul style="list-style-type: none"> ● Station is too weak. ● Stereo FM broadcasts cover only about half the distance of an ordinary broadcast. 	<ul style="list-style-type: none"> ● Install an outdoor FM antenna. ● Change the position or direction of the outdoor antenna.
No station is recalled when a preset key is pressed.	<ul style="list-style-type: none"> ● The main power switch has not been turned on for a long time or the power cord has been unplugged for a long time. 	<ul style="list-style-type: none"> ● The memory contents are lost if the main power switch is not turned on a few times each month. Store all stations again and remember to turn the main power on a few times each month.
Front panel controls function but remote controller does not.	<ul style="list-style-type: none"> ● No batteries in remote controller. ● Batteries have worn out. 	<ul style="list-style-type: none"> ● Insert batteries. ● Replace batteries.

- Also refer to the respective instruction manuals of the video disc player, video cassette recorder, TV monitor, etc., being used.

SPECIFICATIONS

Specifications and features are subject to change without notice.

AMPLIFIER SECTION

	TX-108	TX-88
Power Output:	100 watts per channel, min. RMS, at 8 ohms, both channels driven, from 20Hz to 20kHz, with no more than 0.02% THD.	80 watts per channel, min. RMS, at 8 ohms, both channels driven, from 20Hz to 20kHz, with no more than 0.025% THD.
Total Harmonic Distortion:	0.02% at rated power	0.025% at rated power
IM Distortion:	0.02% at rated power	0.025% at rated power
Damping Factor:	50 at 8 ohms	50 at 8 ohms
Frequency Response:	20 - 30,000 Hz \pm 1dB	20 - 30,000 Hz \pm 1dB
RIAA Deviation:	20 - 20,000 Hz \pm 0.5dB	20 - 20,000 Hz \pm 0.5dB
Sensitivity and Impedance:	Phono (MM): 2.5mV/50 kohms Phono (MC): 350 μ V/330 ohms CD/Tape Play: 150mV/50 kohms Tape Rec: 150mV/3.3 kohms	Phono: 2.5mV/50 kohms CD/Tape Play: 150mV/50 kohms Tape Rec: 150mV/3.3 kohms
Phono Overload (MM):	180mV RMS at 1kHz, 0.02% THD	180mV RMS at 1kHz, 0.025% THD
Signal-to-Noise Ratio:	Phono (MM): 93dB (at 10mV input, A weighted) 76dB (IHF A-202) Phono (MC): 88dB (at 5mV input, A weighted) 67dB (IHF A-202) CD/Tape: 98dB (A weighted) 80dB (IHF A-202)	Phono: 93dB (at 10mV input, A weighted) 76dB (IHF A-202) CD/Tape: 98dB (A weighted) 80dB (IHF A-202)
Tone Controls:	Bass: \pm 8dB at 70Hz Treble: \pm 8dB at 20kHz	Bass: \pm 8dB at 70Hz Treble: \pm 8dB at 20kHz
Loudness (-30dB):	+6dB at 70Hz, +5dB at 20kHz	+6dB at 70Hz, +5dB at 20kHz
Muting:	-20dB	-20dB

TUNER SECTION

FM:

Tuning Range:	87.9 - 107.9MHz (200kHz steps) and/or 87.5 - 108.0MHz (50KHz steps)	87.9 - 107.9MHz (200kHz steps) and/or 87.5 - 108.0MHz (50KHz steps)
Usable Sensitivity:	Mono: 10.3dBf, 1.8 μ V Stereo: 17.2dBf, 4.0 μ V	Mono: 10.8dBf, 1.9 μ V Stereo: 17.2dBf, 4.0 μ V
50dB Quieting Sensitivity:	Mono: 14.7dBf, 3.0 μ V Stereo: 37.2dBf, 40 μ V	Mono: 17.2dBf, 4.0 μ V Stereo: 37.2dBf, 40 μ V
Capture Ratio:	1.3dB	1.5dB
Image Rejection Ratio:	45dB	45dB
IF Rejection Ratio:	90dB	90dB
Signal-to-Noise Ratio:	Mono: 76dB Stereo: 70dB	Mono: 73dB Stereo: 67dB
Alternate Channel Attenuation:	55dB	55dB
AM Suppression Ratio:	55dB	50dB
Harmonic Distortion:	Mono: 0.10% Stereo: 0.18%	Mono: 0.10% Stereo: 0.20%
Frequency Response:	30 - 15,000Hz \pm 1.5dB	30 - 15,000Hz \pm 1.5dB
Stereo Separation:	45dB at 1kHz / 30dB at 100 - 10,000Hz	45dB at 1kHz / 30dB at 100 - 10,000Hz
Tuning Level (Hi/Lo):	27.2dBf, 13 μ V/17.2dBf, 4 μ V	27.2dBf, 13 μ V/17.2dBf, 4 μ V

AM:

Tuning Range:	530 - 1620kHz (10kHz steps) and/or 522 - 1611KHz (9KHz steps)	530 - 1620kHz (10kHz steps) and/or 522 - 1611KHz (9KHz steps)
Usable Sensitivity:	30 μ V	30 μ V
Image Rejection Ratio:	40dB	40dB
IF Rejection Ratio:	40dB	40dB
Signal-to-Noise Ratio:	40dB	40dB
Harmonic Distortion:	0.7%	0.7%

GENERAL

Power Supply:		
USA & Canadian models	AC120V, 60Hz	AC120V, 60Hz
World wide model	120 and 220V switchable, 50/60Hz	120 and 220V switchable, 50/60Hz
Dimensions (W x H x D):	480 x 147 x 460 mm 18-7/8" x 5-2/3" x 18-1/8"	450 x 147 x 460 mm 17-3/4" x 5-2/3" x 18-1/8"
Weight:	15 kg., 33.0 lbs.	12.5 kg., 27.5 lbs.

Remote Control transmitter RC-108X

Transmitter:	Infrared
Signal range:	Approx. 5 meters 16ft. 4"
Power supply:	Two "AA" batteries (1.5V x 2)
Dimentions (W x H x D):	55 x 19 x 167 mm 2-1/8" x 3/4" x 6-5/8"
Weight:	120 grams 4.2 oz. (including batteries)

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