
harman/kardon
Service Manual

TU 970II/230

FM/AM/DAB Tuner


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Technical Specifications

FM Section

Frequency Range	87.50 MHz to 108.00 MHz (50 kHz steps)
Signal-to-Noise Ratio	65 dB (Mono) 60 dB (Stereo)
Presets	30

AM Section

Frequency Rang	522 kHz to 1620 kHz (9 kHz steps)
Signal-to-Noise Ratio	35 dB
Presets	30

DAB Section

RF Section	Band III, 174 MHz - 240 MHz Band L, 1452 MHz - 1492 MHz Input: 50 Ohm, nominal Max signal: -3 dBm typ Sensitivity: -96 dBm typ Adjacent Channel Rejection: 35dB typ
Display	2 line by 16 character DOT Matrix
Presets	99
Audio Output	Stereo, 2.5V P-P 48 kHz sample rate 16 bit sample resolution
Optical S/PDIF	IEC60958 Compliant 48 kHz sample rate 24 bit sample resolution

General

Power Requirement	230-240 V AC, 50 Hz
Power Consumption	12 W 3 W (standby)

Dimension (Max)

Width	442 mm
Height	63 mm
Depth	299 mm
Weight	3.4 kg

Depth measurement includes knobs, buttons and terminal connections. Height measurement includes feet and chassis.

All features and specifications are subject to change without notice.

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Troubleshooting Guide

This unit is designed for trouble-free operation. Most problems users encounter are due to operating errors. If you have a problem, first check this list for a possible solution. If the problem persists, consult your authorized Harman Kardon Service Center.

If the problem is...	Make sure that the...
No lights appear when System Power button is pressed	Unit is plugged into a live outlet. Make sure the outlet is active.
No sound is heard	Tune to an active station. Check for correct amplifier settings. Check the connections and wires.
Sound distorts, particularly in stereo mode.	Use a more directional antenna.
Intermittent or continuous buzzing or hissing.	Place the unit farther away from these appliances. Install noise filters on the appliances.
Display says 'No stations Available'	Check that antenna is connected. Ensure that DAB coverage exists in your area.
Display has gone blank or says 'service off air'	This may occur if a broadcaster changes the label of a service or removes a label whilst you are listening to it. Try to retune to this station, using the Autotune procedure.

Front Panel Controls



- 1** Power Indicator
- 2** System Power Control
- 3** Band selector
- 4** Function/FM Mode Selector

- 5** Info/RDS Button
- 6** Auto Tune Button
- 7** Information Display
- 8** Dimmer

- 9** Memory
- 10** Control Ring
- 11** Select
- 12** Remote Control Sensor

1 Power Indicator: This LED will illuminate in amber when the unit is in the Standby mode to signal that the unit is ready to be turned on. When the unit is in operation, the indicator will turn blue.

2 System Power Control: Press this button to turn on the TU 970 II; press it again to turn the unit off (to Standby). Note that the **Power Indicator 1** next to the switch will turn blue when the unit is on.

3 Band Selector: Press this button to change between the DAB, FM and AM frequency bands.

4 Function/FM Mode Selector: In DAB mode, pressing this button will activate station order, preset tune, Dynamic Rate Control or manual tune features. In FM mode, press this button to select the stereo or mono mode for FM tuning. In the stereo mode, the word **STEREO** will be shown in the **Information Display 7**, and stereo reception will be provided when stations are transmitting stereo signals. In the mono mode, the left and right signals from stereo broadcasts will be mixed together and reproduced through all channels. Select **MONO** for better reception of weak signals.

5 Info/RDS Button: In DAB mode, pressing this button will change the content of the lower display line of the Information Display as shown on page 9, as well as signal error rate and software version. In RDS mode, it will change between the different RDS options.

6 Auto Tune Button: In DAB mode, press this button to automatically scan all available stations.

7 Information Display: This dual line display delivers messages and status indications to help you operate the tuner.

8 Dimmer: Press this button to dim the front panel display. The first press of the button will dim the displays to one-half normal brightness; the next press will turn back to normal brightness. The display will return to normal brightness the next time the unit is turned on.

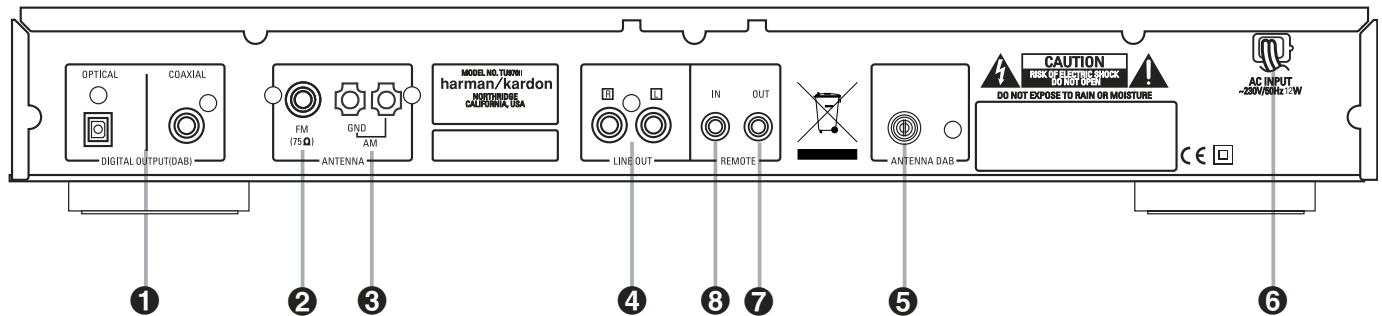
9 Memory Button: Press this button to open the memory position that stores a preset location in the tuner. 99 DAB presets can be stored, as well as 30 FM and 30 AM presets. (See page 9 for more information on tuner presets.)

10 Control Ring: Turn counterclockwise to tune lower frequency stations and clockwise to tune higher frequency stations. When a station with a strong signal is tuned, the **Information Display 7** will read **TUNE D**. Turn again to tune to the next frequency increment in **Manual Tune Mode**, or automatically to the next station with a signal strong enough for acceptable reception in **Auto Tune Mode**. The ring also controls the parameters in the different menus.

11 Select: In FM or AM mode, press this button to select Auto Tune, Manual Tune or Preset Tune. In DAB mode, press this button to select the displayed station.

12 Remote Sensor Window: The sensor behind this window receives infrared signals from the remote control. Aim the remote at this area and do not block or cover it unless an external remote sensor is installed.

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- ❶ Optical and Coaxial Digital Outputs
- ❷ FM Antenna
- ❸ AM Antenna
- ❹ Analog Audio Outputs
- ❺ DAB Antenna

- ❻ AC Power Cord
- ❼ Remote Control Output
- ❽ Remote Control Input

❶ Optical and Coaxial Digital Outputs:

Connect one of these jacks to the optical or coaxial digital input of your pre amplifier or integrated amplifier, if available.

Note that these digital outputs only contain the digital signal from the DAB stations. For FM/AM reception, you will have to connect the analog outputs at all times.

❷ FM Antenna: Connect an indoor or external FM antenna to this terminal.

❸ AM Antenna: Connect the AM loop antenna supplied with the receiver to these terminals. If an external AM antenna is used, make connections to the **AM** and **GND** terminals in accordance with the instructions supplied with the antenna.

❹ Analog Audio Outputs: Connect these jacks to the tuner input of your pre amplifier or integrated amplifier for analog audio playback. Be certain to observe proper channel connections using the color-coded cables and connectors so that red connects right channels and white connects left channels.

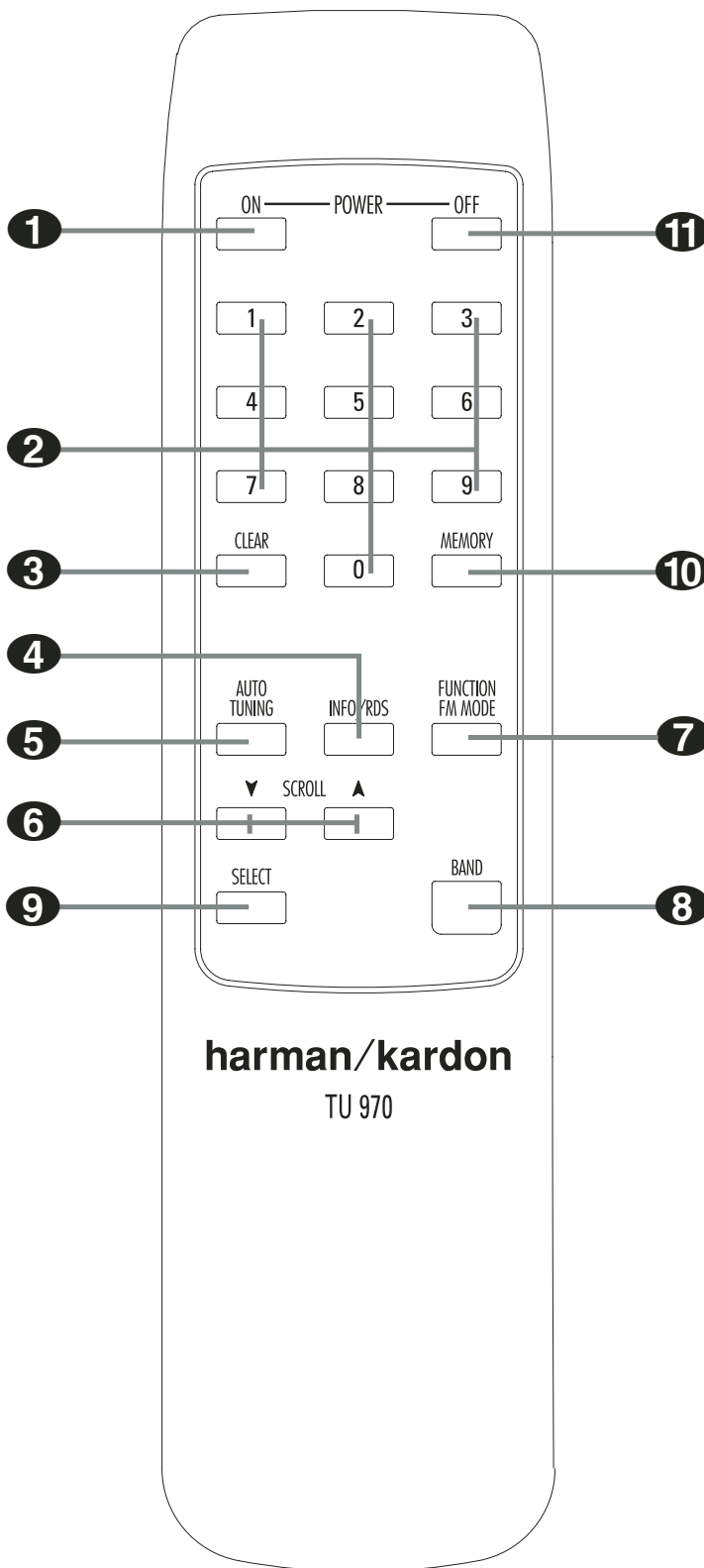
NOTE: Before making any audio connections, unplug all components of your audio system from their AC power outlets. To reduce the possibility of hum or noise in your system, place all audio interconnection cables away from both AC power cords and speaker wires.

❺ DAB Antenna: Connect a DAB antenna to this terminal.

❻ AC Power Cord: Connect this plug to an AC outlet. If the outlet is controlled by a switch, make certain that it is in the ON position.

❼ Remote Control Output: Connect this jack to the infrared (IR) input jack of another compatible Harman Kardon remote controlled product to have the built-in Remote Sensor on the tuner provide IR signals to other compatible products.

❽ Remote Control Input: Connect the output of a remote infrared sensor, or the remote control output of another compatible Harman Kardon product, to this jack. This will enable the remote control to operate even when the front panel Remote Sensor on the tuner is blocked. This jack may also be used with compatible IR remote control-based automation systems.



1 Standby/Power On: Press this button to turn on the TU 970 II. Note that the **Power Indicator 1** next to the switch will turn blue when the unit is on.

2 Numeric Keys: These buttons serve as a ten-button numeric keypad to enter tuner preset positions or to tune stations directly.

3 Clear Button: Press this button to clear presets from your station list.

4 Info/RDS Button: Pressing this button will change the content of the lower display line of the Information Display as well as signal error rate and software version. (See page 9 for more info).

5 Auto Tune Button: In DAB mode, press this button to automatically scan all available stations.

6 Scroll Buttons: Press ▼ to tune lower frequency stations and ▲ to tune higher frequency stations. When a station with a strong signal is tuned, the **Information Display 7** will read **TUNE D**. Press again briefly to tune to the next frequency increment in Manual Tune Mode, or keep pressed for automatic search for the next station with a signal strong enough for acceptable reception in **Auto Tune Mode**. These buttons also control the parameters in the different menus, like the **Control Ring 10** on the front panel.

7 Function/FM Mode Selector: In **DAB mode**, pressing this button will activate station order, preset tune, Dynamic Rate Control or manual tune features. In FM mode, press this button to select the stereo or mono mode for FM tuning. In the stereo mode, the word **STEREO** will be shown in the **Information Display 7**, and stereo reception will be provided when stations are transmitting stereo signals. In the mono mode, the left and right signals from stereo broadcasts will be mixed together and reproduced through all channels. Select **MONO** for better reception of weak signals.

8 Band Selector: Press this button to change between the DAB, FM and AM frequency bands.

9 Select: In FM or AM mode, press this button to select Auto Tune, Manual Tune or Preset Tune.

10 Memory Button: Press this button to open the memory position that stores a preset location in the tuner. **99 DAB** presets can be stored, as well as 30 FM and 30 AM presets. (See page 9 for more information on tuner presets.)

11 Standby/Power Off: Press this button to turn the unit off (to Standby).

- 1** Standby/Power On
- 2** Numeric Keys
- 3** Clear Button
- 4** Info/RDS Button
- 5** Auto Tuning Button
- 6** Scroll Button
- 7** Function/FM Mode Selector
- 8** Band Selector
- 9** Select Button
- 10** Memory Button
- 11** Standby/Power Off

