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**harman/kardon**
**Service Manual**


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# 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.

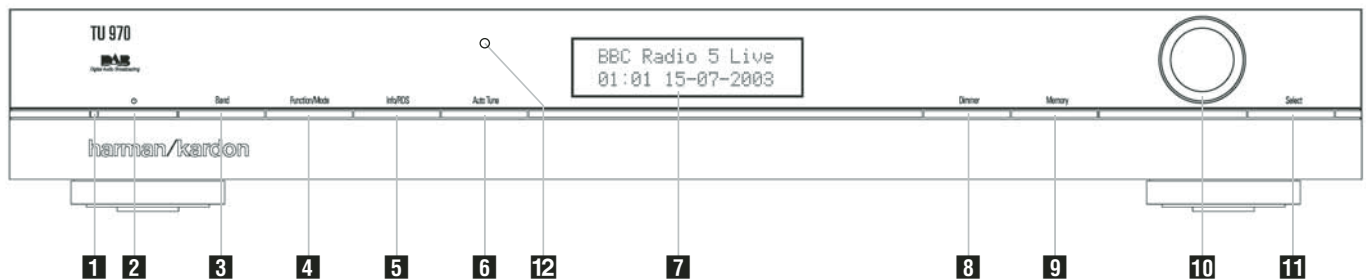
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## Troubleshooting Guide

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 <b>System Power</b> 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.

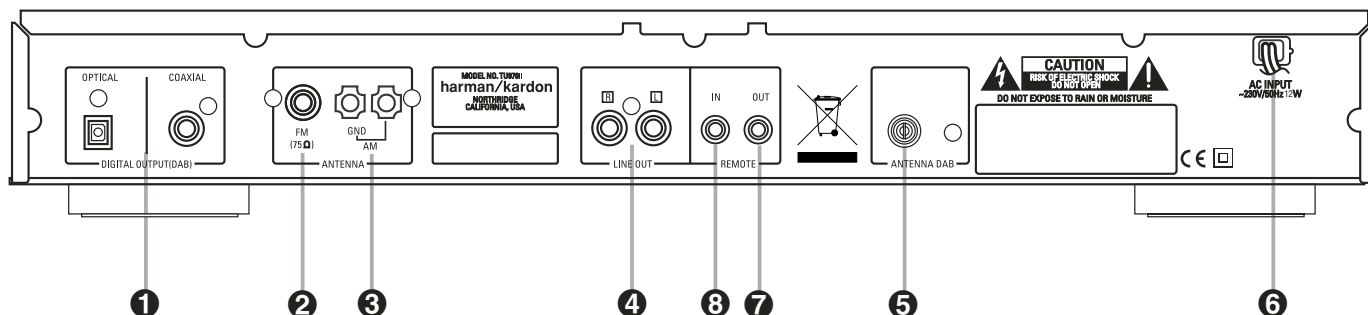
**9 Memory Button:** Press this button to open the memory position that stores a preset location in the tuner. 99 DAB presets can be stored, as well as 30 FM and 30 AM presets. (See page 9 for more information on tuner presets.)

**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.

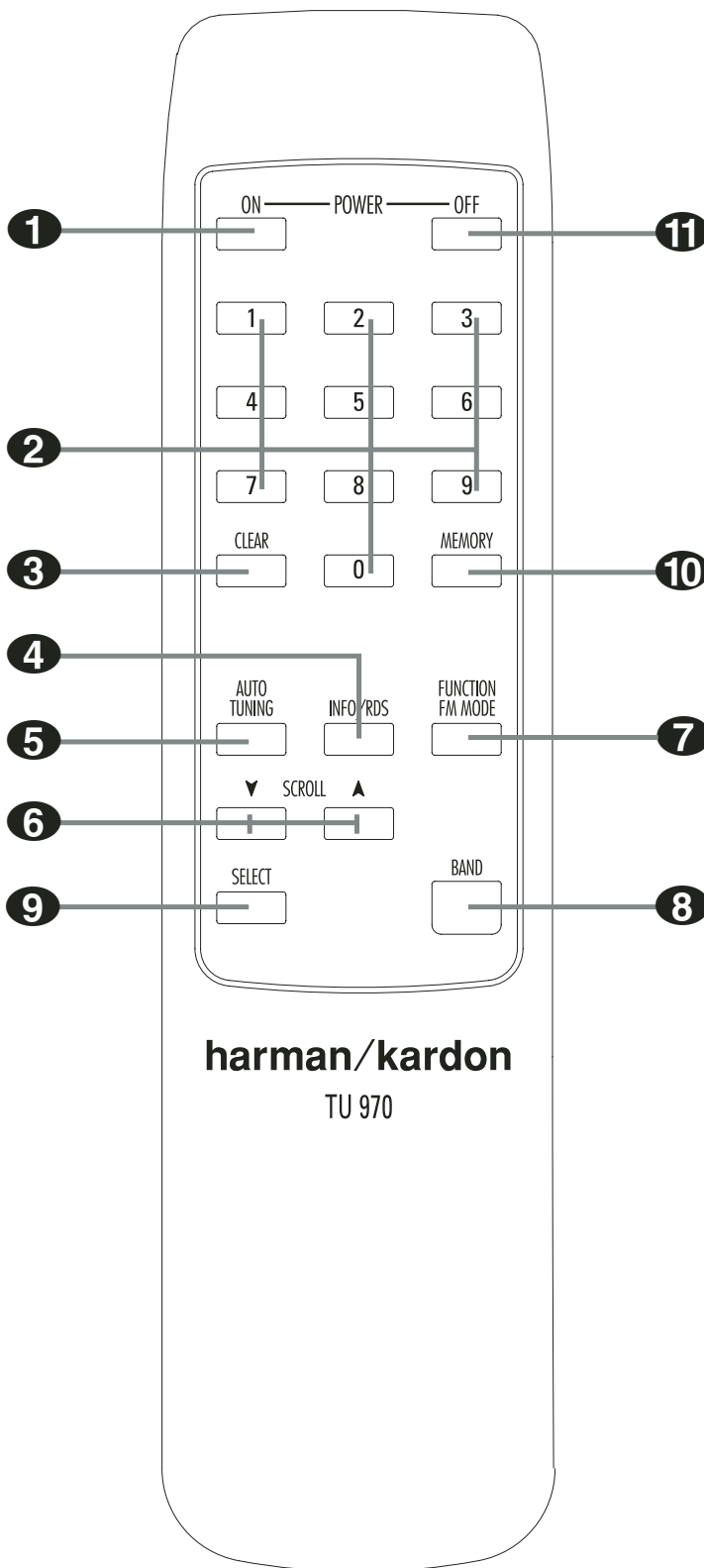
**NOTE:** Before making any audio connections, unplug all components of your audio system from their AC power outlets. To reduce the possibility of hum or noise in your system, place all audio interconnection cables away from both AC power cords and speaker wires.

**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.

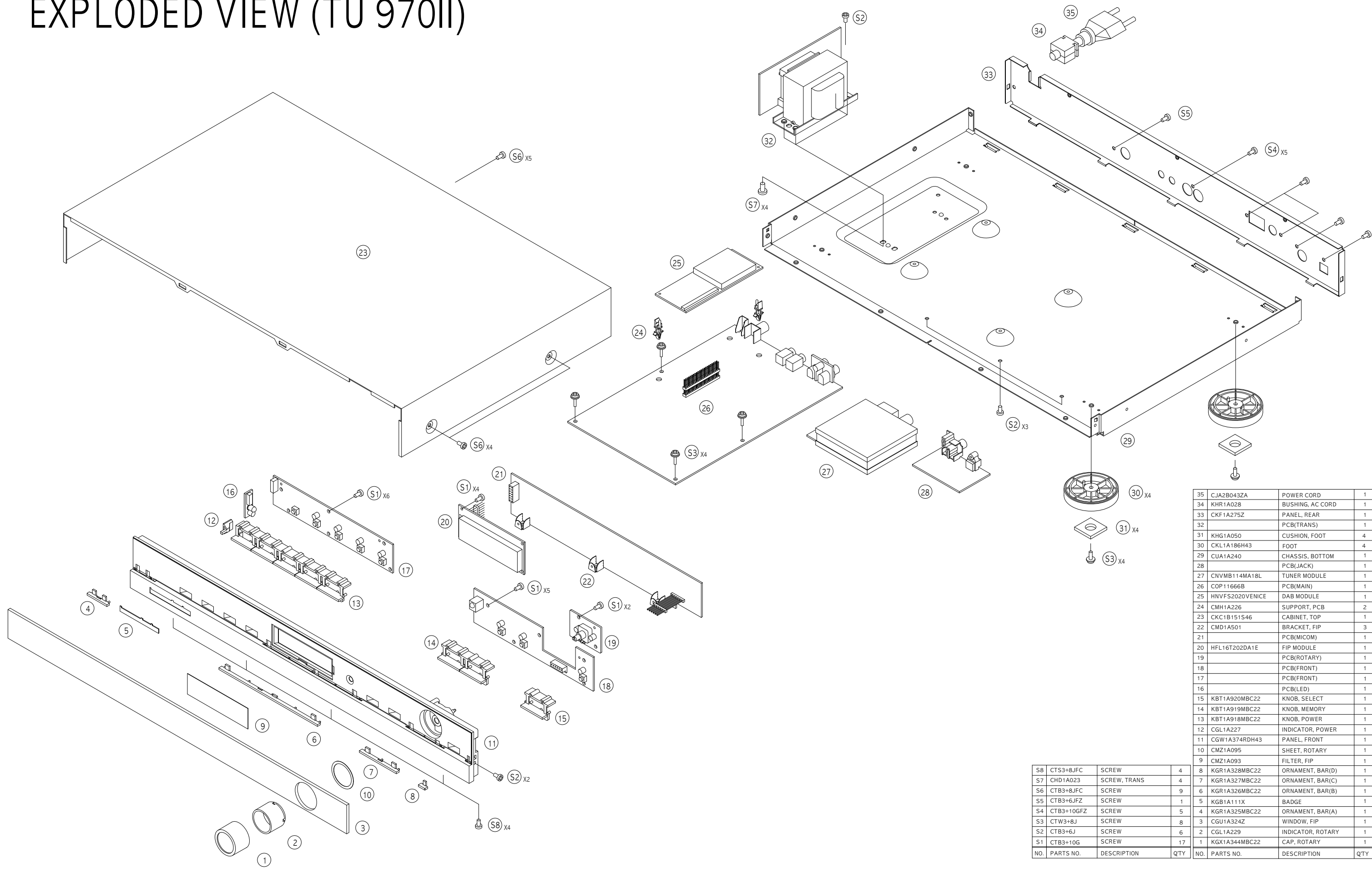
**9 Select:** In FM or AM mode, press this button to select Auto Tune, Manual Tune or Preset Tune.

**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

# EXPLODED VIEW (TU 970II)



35	CJA2B043ZA	POWER CORD	1
34	KHR1A028	BUSHING, AC CORD	1
33	CKF1A275Z	PANEL, REAR	1
32		PCB(TRANS)	1
31	KHG1A050	CUSHION, FOOT	4
30	CKL1A186H43	FOOT	4
29	CUA1A240	CHASSIS, BOTTOM	1
28		PCB(JACK)	1
27	CNVMB114MA18L	TUNER MODULE	1
26	COP11666B	PCB(MAIN)	1
25	HNVS2020VENICE	DAB MODULE	1
24	CMH1A226	SUPPORT, PCB	2
23	CKC1B151S46	CABINET, TOP	1
22	CMD1A501	BRACKET, FIP	3
21		PCB(MICOM)	1
20	HFL16T202DA1E	FIP MODULE	1
19		PCB(ROTARY)	1
18		PCB(FRONT)	1
17		PCB(FRONT)	1
16		PCB(LED)	1
15	KBT1A920MBC22	KNOB, SELECT	1
14	KBT1A919MBC22	KNOB, MEMORY	1
13	KBT1A918MBC22	KNOB, POWER	1
12	CGL1A227	INDICATOR, POWER	1
11	CGW1A374RDH43	PANEL, FRONT	1
10	CMZ1A095	SHEET, ROTARY	1
9	CMZ1A093	FILTER, FIP	1
8	KGR1A328MBC22	ORNAMENT, BAR(D)	1
7	KGR1A327MBC22	ORNAMENT, BAR(C)	1
6	KGR1A326MBC22	ORNAMENT, BAR(B)	1
5	KGB1A111X	BADGE	1
4	KGR1A325MBC22	ORNAMENT, BAR(A)	1
3	CGU1A324Z	WINDOW, FIP	1
2	CGL1A229	INDICATOR, ROTARY	1
1	KGX1A344MBC22	CAP, ROTARY	1
S8	CTS3+8JFC	SCREW	4
S7	CHD1A023	SCREW, TRANS	4
S6	CTB3+8JFC	SCREW	9
S5	CTB3+6JFZ	SCREW	1
S4	CTB3+10GFZ	SCREW	5
S3	CTW3+8J	SCREW	8
S2	CTB3+6J	SCREW	6
S1	CTB3+10G	SCREW	17
NO.	PARTS NO.	DESCRIPTION	QTY
NO.	PARTS NO.	DESCRIPTION	QTY

## TU 970II/230 FM/AM/DAB TUNER

POS	PART NUMBER	PART NAME	COMMENTS
	CHE154	CLAMPER , ARM	
	CQXTU970II/230	INSTRUCTION MANUAL ASS'Y	
	CARTTU970II	REMOCON , TRANSMITER ASS'Y	
	CJS4M009X	CORD, PIN	CORD, PIN
	CJS4N014Z	CORD , PIN	
	CJS9D002Z	CORD , JACK(MONO) 1200MM	
	CQX1A1145Z	MANUAL, INSTRUCTION	
	CGL1A229	INDICATOR, ROTARY	
	CGWTU970II/230	FRONT PANEL ASS'Y	
	CBT1A918MBG27	KNOB, POWER	
	CBT1A919MBG27	KNOB, MEMORY	
	CBT1A920MBG27	KNOB, SELECT	
	CGL1A227	INDICATOR, POWER	
	CGU1A324X	WINDOW, FIP	
	CGU1A324X-1	WINDOW, FIP	
	CGW1A374RDH43	PANEL, FRONT	TU970
	CMZ1A093	FILTER, FIP	PVC 0.4T
	CMZ1A095	SHEET, ROTARY	
	CTB3+10GR	SCREW	
	CTW3+10GR	SCREW	
	CWC1C4A23B160B	CABLE , CARD	
	HFL16T202DA1E	VFD , MODULE	16T202DA1E
FIP1	KJP14TT152ZY	PIN HEADER (2.54MM)	
	CGX1A344MBG27	CAP, ROTARY	
	CHG1A113	RUBBER	
	CHR301	CLAMPER	
	BKC1C151S46	SHEET , CABINET(296X560)	ALKOR 40211
	CUATU970II/230	BOTTOM CHASSIS ASS'Y	
	CHD1A023R	SCREW , SPECIAL	
	CMH1A226	SUPPORT , PCB	
	CNE1A009	NUT, DAB	M3/8X32
	CNVFS2022V131C	MODULE , DUAL DAB	FS2022-0101-0005
	CNVMB114MA18L	TUNER MODULE(EUR)	
	CNW1A038	WASHER	9.5X15
	COP11923B	PCB , ASS'Y	
	CIP11923B	PCB , AUTO ASS'Y	
	CUP11923Z	PCB , MAIN	
C101	CCEA1CH471T	CAP , ELECT	470UF 16V
C104	CCFT1H223ZF	CAP, CERAMIC	22000UF 50V
C201	CCEA1AH471T	CAP , ELECT	470UF 10V
C202	CCFT1H223ZF	CAP, CERAMIC	22000UF 50V
C203	CCEA1AH471T	CAP , ELECT	470UF 10V
C204	CCFT1H223ZF	CAP, CERAMIC	22000UF 50V
C205	CCEA1HH4R7T	CAP , ELECT	4.7UF 50V
C206	CCCT1H220JC	CAP , CERAMIC	22UF 50V
C207	CCFT1H223ZF	CAP, CERAMIC	22000UF 50V
C208	CCEA1AH101T	CAP , ELECT	100UF 10V
C209	CCEA1HH4R7T	CAP , ELECT	4.7UF 50V
C210	CCFT1H223ZF	CAP, CERAMIC	22000UF 50V
C211	CCEA1AH101T	CAP , ELECT	100UF 10V
C212	CCEA1HH4R7T	CAP , ELECT	4.7UF 50V
C213	CCCT1H220JC	CAP , CERAMIC	22UF 50V



POS	PART NUMBER	PART NAME	COMMENTS
C214	CCFT1H223ZF	CAP, CERAMIC	22000UF 50V
C215	CCEA1AH101T	CAP, ELECT	100UF 10V
C216	CCEA1HH4R7T	CAP, ELECT	4.7UF 50V
C217	CCEA1AH101T	CAP, ELECT	100UF 10V
C218	CCFT1H223ZF	CAP, CERAMIC	22000UF 50V
C219	CCEA1HH4R7T	CAP, ELECT	4.7UF 50V
C220	CCEA1HH4R7T	CAP, ELECT	4.7UF 50V
C221	HCQI1H152JZT	CAP, MYLAR	1500UF 50V
C222	HCQI1H152JZT	CAP, MYLAR	1500UF 50V
C223	CCEA1HH4R7T	CAP, ELECT	4.7UF 50V
C224	CCEA1HH4R7T	CAP, ELECT	4.7UF 50V
C225	CCFT1H103ZF	CAP, CERAMIC	10000UF 50V
C226	CCKT1H102KB	CAP, CERAMIC	1000UF 50V
C228	CCEA1HH4R7T	CAP, ELECT	4.7UF 50V
C229	CCEA1AH101T	CAP, ELECT	100UF 10V
C230	CCEA1CH470T	CAP, ELECT	47UF 16V
C231	CCFT1H104ZF	CAP, SEMICONDUCTOR	100nF 50V
C234	CCCT1H330JC	CAP, CERAMIC	33UF 50V
C235	CCEA1AH101T	CAP, ELECT	100UF 10V
C701	CCEA1AH471T	CAP, ELECT	470UF 10V
C702	CCCT1H330JC	CAP, CERAMIC	33UF 50V
C703	CCCT1H330JC	CAP, CERAMIC	33UF 50V
C704	CCFT1H223ZF	CAP, CERAMIC	22000UF 50V
C705	CCKT1H221KB	CAP, CERAMIC	220UF 50V
C706	CCKT1H221KB	CAP, CERAMIC	220UF 50V
C707	CCEA1AH101T	CAP, ELECT	100UF 10V
C708	CCFT1H223ZF	CAP, CERAMIC	22000UF 50V
C709	CCKT1H221KB	CAP, CERAMIC	220UF 50V
C710	CCKT1H221KB	CAP, CERAMIC	220UF 50V
C711	CCKT1H221KB	CAP, CERAMIC	220UF 50V
C714	CCEA1AH101T	CAP, ELECT	100UF 10V
C715	CCFT1H223ZF	CAP, CERAMIC	22000UF 50V
C716	CCEA1AH471T	CAP, ELECT	470UF 10V
C717	CCFT1H223ZF	CAP, CERAMIC	22000UF 50V
C718	CCKT1H101KB	CAP, CERAMIC	100UF 50V
C719	CCKT1H101KB	CAP, CERAMIC	100UF 50V
C720	CCKT1H101KB	CAP, CERAMIC	100UF 50V
C721	CCKT1H101KB	CAP, CERAMIC	100UF 50V
C722	CCKT1H101KB	CAP, CERAMIC	100UF 50V
C723	CCKT1H101KB	CAP, CERAMIC	100UF 50V
C724	CCFT1H223ZF	CAP, CERAMIC	22000UF 50V
C726	CCEA1CH470T	CAP, ELECT	47UF 16V
C727	CCFT1H223ZF	CAP, CERAMIC	22000UF 50V
C901	CCFT1H223ZF	CAP, CERAMIC	22000UF 50V
C902	CCFT1H223ZF	CAP, CERAMIC	22000UF 50V
C903	CCFT1H223ZF	CAP, CERAMIC	22000UF 50V
C904	CCFT1H223ZF	CAP, CERAMIC	22000UF 50V
C905	CCEA1HH220T	CAP, ELECT	22UF 50V
C906	CCFT1H223ZF	CAP, CERAMIC	22000UF 50V
C908	CCEA1AH101T	CAP, ELECT	100UF 10V
C909	CCFT1H223ZF	CAP, CERAMIC	22000UF 50V
C910	CCEA1CH101T	CAP, ELECT	100UF 16V
C911	CCFT1H223ZF	CAP, CERAMIC	22000UF 50V

POS	PART NUMBER	PART NAME	COMMENTS
C914	CCEA1AH101T	CAP , ELECT	100UF 10V
C915	CCFT1H223ZF	CAP, CERAMIC	22000UF 50V
C916	CCEA1AH101T	CAP , ELECT	100UF 10V
C917	CCFT1H223ZF	CAP, CERAMIC	22000UF 50V
C918	CCEA1AH101T	CAP , ELECT	100UF 10V
C919	CCFT1H223ZF	CAP, CERAMIC	22000UF 50V
C920	CCEA1AH101T	CAP , ELECT	100UF 10V
C921	CCFT1H223ZF	CAP, CERAMIC	22000UF 50V
C922	CCEA1AH101T	CAP , ELECT	100UF 10V
C923	CCFT1H223ZF	CAP, CERAMIC	22000UF 50V
C924	CCEA1CH471T	CAP , ELECT	470UF 16V
C925	CCFT1H223ZF	CAP, CERAMIC	22000UF 50V
C926	CCEA1AH101T	CAP , ELECT	100UF 10V
C927	CCFT1H223ZF	CAP, CERAMIC	22000UF 50V
C928	CCEA1AH470T	CAP , ELECT	47UF 10V
C929	CCFT1H223ZF	CAP, CERAMIC	22000UF 50V
D201	CVDZJ3.3BT	DIODE , ZENER	ZJ3.3B 1/2W
D202	CVD1SS133MT	DIODE	1SS133
D702	CVD1SS133MT	DIODE	1SS133
D703	CVD1SS133MT	DIODE	1SS133
D706	CVD1SS133MT	DIODE	1SS133
D707	CVD1SS133MT	DIODE	1SS133
D708	CVD1SS133MT	DIODE	1SS133
D719	CVD1SS133MT	DIODE	1SS133
D720	CVD1SS133MT	DIODE	1SS133
D901	CVD1N4003ST	RECT , DIODE	1N4003
D902	CVD1N4003ST	RECT , DIODE	1N4003
D903	CVD1N4003ST	RECT , DIODE	1N4003
D904	CVD1N4003ST	RECT , DIODE	1N4003
D905	CVD1N4003ST	RECT , DIODE	1N4003
D906	CVD1SS133MT	DIODE	1SS133
D907	CVDZJ4.7BT	DIODE , ZENER	ZJ4.7B 1/2W
D908	CVD1N4003ST	RECT , DIODE	1N4003
D909	CVD1N4003ST	RECT , DIODE	1N4003
D910	CVDZJ6.2BT	DIODE , ZENER	ZJ6.2B 1/2W
D911	CVDZJ6.2BT	DIODE , ZENER	ZJ6.2B 1/2W
D912	CVD1N4003ST	RECT , DIODE	1N4003
D913	CVD1SS133MT	DIODE	1SS133
F901	KJCF5S	HOLDER , FUSE	
IC72	HVIRE5VL28CATZ	IC , RESET	
Q201	HVTKTC2874BT	T.R , MUTE	KTC2874B
Q202	HVTKTC2874BT	T.R , MUTE	KTC2874B
Q203	HVTKRA107MT	T.R	KRA107M
Q204	HVTKRC107MT	T.R	KRC107M
Q205	HVTKRA107MT	T.R	KRA107M
Q701	HVTKRA107MT	T.R	KRA107M
Q702	HVTKRA107MT	T.R	KRA107M
Q703	HVTKRA107MT	T.R	KRA107M
Q704	HVTKRA107MT	T.R	KRA107M
Q705	HVTKRA107MT	T.R	KRA107M
Q709	HVTKRC102MT	T.R	KRC102M
Q710	HVTKRC107MT	T.R	KRC107M
Q711	HVTKRC102MT	T.R	KRC102M

POS	PART NUMBER	PART NAME	COMMENTS
Q712	HVTKSA1175YT	T.R	KSA1175Y(DEAD)
Q713	HVTKSC2785YT	T.R	KSC2785Y
Q905	HVTKTC3198YT	T.R	KTC3198Y
Q906	HVTKTA1266YT	T.R	TKTA1266YT
R101	CRD25TJ4R7T	RES , CARBON	
R104	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R105	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R201	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R203	CRD20TJ473T	RES , CARBON	47K OHM 1/5W J
R205	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R206	CRD20TJ151T	RES , CARBON	150 OHM 1/5W J
R207	CRD20TJ151T	RES , CARBON	150 OHM 1/5W J
R208	CRD20TJ473T	RES , CARBON	47K OHM 1/5W J
R209	CRD20TJ473T	RES , CARBON	47K OHM 1/5W J
R210	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R212	CRD20TJ151T	RES , CARBON	150 OHM 1/5W J
R213	CRD20TJ473T	RES , CARBON	47K OHM 1/5W J
R214	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R215	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R216	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R217	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R218	CRD20TJ151T	RES , CARBON	150 OHM 1/5W J
R219	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R220	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R221	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R222	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R223	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R224	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R225	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R226	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R227	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R228	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R229	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R230	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R231	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R232	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R233	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R234	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R235	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R236	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J
R237	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R238	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J
R239	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J
R240	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R241	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R243	CRD20TJ100T	RES , CARBON	10 OHM 1/5W J
R245	CRD20TJ271T	RES , CARBON	270 OHM 1/5W J
R246	CRD20TJ470T	RES , CARBON	47 OHM 1/5W J
R247	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R248	CRD20TJ332T	RES , CARBON	3.3K OHM 1/5W J
R249	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J
R250	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R704	CRD20TJ470T	RES , CARBON	47 OHM 1/5W J

POS	PART NUMBER	PART NAME	COMMENTS
R705	CRD20TJ332T	RES , CARBON	3.3K OHM 1/5W J
R706	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R707	CRD20TJ470T	RES , CARBON	47 OHM 1/5W J
R711	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R712	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R713	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R718	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R719	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R720	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R721	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R722	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R723	CRD20TJ182T	RES , CARBON	1.8K OHM 1/5W J
R724	CRD20TJ272T	RES , CARBON	2.7K OHM 1/5W J
R725	CRD20TJ332T	RES , CARBON	3.3K OHM 1/5W J
R726	CRD20TJ562T	RES , CARBON	5.6K OHM 1/5W J
R727	CRD20TJ752T	RES , CARBON	7.5K OHM 1/5W J
R728	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R729	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R730	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R731	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R732	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R733	CRD20TJ105T	RES , CARBON	1M OHM 1/5W J
R734	CRD20TJ181T	RES , CARBON	180 OHM 1/5W J
R735	CRD20TJ471T	RES , CARBON	470 OHM 1/5W J
R736	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R739	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R740	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R741	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R742	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R743	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R744	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R901	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J
R902	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R903	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R904	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R905	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R906	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R907	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R912	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
S701	HST1A020ZT	SW , TACT	
S702	HST1A020ZT	SW , TACT	
S703	HST1A020ZT	SW , TACT	
S704	HST1A020ZT	SW , TACT	
S705	HST1A020ZT	SW , TACT	
S706	HST1A020ZT	SW , TACT	
S707	HST1A020ZT	SW , TACT	
S709	HST1A020ZT	SW , TACT	
BAT1	CAB30H3A3H	BATTERY , RECHARGEABLE	30H3A3H
BN21	CJP44TT153ZY	PIN , HEADER (2.00MM)	DAB2025
BN23	CWZTU970BN23	WIRE , SILED ASS'Y	
BN71	KJP14HA151ZY	PIN SOCKET (2.54MM)	
BN74	KJP06TT154ZY	PIN HEADER (2.54MM)	
BN75	CWB2B903090EN	WIRE ASS'Y	ADVD-6500

POS	PART NUMBER	PART NAME	COMMENTS
BN76	CWB2B904110EN	WIRE ASS'Y	
BN77	CWB1C902050EN	WIRE ASS'Y	
BN78	CWB2B907140EN	WIRE ASS'Y	
BN79	CJP05GB99ZY	WAFER ANGLE	
BN92	CWB1E907150BM	WIRE ASS'Y	
CN23	CJP03GB46ZY	WAFER , ANGLE , 3PIN	
CN72	CJP23GA115ZY	WAFER , CARD CABLE	
CN73	CJP06GB46ZY	WAFER , ANGLE , 6PIN	
CN74	CJP06HA37ZM	WAFER	
CN75	CJP03GA19ZM	WAFER	
CN76	CJP04GA19ZM	WAFER	
CN77	CJP02GA19ZM	WAFER	
CN78	CJP07GB46ZY	WAFER, ANGLE, 7PIN	
CN79	CJP05GA98ZM	WAFER	
CN91	CJP02KA060ZY	WAFER	
CN92	CJP07GA01ZY	WAFER, STRAIGHT, 7PIN	
C900	HCQE2E104KDE	CAP , LINE ACROSS	
C907	CCEA1CH103E	CAP , ELECT	
C912	CCEA1EH222E	CAP , ELECT	2200UF 25V
C913	CCEA1CH102E	CAP , ELECT	
C930	CCEA1CH682E	CAP , ELECT	
D701	CVD52CSBBCEAB2	BLUE L.E.D	
D709	CVD52CSBBCEAB2	BLUE L.E.D	
D711	CVD50BOGDWGA	L.E.D , 2 COLOR	
D718	CVD52CSBBCEAB2	BLUE L.E.D	
ET21	CMD1A387	BRACKET , PCB	
ET71	CMD1A501	BRACKET , FIP	
ET72	CMD1A501	BRACKET , FIP	
ET73	CMD1A501	BRACKET , FIP	
ET91	CNE75	PLATE , EARTH	
ET92	CNE75	PLATE , EARTH	
IC21	HVINJM2068MDTE1	I.C , OP AMP	NJM2068MD-TE1
IC22	HVI74HC4066D	I.C , SWITCHING(QUAD)	74HC4066D
IC23	HVI74HCU04AFNG	I.C , INVERTER	TC74HCU04AFNG(TOSHIB
IC24	BVIKP1010B	IC, PHOTO COUPLER	
IC71	HVIS3F84BB	I.C , FLASH U-COM	S3F84BB
IC91	HVIKA78R05ZA	I.C ASS'Y	
	CMY2A048	HEAT SINK	
	CTB3+8JR	SCREW	
	HVIKA78R05	REGULATOR (5V OUTPUT LOW DROP)	KA78R05TU
IC92	HVIKA78R05ZA	I.C ASS'Y	
	CMY2A048	HEAT SINK	
	CTB3+8JR	SCREW	
	HVIKA78R05	REGULATOR (5V OUTPUT LOW DROP)	KA78R05TU
IC93	HVIKA78R12ZA	I.C , ASS'Y	
	CMY2A048	HEAT SINK	
	CTB3+8JR	SCREW	
	HVIKA78R12	REGULATOR(12V OUTPUT LOW DROP)	KA78R12TU
IC94	HVILM1117S-3V3	I.C , REGULATOR (3.3V)	1117S-3.3V
JK21	CJJ4N063Z	JACK , BOARD	
JK22	HJSTOTX177L	MODULE , OPTICAL(TX)	TOTX177L
JK24	CJJ4M041Y	JACK , BOARD (COAX)	
JK25	CJJ2D008Z	JACK , STEREO	

POS	PART NUMBER	PART NAME	COMMENTS
JK26	CJJ2D008Z	JACK , STEREO	
JW71	CWE8202070RV	WIRE ASS'Y	
JW73	CWE8202070RV	WIRE ASS'Y	
RS71	HRVKSM603TH2	SENSOR IR	KSM-603TH2
S708	KST1A010Z	SW , TACT CN	
T901	CLT5M026YE	TRANS , POWER	
VE71	HSR2A028Z	VR , ENCODER	EC12B24S0034ZZZ
WF11	CJP17GA115ZY	WAFER , CARDCABLE	
WF72	CJP23GA115ZY	WAFER , CARD CABLE	
X701	HOX10000E220C	CRYSTAL	
	CQB1A644Z	LABEL , ORIGIN	
	CWC1C4A17B070B	CABLE , CARD	
	KHG1A050	RUBBER , CUSHION	
F901	KBA2C1000TLEZ	FUSE	

## IC71 FUNCTION (MI-COM S3F84BB)

Pin No.	PIN NAME	I/O	DESCRIPTION
1~8	FIP-DA	O	FIP Data output port
9	N.C	-	Non connection
10	SINO	I	UART Data input port
11	SOTO	O	UART Data output port
12	VDD1	I	Power supply port(+5V)
13	VSS1	I	GND
14	XTOUT	O	10MHz crystal connection port
15	XIN	I	
16	TEST	I	Back-up Input
17,18	N.C	-	Non connection
19	RESET	I	Reset input port("L")
20	N.C	-	Non connection
21	DAB_DIN	I	DAB Data input port
22	DAB_DOUT	O	DAB Data output port
23	DAB_CLK	O	DAB Clock control port("L")
24	FM/AM_MUTE	O	FM/AM MUTE control port("L")
25	PLL_DATA	O	PLL Data output port
26	PLL_CE	O	PLL Enable control port
27	PLL_CLK	O	PLL Clock control port
28	STEREO	I	Tuner module stereo control port
29	TUNED	I	Tuner module tuned control port
30	PLL_DIN	I	PLL Data input port
31	RDS_CLK	O	RDS Clock control port
32	RDS_DATA	I	RDS Data input port
33	BACK_UP	I	BACK-UP mode control port("L")
34	REMOTE_IN	I	Remote unit data input port
35~38	N.C	-	Non connection
39,40	GND	I	GND
41	SCROLL_UP	I	Scroll up control port
42	SCROLL_DN	I	Scroll down control port
43	VREF	I	A/D converter reference voltage
44	AVSS	I	GND
45	GND	I	
46	KEY3	I	
47	KEY2	I	
48	KEY1	I	KEY 1 control port
49~51	N.C	-	Non connection
52	VSS2	I	GND
53	VDD2	I	Power supply port(+5V)
54	SYSTEM_MUTE	O	System MUTE control port("L")
55	STAND_BY	O	Standby on control port("L")
56	FM/AM_ON	O	FM/AM on control port("L")
57	N.C	-	Non connection
58	POWER_ON	O	Unit turn on control port("L")
59~64	N.C	-	Non connection
65~68	OPTION	I	GND or OPEN
69~70	N.C	-	Non connection
71	OPTION	I	GND or OPEN
72~74	N.C	-	Non connection
75	OPTION	I	GND or OPEN
76~77	N.C	-	Non connection
78	RS_P	O	Register selection port
79	WRITE	O	Write enable port
80	READ	O	Read enable port

S3C84BB/F84BB

PRODUCT OVERVIEW

BLOCK DIAGRAM

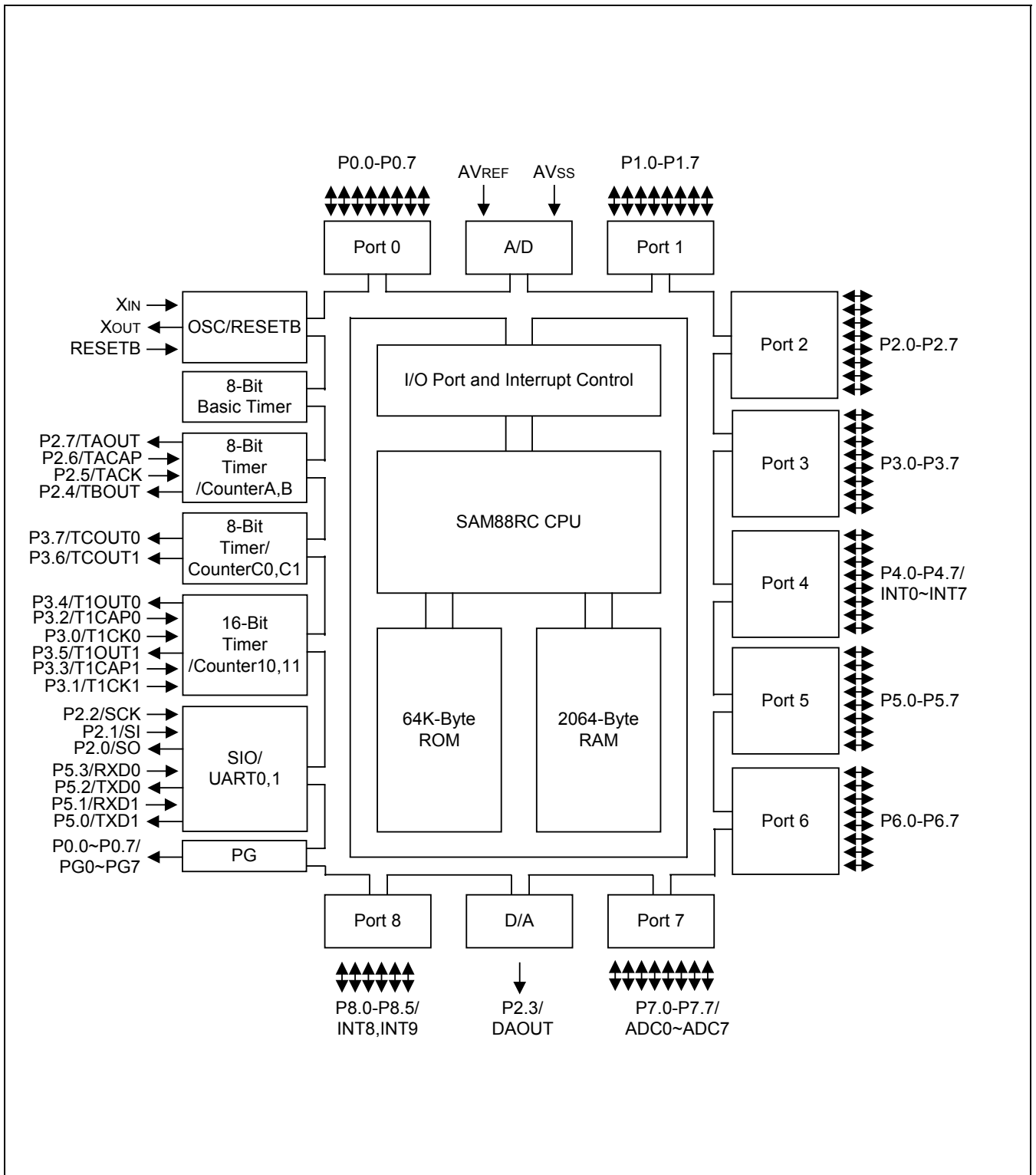


Figure 1-1. S3C84BB/F84BB Block Diagram





