

OUTLINE OF SYSTEM

KIC9309F-006 is a C-MOS LSI designed for FM/MW/LW radio of PLL frequency synthesizer system corresponded to the requirement of the whole world.

Since prescaler and LCD driver are built in addition to PLL and controller, the compact 3 band digital tuning system of high performance home stereo can be constructed.

RECEIVING BAND

AREA	CODE	BAND	RECEIVING BAND (Hz)	STEP (Hz)	REF (Hz)	IF (Hz)
	A2A1A0					
EUROPE	000 or 001	FM	87.50 ~ 108.0 M	50 k	50 k	+ 10.70 M
		MW	522 ~ 1620 k	9 k	9 k	+ 459 k / + 450 k
		LW	144 ~ 288 k	1 k	1 k	
			153 ~ 279 k			
LW	146 ~ 290 k					
USA 1	010	FM	87.5 ~ 108.1 M	200 k	50 k	+ 10.7 M
		MW	520 ~ 1720 k	10 k	10 k	+ 450 k
USA 2	011	FM	87.5 ~ 108.0 M	100 k	50 k	+ 10.7 M
		MW	520 ~ 1720 k	10 k	10 k	+ 450 k
LATIN AMERICA	100	FM	87.5 ~ 108.0 M	100 k	50 k	+ 10.7 M
		MW	520 ~ 1620 k	5 k	5 k	+ 450 k
AUSTRALIA/ MIDDLE AND NEAR EAST	101	FM	87.5 ~ 108.0 M	100 k	50 k	+ 10.7 M
		MW	531 ~ 1602 k	9 k	9 k	+ 450 k
JAPAN	110	FM	76.0 ~ 90.0 M	100 k	50 k	- 10.7 M
		MW	522 ~ 1629 k	9 k	9 k	+ 450 k
SOUTH AFRICA	111	FM	87.50 ~ 108.0 M	50 k	50 k	- 10.7 M
		MW	531 ~ 1602 k	9 k	9 k	+ 450 k

CODE="000" is 3 BAND version of Europe. CODE="001" is 2 BAND version of Europe.
LW band is decided by LW0, LW1 jumper.

OUTLINE OF FUNCTION

- TUNING FUNCTION
 - MANUAL TUNING (UP/DOWN)
 - AUTO TUNING (SEEK)
 - PRESET MEMORY SCAN

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- MEMORY FUNCTION

- FM1 / FM2 : MAX 20 STATIONS
 - MW : MAX 10 STATIONS
 - LW : MAX 10 STATIONS
 - RANDOM MEMORY : MAX 30 STATIONS
 - Each band have last memory.
-] MAX 40 STATIONS

- CLOCK FUNCTION

- 24 hour display in EUROPE
- 12 hour display in other area (with AM/PM indicator)
- TIMER ON/OFF (ONCE TIME TIMER / EVERY DAY TIMER)

- AUDIO CONTROL

- Electric volume control (KIC9176/77P)
- Function switch 6 inputs+tape monitor (KIC9164N)
- Function indicator (KIC9174P)
- Electric volume level display output (DC output)
- Motor volume control output
- Loudness control output and indicator
- -20 dB muting function

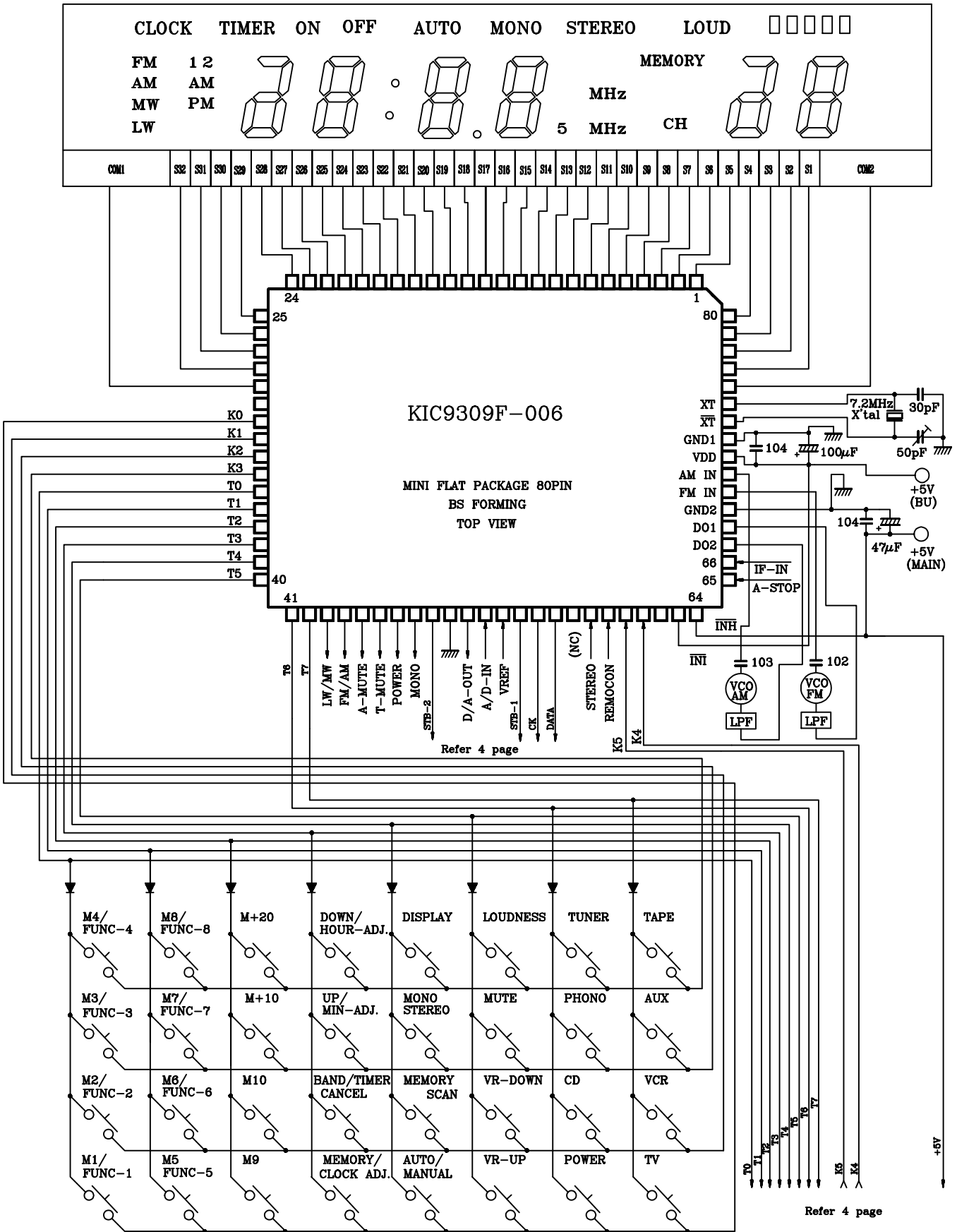
- REMOTE CONTROL FUNCTION

- 32 key remote control decoder (transmission KIC9243F)
- Remote control direct output except tuner mode (KIC9173P)

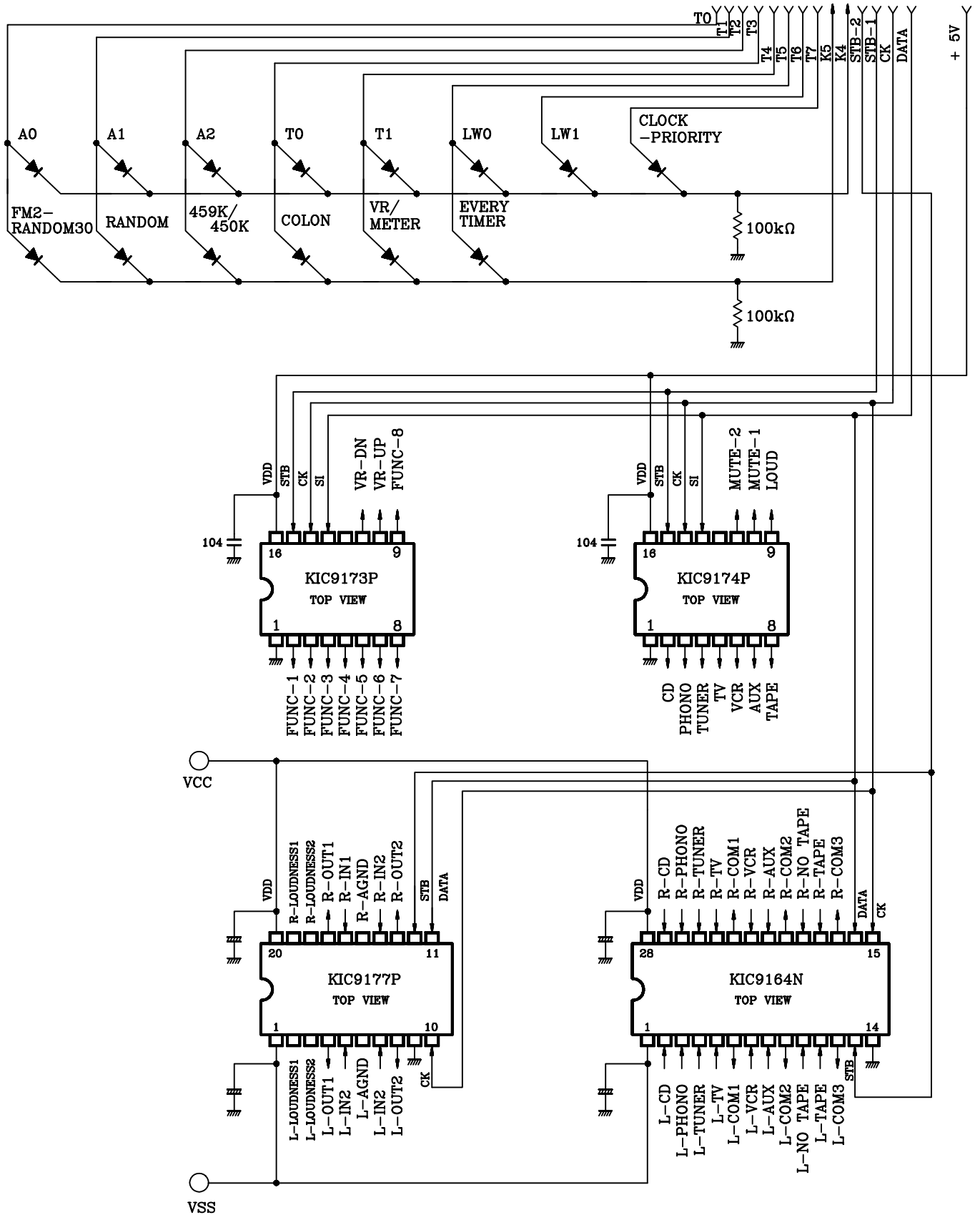
- OTHER FUNCTION

- Signal level indicator of receiving station (S-meter)
- Stereo indicator
- Monaural output and indicator
- Clock display priority
- Auto volume function
- Tracking data

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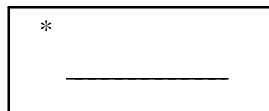
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KEY MAP

LABEL

K0	K1	K2	K3		K4	K5
M1	M2	M3	M4	T0	* A0	* FM2- RANDOM ₃₀
M5	M6	M7	M8	T1	* A1	* RANDOM
M9	M10	M+10	M+20	T2	* A2	* 459 k / 450 k
MEMORY / CLOCK ADJ.	BAND / TIMER CLEAR	UP / MIN ADJ.	DOWN / HOUR ADJ.	T3	* T0	* COLON
AUTO / MANUAL	MEMORY SCAN	MONO / STEREO	DISPLAY	T4	* T1	* METER / VR
VR-UP	VR-DOWN	MUTE	LOUDNESS	T5	* LW0	* EVERY TIMER
POWER	CD	PHONO	TUNER	T6	* LW1	
TV	VCR	AUX	TAPE	T7	* CLOCK PRIORITY	

ANNOTATION : aforesaid 32 keys can be controlled remote control.



This is the diode jumper.

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FUNCTION

SYMBOL	EXPLANATION OF FUNCTION
M1~M10	Calling and writing preset memory. (ch 1 ~ ch 10)
M+10	Calling and writing preset memory. (ch 11 ~ ch 20) by pushing with M1~M10 key.
M+20	Calling and writing preset memory. (ch 21 ~ ch 30) by pushing with M1~M10 key.
MEMORY (CLOCK -ADJUSTMENT)	When frequency is displayed, this key is use for setting of memory writing enable state. When clock is displayed, this key is used for setting of the clock adjusting enable state. Each enable state is cleared when the key is not pushed for 5 sec.
BAND / TIMER CLEAR	<p>Changing the receiving band cyclically. Every pushing of this key, the band is changed as shown below.</p> <div style="text-align: center;"> <pre> graph LR A[FM1] --> B["(FM2)"] B --> C[MW] C --> D[LW] D --> A </pre> </div> <p>When time of timer is displayed at power on, this key is used for to clear the timer.</p>
UP (MINUTE -ADJUSTMENT) DOWN (HOUR -ADJUSTMENT)	In radio mode, the receiving frequency steps up or down by pushing [UP] or [DOWN] key. The seek tuning is started by pushing this key in case that auto tuning is set. During clock adjusting enable state, the minute of the clock is adjusted by the [UP] key, while the hour is adjusted by the [DOWN] key.
AUTO / MANUAL	Changing manual tuning and auto tuning of the [UP/MINUTE-ADJUSTMENT] key and [DOWN/HOUR-ADJUSTMENT] key. When their key function is in auto tuning, "AUTO" mark is indicated.
MEMORY SCAN	The preset memory is called in order, and will be received for 5 sec. if it is station. During memory scan, the display of channel number is flashing.

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SYMBOL	EXPLANATION OF FUNCTION																																																															
DISPLAY	<p>Every pushing of this key, the display is changed as shown below.</p> <p>In case of clock enable (timer enable)</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> → frequency → clock → timer on → timer off ← </div> <p>In case of clock enable (timer disable)</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> → frequency → clock ← </div> <p>In case of clock disable, this key is invalid.</p>																																																															
MONO	Changing STEREO/MONO in FM band of radio mode. The MONO OUTPUT is "H" and the "MONO" mark on LCD is indicated, when MONO is selected.																																																															
VR-UP VR-DOWN	Controlling the electronic volume or motor volume. When METER/VR diode is not set, corresponding voltage to the level of KIC9176/77P is outputted from D/A converter.																																																															
MUTE	Used for ON/OFF of audio mute. When the mute on, "VOL" indicator is flashed and value of electronic volume is down 20 dB. At the muting, only [VR-UP] key is valid. In case jumper of METER/VR is set, this key is invalid.																																																															
LOUDNESS	Used for changing ON/OFF of LOUDNESS in radio, tape. The "LOUD" mark on LCD is indicated, when the LOUDNESS function is on.																																																															
POWER	Used for power ON/OFF.																																																															
CD PHONO TUNER TV VCR AUX	<p>Changing function. Switches of KIC9164N are shown below.</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 12.5%;">FUNCTION</th> <th>S1</th> <th>S2</th> <th>S3</th> <th>S4</th> <th>S5</th> <th>S6</th> <th>S7</th> <th>S8</th> </tr> </thead> <tbody> <tr> <td>CD</td> <td>○</td> <td>×</td> <td>×</td> <td>×</td> <td>×</td> <td>×</td> <td>○</td> <td>×</td> </tr> <tr> <td>PHONO</td> <td>×</td> <td>○</td> <td>×</td> <td>×</td> <td>×</td> <td>×</td> <td>○</td> <td>×</td> </tr> <tr> <td>TUNER</td> <td>×</td> <td>×</td> <td>○</td> <td>×</td> <td>×</td> <td>×</td> <td>○</td> <td>×</td> </tr> <tr> <td>TV</td> <td>×</td> <td>×</td> <td>×</td> <td>○</td> <td>×</td> <td>×</td> <td>○</td> <td>×</td> </tr> <tr> <td>VCR</td> <td>×</td> <td>×</td> <td>×</td> <td>×</td> <td>○</td> <td>×</td> <td>○</td> <td>×</td> </tr> <tr> <td>AUX</td> <td>×</td> <td>×</td> <td>×</td> <td>×</td> <td>×</td> <td>○</td> <td>○</td> <td>×</td> </tr> </tbody> </table> <p>○ : ON × : OFF</p>	FUNCTION	S1	S2	S3	S4	S5	S6	S7	S8	CD	○	×	×	×	×	×	○	×	PHONO	×	○	×	×	×	×	○	×	TUNER	×	×	○	×	×	×	○	×	TV	×	×	×	○	×	×	○	×	VCR	×	×	×	×	○	×	○	×	AUX	×	×	×	×	×	○	○	×
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SYMBOL	EXPLANATION OF FUNCTION																									
TAPE	Used for tape monitor ON/OFF. In case tape monitor is ON, S7 is OFF and S8 is ON of KIC9164N.																									
* A0 A1 A2	Setting the area of receiving station <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">A2, A1, A0 = 000 : Europe(3bands)</td> <td style="width: 50%;">001 : Europe (2bands)</td> </tr> <tr> <td>010 : USA 1</td> <td>011 : USA 2</td> </tr> <tr> <td>100 : Latin America</td> <td>101 : Australia, Middle and Near East</td> </tr> <tr> <td>110 : Japan</td> <td>111 : South Africa</td> </tr> </table>	A2, A1, A0 = 000 : Europe(3bands)	001 : Europe (2bands)	010 : USA 1	011 : USA 2	100 : Latin America	101 : Australia, Middle and Near East	110 : Japan	111 : South Africa																	
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* T 0 T 1	Setting the clock and the timer <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>TO</th> <th>T1</th> <th>clock</th> <th>The display of clock during power is off.</th> <th>timer</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>×</td> <td>×</td> <td>×</td> </tr> <tr> <td>1</td> <td>0</td> <td>○</td> <td>×</td> <td>×</td> </tr> <tr> <td>0</td> <td>1</td> <td>○</td> <td>○</td> <td>×</td> </tr> <tr> <td>1</td> <td>1</td> <td>○</td> <td>○</td> <td>○</td> </tr> </tbody> </table> <p style="text-align: center;">○ : There is function × : There is not function.</p>	TO	T1	clock	The display of clock during power is off.	timer	0	0	×	×	×	1	0	○	×	×	0	1	○	○	×	1	1	○	○	○
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0	0	×	×	×																						
1	0	○	×	×																						
0	1	○	○	×																						
1	1	○	○	○																						
* FM 2 - RANDOM 30	Setting the number of the memory The diode is set. : fixed memory : FM1/FM2 each band have 10 memories random memory : FM is only 1 band. 30 memories The diode no set. : fixed memory : FM is only 1 band. each band have 10 memories random memory : FM is only 1 band. 20 memories																									
* RANDOM	Setting the method of memory The diode set. : random memory The diode not set. : fixed memory																									
* 450 k / 459 k	Changing IF of AM band only valid in the Europe area (A2/A1/A0 = "000" or "001") The diode set. : AM IF = 459 kHz The diode not set. : = 450 kHz																									
* COLON	Setting flashing colon of clock The diode set. : no flash The diode not set : flash at 1Hz rate																									

* : DIODE JUMPER

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SYMBOL	EXPLANATION OF FUNCTION															
* METER / VR	Setting the display of the S-meter/Volume level The diode set : display : S-meter PIN52 : S-meter input (A/D-IN) The diode no set : display : volume level PIN51 : volume level out (D/A OUT)															
* LW 0 LW 1	setting the receiving band of the LW band. <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">LW 1</th> <th style="width: 10%;">LW 0</th> <th style="width: 80%;">RECEIVING BAND</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">146 ~ 290 kHz</td> </tr> <tr> <td style="text-align: center;">0</td> <td style="text-align: center;">1</td> <td style="text-align: center;">144 ~ 288 kHz</td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">0</td> <td style="text-align: center;">153 ~ 279 kHz</td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> <td style="text-align: center;">146 ~ 290 kHz</td> </tr> </tbody> </table> 1 : The diode set. 0 : The diode no set.	LW 1	LW 0	RECEIVING BAND	0	0	146 ~ 290 kHz	0	1	144 ~ 288 kHz	1	0	153 ~ 279 kHz	1	1	146 ~ 290 kHz
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* CLOCK PRIORITY	Setting the priority of the clock display in except the tuner mode. The diode set. : clock display The diode not set. : frequency display															
* EVERY TIMER	Setting the once/every timer The switch on. : every timer The switch off : once timer															

* : DIODE JUMPER

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I/O PORTS

PORT	NO.	NAME	I/O	FUNCTION	ACTIVE	INIT.
IN 1	66	IF-IN	IN	INTERMEDIATE FREQUENCY INPUT : The intermediate frequency (FM=10.7MHz, MW/LW=450kHz or 459kHz) is inputted through the condenser.	-	-
IN 2	65	A-STOP		AUTO STOP SIGNAL INPUT : The signal of detected station is input from IF-IC to this pin.	H	
P1-1	61	K4		KEY SCAN RETURN INPUT : These are input ports for extending of key matrix.	-	
P1-2	60	K5				
P1-3	59	REMOCON		REMOCON INPUT : This terminal is inputting the sio data of the remocon.	-	
P1-4	58	STEREO		INDICATING STEREO INPUT : "H" : "STEREO" is indicated "L" : "STEREO" is not indicated (when the MONO output is "H", "STEREO" will not be indicated) This is only valid in FM band.	H	
P2-1	57	GND		RESERVE INPUT connect the GND.	-	
P2-2	56	DATA		OUT	OPTION IC control OUTPUT : DATA : The serial data is outputted. CK : The serial clock is outputted. STB-1 : The strobe pulse is outputted. (for KIC9173/KIC9174P)	
P2-3	55	CK				
P2-4	54	STB-1				
P3-1	53	V _{REF}	IN	REFERENCE VOLTAGE INPUT	-	-
P3-2	52	A/D-IN		A/D CONVERTER OF DETECTING THE FIELD STRENGTH of a SIGNAL : This terminal is inputted with S-meter signal from the IF DETECTION-IC for displaying the field strength level of station.		
P3-3	51	D/A-OUT	OUT	ELECTRONIC VOLUME LEVEL OUTPUT (D/A OUTPUT) : The DC voltage is outputted to display the electronic volume level. (KIC7612P, etc)	-	-
P4-1	50	NC		RESERVE OUTPUT no connect		
P4-2	49	STB 2		OPTION IC CONTROL OUTPUT : The strobe pulse is outputted. (for KIC9164AN/KIC9176, KIC9177P)		

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PORT	NO.	NAME	I/O	FUNCTION	ACTIVE	INIT.												
P4-3	48	MONO	OUT	MONO / STEREO OUTPUT : When the mono is selected, this pin is set to "H" and all stations are treated as monaural.	H	L												
P4-4	47	POWER		POWER ON/OFF CONTROL OUTPUT POWER ON : "H", POWER OFF : "L"														
OT-1	46	TUNER MUTE		The mute output for tuner.														
OT-2	45	AUDIO MUTE		The mute output for AUDIO.														
OT-3	44	FM / AM		BAND OUTPUT	-	H												
OT-4	43	LW / MW				L												
				<table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">PORT</th> <th style="width: 15%;">FM</th> <th style="width: 15%;">MW</th> <th style="width: 15%;">LW</th> </tr> </thead> <tbody> <tr> <td>FM / AM</td> <td style="text-align: center;">"H"</td> <td style="text-align: center;">"L"</td> <td style="text-align: center;">"L"</td> </tr> <tr> <td>LW / MW</td> <td style="text-align: center;">"L"</td> <td style="text-align: center;">"L"</td> <td style="text-align: center;">"H"</td> </tr> </tbody> </table>	PORT	FM	MW	LW	FM / AM	"H"	"L"	"L"	LW / MW	"L"	"L"	"H"		
PORT	FM	MW	LW															
FM / AM	"H"	"L"	"L"															
LW / MW	"L"	"L"	"H"															

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KIC9174P EXTENDING OUTPUT PORTS

PORT	NO.	NAME	I/O	FUNCTION	ACTIVE	INIT.																																																	
OP-1	2	CD	OUT	The output for the display of function : The output that correspond to the function is outputted. ○ : L × : HZ	L	HZ																																																	
OP-2	3	PHONO			L	HZ																																																	
OP-3	4	TUNER		<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>FUNCTION</th> <th>S1</th> <th>S2</th> <th>S3</th> <th>S4</th> <th>S5</th> <th>S6</th> </tr> </thead> <tbody> <tr> <td>C D</td> <td>○</td> <td>×</td> <td>×</td> <td>×</td> <td>×</td> <td>×</td> </tr> <tr> <td>PHONO</td> <td>×</td> <td>○</td> <td>×</td> <td>×</td> <td>×</td> <td>×</td> </tr> <tr> <td>TUNER</td> <td>×</td> <td>×</td> <td>○</td> <td>×</td> <td>×</td> <td>×</td> </tr> <tr> <td>T V</td> <td>×</td> <td>×</td> <td>×</td> <td>○</td> <td>×</td> <td>×</td> </tr> <tr> <td>VCR</td> <td>×</td> <td>×</td> <td>×</td> <td>×</td> <td>○</td> <td>×</td> </tr> <tr> <td>AUX</td> <td>×</td> <td>×</td> <td>×</td> <td>×</td> <td>×</td> <td>○</td> </tr> </tbody> </table>	FUNCTION	S1	S2	S3	S4	S5	S6	C D	○	×	×	×	×	×	PHONO	×	○	×	×	×	×	TUNER	×	×	○	×	×	×	T V	×	×	×	○	×	×	VCR	×	×	×	×	○	×	AUX	×	×	×	×	×	○	L	L
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OP-4	5	TV	L	HZ																																																			
OP-5	6	VCR	L	HZ																																																			
OP-6	7	AUX	L	HZ																																																			
OP-7	8	TAPE	OUT	The output for the display of tape monitor.	L	HZ																																																	
OP-8	9	LOUDNESS	OUT	The output for the display of loudness	L	HZ																																																	
OP-9	10	MUTE-1	OUT	The output for the display of the "20dB" muting MUTE-1 : "L" MUTE-2 : flashing at 1 Hz rate.	L	HZ																																																	
OP-10	11	MUTE-2			L	HZ																																																	

HZ : HIGH IMPEDANCE

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PORT	NO.	NAME	I/O	FUNCTION	ACTIVE	INIT.
I/O-1	2	FUNC-1	OUT	The output for the function of remocon. The output that correspond to the keys is outputted, when the [M1/FUNC8]~[M8/FUNC8] key on the transmitter was pushed in except the tuner mode.	L	HZ
I/O-2	3	FUNC-2			L	HZ
I/O-3	4	FUNC-3			L	HZ
I/O-4	5	FUNC-4			L	HZ
I/O-5	6	FUNC-5			L	HZ
I/O-6	7	FUNC-6			L	HZ
I/O-7	8	FUNC-7			L	HZ
I/O-8	9	FUNC-8			L	HZ
I/O-9	10	VR-UP		VOLUME UP/DOWN OUTPUT	L	HZ
I/O-10	11	VR-DOWN		The output that correspond to up/down of the volume is outputted.	L	HZ

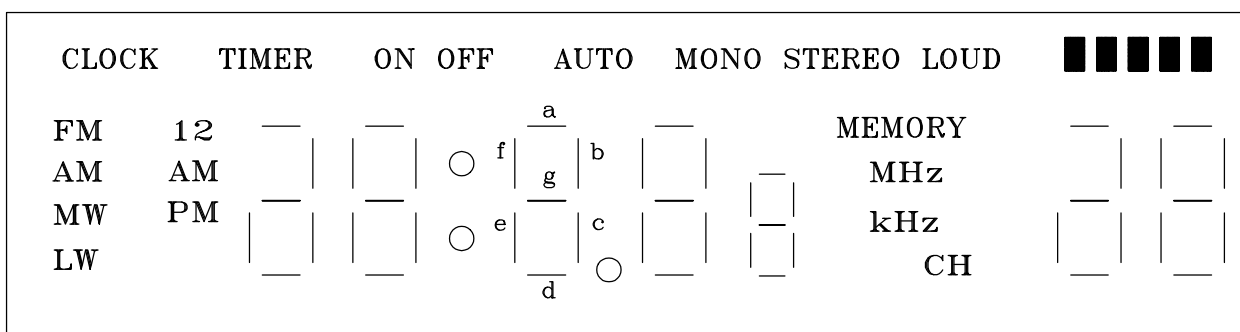
HZ : HIGH IMPEDANCE

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LCD map

SYMBOL	PIN NO.	SEGMENT NAME		FUNCTION
		COM1	COM2	
COM 1	29	COM 1	-	COMMON 1
S 32	28	CLOCK	TIMER	CLOCK : CLOCK MODE
S 31	27	FM	1	TIMER : TIMER MODE
S 30	26	AM	2	FM : FM BAND
S 29	25	MW	AM	MW : MW BAND
S 28	24	LW	PM	(In case of there in no LW band.)
S 27	23	ON	1 adeg	AM : MW BAND
S 26	22	1b	1c	(In case of there is LW band.)
S 25	21	2f	2b	LW : LW BAND
S 24	20	2e	2g	ON : ON TIME OF TIMER MODE.
S 23	19	2d	2c	1,2 : MEMORY BANK (FM1/2)
S 22	18	:	2a	AM : AM/PM of CLOCK
S 21	17	AUTO	OFF	PM : AM/PM of CLOCK
S 20	16	3f	3b	":": : COLON of CLOCK
S 19	15	3e	3g	AUTO : AUTO SEARCH
S 18	14	3d	3c	1g-a : 23:55/108.05
S 17	13	MONO	3a	2g-a : 23:55/108.05
S 16	12	4f	4b	OFF : OFF TIME of TIMER MODE.
S 15	11	4e	4g	3g-a : 23:55/108.05
S 14	10	4d	4c	MONO : MONAURAL
S 13	9	5be	4a	4g-a : 23:55/108.05
S 12	8	5 acdf	5g	5g-a : 108.05
S 11	7	MEMORY	MHz, "."	MEMORY : MEMORY STORE STATE
S 10	6	kHz	CH	MHz, "." : MHz, FM dot
S 9	5	STEREO	LOUD	kHz : kHz
S 8	4	6e	6 adg	CH : CHANNEL
S 7	3	6b	6c	STEREO : STEREO STATION
S 6	2	7f	7b	LOUD : LOUDNESS
S 5	1	7e	7g	6g-a : CH 10
S 4	80	7d	7c	7g-a : CH 10
S 3	79	V5	7a	V1~V5 : VOLUME
S 2	78	V3	V4	S-METER LEVEL
S 1	77	V1	V2	
COM 2	76	-	COM 2	COMMON 2

LCD ARRANGEMENT FIGURE



THE EXPLANATION OF FUNCTIONS

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BAND CHANGE

1. PRINCIPAL FUNCTION

changing the receiving band

2. KEY AND I/O PORT TO BE USED

[BAND/TIMER CLEAR] key, FM2-RANDOM 30 jumper, FM/AM OUTPUT, LW/MW OUTPUT

3. FUNCTIONS

a. Every pushing the [BAND] key, the receiving band is changed cyclically.
The order of changing the band is as shown below.

- In case of A0, A1, A2 = 0,0,0



- Other case



b. The FM band has 2 memory bank in case that the FM2-RANDOM30 jumper is set.
But, in this case, the FM BAND has only 1 memory bank when the random jumper is set.

c. The FM/AM OUTPUT and The LW/MW OUTPUT are as shown below.

PORT	FM	MW(AM)	LW
FM/AM	H	L	L
LW/MW	L	L	H

d. The "FM" mark and the "MHz" mark are indicated when the receiving band is FM.
The "MW" mark and the "kHz" mark are indicated when the receiving band is AM.
The "LW" mark and the "kHz" mark are indicated when the receiving band is LW.

e. The tuner mute is "H" for 1 sec. when the receiving band is changed.

MANUAL TUNING

1. PRINCIPAL FUNCTION

The 1 step / 1 push and continuous tuning by pushing the [UP/MIN-ADJ.] or [DOWN/HOUR-ADJ.] key.

2. KEY TO BE USED

[UP/MIN-ADJ.] key, [DOWN/HOUR-ADJ.] key, [AUTO/MANUAL] key.

3. FUNCTIONS

- a. The manual mode and the auto mode is changed cyclically by pushing the [AUTO/MANUAL] key. The manual mode is set by pushing this key.
- b. The 1 step/1push tuning is executed by pushing the [UP/MIN-ADJ.] or [DOWN/HOUR-ADJ.] key for less than 500mS.
- c. When the [UP/MIN-ADJ.] key or [DOWN/HOUR-ADJ.] key is pushed for more than 500mS, the continuous tuning is started. If that key is released, the continuous tuning stop.
- d. The tuning method is the saw tooth wave form method, and when the frequency reached the band edge, it goes to the opposite side and the continuous tuning is stopped for 500mS.
- e. The speed of running in the continuous tuning is 50mS / step.

SEEK TUNING

1. PRINCIPAL FUNCTION

The seek tuning by pushing the [UP/MIN-ADJ.] or [DOWN/HOUR-ADJ.] key.

2. KEY TO BE USED

[UP/MIN-ADJ.] key, [DOWN/HOUR-ADJ.] key, [AUTO/MANUAL] key.

3. FUNCTIONS

- a. The auto mode and the manual mode is changed cyclically by pushing [AUTO/MANUAL] key.
The auto mode is set by pushing this key and the "AUTO" mark is indicated in the auto mode.
- b. The seek tuning is started by pushing the [UP/MIN-ADJ.] or the [DOWN/MIN-ADJ.] key in the auto mode.
- c. The seek tuning is stopped, if the stop signal is detected on the A-STOP INPUT or the intermediate frequency is counted by the IF counter.
- d. When the [UP/MIN-ADJ.] key or the [DOWN/HOUR-ADJ.] key is pushed continuous, the seek tuning is not stopped if the station can be received.
- e. The tuning method is the saw tooth wave form method, and when the receiving frequency reached the band edge, it goes to the opposite side and the continuous tuning is held for 500 mS.
- f. The speed of the seek tuning is 50mS/step.

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AUTO STOP and IF COUNTER

1. PRINCIPAL FUNCTION

Detecting A-STOP signal or Counting IF

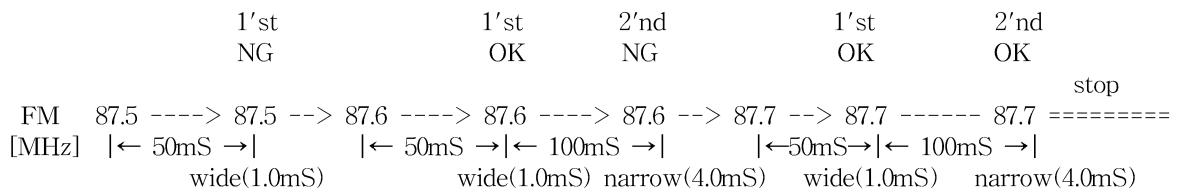
2. I/O TO BE USED

IF-IN INPUT, A-STOP INPUT

3. FUNCTIONS

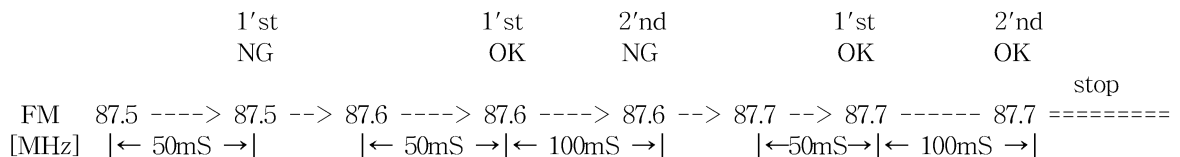
- a. The intermediate frequency (IF) is counted and the auto stop signal is detected, as condition of stopping for the seek/scan tuning and the memory scan.
- b. It is judged to be station when the stop signal is detected in the method as shown below on the A-STOP INPUT or the IF-IN INPUT.
- c. The IF is inputted on IF-IN INPUT, and counted.
If the IF counted is in wide range, after 100mS the IF is counted on same receiving frequency again.
If the IF counted is in narrow range, it is judged to be the station.

In case of IF check



- d. The auto stop signal is inputted on the A-STOP INPUT.
If the A-STOP INPUT is "H", after 100mS the auto stop signal is detected on same receiving frequency again. If the A-STOP is "H" again, it is judged to be station.

In case of IF check



e. Setting value of IF check

BAND	REFERENCE FREQUENCY (Hz)	First Counting (WIDE)		Second Counting (NARROW)	
		DETECTED WIDTH (Hz)	GATE TIME (mS)	DETECTED WIDTH (Hz)	GATE TIME (mS)
MW	9 k	450k ± 12.0k (459k ± 12.0k)	4.0	450k ± 3.0k (459k ± 3.0k)	16.0
	10 k				
FM	50 k	10.7M ± 60k	1.0	10.7M ± 15k	4.0
LW	1 k	450k ± 2.4k (459k ± 2.4k)	4.0	450k ± 0.6k (459k ± 0.6k)	16.0

() : In case the jumper of the 459k/ 450k is set.

PRESET MEMORY

1. PRINCIPAL FUNCTION

Calling and writing in the preset memory.

2. KEY TO BE USED

[M1]~[M10] key, [M+10] key, [M+20] key, [M+20] key, [MEMORY/CLOCK-ADJUSTMENT] key, RANDOM jumper, FM2-RANDOM30 jumper.

3. FUNCTIONS

a. In case the RANDOM jumper is set, there are maximum 20 stations for FM band, each 10 stations for MW band and LW band.

In case the RANDOM jumper is not set, there are maximum 30 stations.

b. The preset memory method is set by the random jumper.

In case the random jumper is set, it is in the random memory method.

In case the random jumper is not set, it is in the fixed memory method.

c. In case the FM2-RANDOM30 jumper is set in the fixed memory method, there are two memory banks of FM band.

In case the FM2-RANDOM30 jumper is not set, there is only one memory bank. One memory bank have 10 memories in the fixed memory method.

d. In case the FM2-RANDOM30 jumper is set in the random memory method, the number of memory is 30.

In case the FM2-RANDOM30 jumper is not set, the number of memory is 20.

e. In case of calling the preset memory

1. The receiving frequency written in the memory is called by the pushing the [M1]~[M10] key, [M+10] key and [M+20] key.

In case that the M1~M2 is called, the memory of the key pushed can be called when the [M1]~[M10] key is pushed.

In case that the M11~M20 is called, the memory of the key pushed can be called when the [M1]~[M10] key is pushed with [M+10] key.

In case that the M21~M30 is called, the memory of the key pushed can be called when the [M1]~[M10] key is pushed with [M+20] key.

2. At the time the [M1]~[M6] key is pushed, the MUTE OUTPUT is output "H" for 60mS.

However the MUTE OUTPUT is not output "H" if the memory number of the key pushed and the memory number that is receiving now is same.

f. In case of writing in preset memory

1. If the [MEMORY/CLOCK-ADJUSTMENT] key is pushed in the radio mode, it is the memory writing enable state for 5 sec.

2. The "MEMORY" mark flashes at 1Hz rate in the memory writing enable state.

3. If the [M1]~[M6] key, [M+10] key and [M+20] key is pushed in the memory writing enable state, the receiving frequency is written in the memory of the key pushed.

4. If the receiving frequency is written in the preset memory, the "MEMORY" mark is indicated and the memory number of the key pushed is indicated on LCD.

d. If the [MEMORY] key is pushed in the memory writing enable state, the state is released.

e. After 5 sec from setting of memory writing enable state, the state is released.

MEMORY SCAN

1. PRINCIPAL FUNCTION

Calling the preset memory in order.

2. KEY TO BE USED

[MEMORY-SCAN] key.

3. FUNCTIONS

a. When the [MEMORY-SCAN] key is pushed, the memory scan function is started from next memory number of receiving memory number.

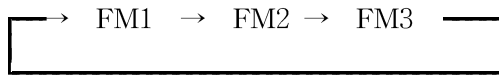
If the preset memory is not called, the memory scan function is started from ch 1.

In the memory scan, the frequency written in the memory is received for 5 sec in order.

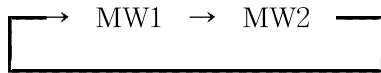
b. During memory scan, the channel number flashes at 1 Hz.

c. In case of the fixed memory, the number of memory reached ch 10, the band is changed as shown below and memory scan is continuous from ch 1.

1. In case of FM band (FM 3 band)



2. In case of MW band (MW 2 band)



d. If the station is not received (by check the IF or A-STOP signal) when the preset memory is called, the next preset memory is called immediately.

If the station is received, the next preset memory is called after receiving the station for 5 sec.

e. When the [MEMORY-SCAN] key is pushed in the memory scan, the memory scan is stopped on the preset memory that is receiving now.

REMOTE CONTROL

1. PRINCIPAL FUNCTION

Receiving the remote control data from the KIC9243F.

2. I/O TO BE USED

REMOCON INPUT

3. FUNCTIONS

- a. The transmission IC is KIC9243F.
- b. The custom code for the remote control is "90".
- c. The key action that correspond to the remote control data is executed.
- d. The all radio related key is valid in the tuner mode.
However, the radio related key is invalid in the mode excepting the tuner.
- e. But, the [M1/FUNC1]~[M8/FUN8] key is valid for func out (KIC9173P) except tuner mode.
The output port of the pushed key on the (KIC9173P) is "H" during these key on transmission is pushed.
- f. The valid key on transmission in case power is off, is only [POWER] key.
But, in case power is off when timer is set, it is only [DISPLAY] key.
All keys on the transmission is invalid when the power is on by timer.
- g. The pushing [M1/FUNC1]~[M10] key with [M+10] or [M+20] key is valid.
But, the pushing [M+10] key with [M+20] key is invalid.

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h. The setting for the remote control data on the KIC9309F-006 is as shown below.

DATA	D0	D1	D2	D3	D4	D5	D6	D7	DTS KEY
K 01	1	0	0	0	0	-	-	-	M1 / FUNC 1
K 02	0	1	0	0	0	-	-	-	M5 / FUNC 5
K 03	1	1	0	0	0	-	-	-	MEMORY / CLOCK ADJ.
K 04	0	0	1	0	0	-	-	-	AUTO / MANUAL
K 05	1	0	1	0	0	-	-	-	M9
K 06	0	1	1	0	0	-	-	-	POWER
K 07	1	1	1	0	0	-	-	-	TV
K 08	-	-	-	-	-	1	0	0	VR-UP
K 09	1	0	0	1	0	-	-	-	M2 / FUNC 2
K 10	0	1	0	1	0	-	-	-	M6 / FUNC 6
K 11	1	1	0	1	0	-	-	-	BAND / TIMER CLEAR
K 12	0	0	1	1	0	-	-	-	MEMORY SCAN
K 13	1	0	1	1	0	-	-	-	M 10
K 14	0	1	1	1	0	-	-	-	CD
K 15	1	1	1	1	0	-	-	-	VCR
K 16	-	-	-	-	-	1	1	0	VR-DOWN
K 17	1	0	0	0	1	-	-	-	M3 / FUNC 3
K 18	0	1	0	0	1	-	-	-	M7 / FUNC 7
K 19	1	1	0	0	1	-	-	-	UP / MIN ADJ.
K 20	0	0	1	0	1	-	-	-	MONO / STEREO
K 21	1	0	1	0	1	-	-	-	MUTE
K 22	0	1	1	0	1	-	-	-	PHONO
K 23	1	1	1	0	1	-	-	-	AUX
K 24	-	-	-	-	-	1	0	1	M+10
K 25	1	0	0	1	1	-	-	-	M4 / FUNC 4
K 26	0	1	0	1	1	-	-	-	M8 / FUNC 8
K 27	1	1	0	1	1	-	-	-	DOWN / HOUR ADJ.
K 28	0	0	1	1	1	-	-	-	DISPLAY
K 29	1	0	1	1	1	-	-	-	LOUDNESS
K 30	0	1	1	1	1	-	-	-	TUNER
K 31	1	1	1	1	1	-	-	-	TAPE
K 32	-	-	-	-	-	1	1	1	M+20

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SOURCE CHANGE

1. PRINCIPAL FUNCTION

Changing the source of the amplifier.

2. KEY AND IO TO BE USED

[CD] key, [PHONO] key, [TUNER] key, [TV] key, [VCR] key, [AUX] key, [TAPE] key,
DATA OUTPUT, CK OUTPUT, STB-1 OUTPUT

3. FUNCTIONS

a. The source that is inputted to the amplifier is selected by pushing the aforesaid keys.

b. The selecting of the source is controlled by the KIC9164N, and the display of the selected source is outputted on the KIC9174P.

They are controlled by sending the serial data from the KIC9309F.

c. The KIC9164N and the KIC9174P is set condition as shown below according to the source.

• Internal switch of the KIC9164N (○:ON, ×:OFF)

SOURCE	SW 1	SW 2	SW 3	SW 4	SW 5	SW 6	SW 7	SW 8
C D	○	×	×	×	×	×	○	×
PHONO	×	○	×	×	×	×	○	×
TUNER	×	×	○	×	×	×	○	×
T V	×	×	×	○	×	×	○	×
V C R	×	×	×	×	○	×	○	×
A U X	×	×	×	×	×	○	○	×
TAPE	-	-	-	-	-	-	×	○

• OUTPUT of the KIC9174P

SOURCE	IO 1	IO 2	IO 3	IO 4	IO 5	IO 6	IO 7
C D	L	H	H	H	H	H	H
PHONO	H	L	H	H	H	H	H
TUNER	H	H	L	H	H	H	H
T V	H	H	H	L	H	H	H
V C R	H	H	H	H	L	H	H
A U X	H	H	H	H	H	L	H
TAPE	-	-	-	-	-	-	L

- : DON'T CARE

d. The tape source and other source is changed cyclical, if the [TAPE] key is pushed.

e. If source key except the [TAPE] key is pushed when the tape source is selected, the source of the key pushed is selected and the tape source is automatically off.

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ELECTRONIC VOLUME CONTROL

1. PRINCIPAL FUNCTION

Controlling the electric volume

2. KEY AND I/O TO BE USED

[VR-UP] key, [VR-DOWN] key, [LOUDNESS] key, DATA OUTPUT, CK OUTPUT, STB-2 OUTPUT, D/A OUTPUT, LOUD OUTPUT

3. FUNCTIONS

- a. The volume level is displayed on the LCD when the jumper of METER/VR is not set.
- b. The 2dB step/1push tuning is executed by pushing the [VR-UP] key or [VR-DOWN] key for less than 500 mS.
- c. When the [VR-UP] key or [VR-DOWN] key is pushed for more than 500mS, the continuous volume up/down (2dB/50mS) is started.
If that key is released, the continuous tuning stop.
- d. The KIC9309F send the serial data to the KIC9176/77P and the KIC9173P when the volume data is up or down.
- e. The DC voltage that correspond to the data of the volume is outputted on D/A OUTPUT. And the V1~V5 on the LCD that correspond to the data of the volume is displayed in case the jumper of the METER/VR is not set.
- f. The VR-UP OUTPUT on the KIC9173P is "L" during the pushing the [VR-UP] key.
The VR-DOWN OUTPUT is "L" during the pushing the [VR-DOWN] key.
- g. The attenuation level of the volume that can be used is from 0 dB to 78 dB and infinity.
- h. The display and the DATA of the D/A OUTPUT are as shown below.

VOLUME ATTENUATION LEVEL	∞ dB	76~70dB	68~60dB	58~50dB	48~40dB
DISPLAY					
LCD	V1		V1, V2		V1~V3
D/A-OUT	06 H	0 CH	12 H	18 H	1 EH

VOLUME ATTENUATION LEVEL	38~30dB	28~20dB	18~10dB	8~2dB	0dB
DISPLAY					
LCD	V1~V3	V1~V4		V1~V5	
D/A-OUT	24 H	2 AH	30 H	36 H	3 FH

ANNOTATION : $\times \times$ H is hexadecimal data. The 3FH of the data is V_{REF} .

- i. The loudness function is set ON/OFF cyclically by pushing the [LOUDNESS] key.
- j. When the loudness function is on, the "LOUD" mark on the LCD is indicated and the LOUD OUTPUT on the KIC9174P is "L".

VOLUME MUTE

1. PRINCIPAL FUNCTION

Down the volume level -20dB

2. KEY AND IO TO BE USED

[MUTE] key, DATA OUTPUT, CK OUTPUT, STB-1 OUTPUT, STB-2 OUTPUT, MUTE-1 OUTPUT, MUTE-2 OUTPUT

3. FUNCTIONS

a. The ON and OFF of the volume mute function is changed cyclically by pushing [MUTE] key.

b. When the volume mute function is on, the actual volume level is down -20dB and the volume level mark on the LCD flash.

And the MUTE-1 OUTPUT is "L" and the MUTE-2 OUTPUT flash. These ports are on the KIC9174P.

c. The [VR-UP] key is invalid when the volume mute function is on.

AUTO LEVEL DOWN

1. PRINCIPAL FUNCTION

The attenuation level of the volume is set 50dB automatically.

2. KEY TO BE USED

Nothing

3. FUNCTIONS

The attenuation level of the volume is set 50dB automatically, if the power is off when that level is more than 20dB.

This function is prevent the too big level of the volume of when the power is on.

CLOCK

1. PRINCIPAL FUNCTION

The clock of 12H and 24H displayed.

2. KEY TO BE USED

[UP/MIN-ADJ.] key, [DOWN/HOUR-ADJ.] key, [DISPLAY] key, [MEMORY/CLOCK-ADJUSTMENT] key, T0, T1 jumper.

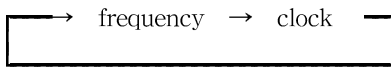
3. FUNCTIONS

- a. The condition of the clock and the timer function is set as shown below according to setting of the T0, T1 jumper.

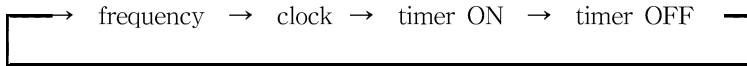
T0	T1	CLOCK	display at power off	TIMER
0	0	×	×	×
1	0	○	×	×
0	1	○	○	×
1	1	○	○	○

○ : enable × : no function

- b. The display is changed by pushing [DISPLAY] key as shown below.
 T0/T1 = 0/0 The [DISPLAY] key is invalid.
 T0/T1 = 1/0, 0/1



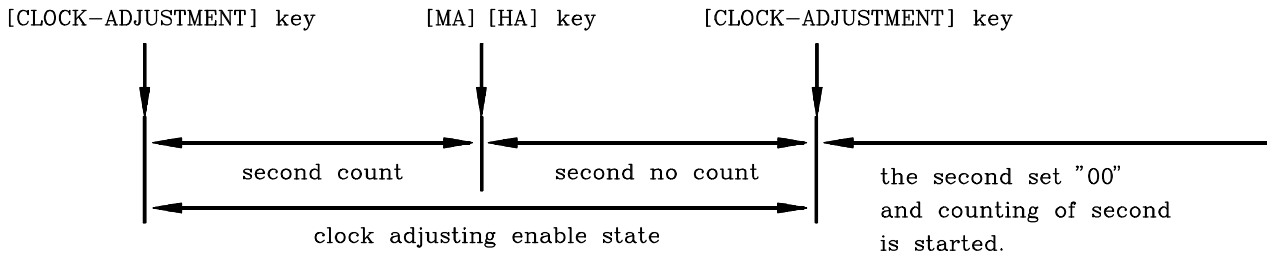
T0/T1 = 1/1



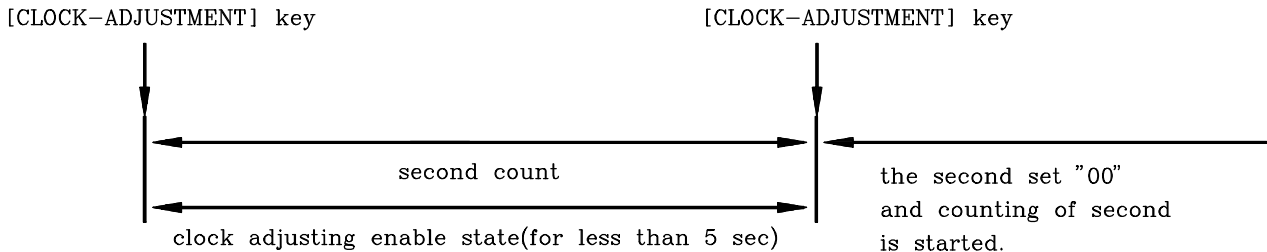
- c. The "CLOCK" mark on LCD is indicated in the clock display when the power is on. In case the power is off, the "CLOCK" mark is not indicated.
- d. If the [MEMORY/CLOCK-ADJUSTMENT] key is pushed in clock display, the clock adjusting enable state is set for 5 sec. The "clock" mark on the LCD flashes at 1 Hz rate in the clock adjusting enable state. In that state, the hour of the clock is adjusted by pushing the [DOWN/HOUR-ADJ.] key, and the minute of clock is adjusted by pushing the [DOWN/MIN-ADJ.] key.
- e. Any key except the [MEMORY/CLOCK-ADJUSTMENT] key, [UP/MIN-ADJ.] key, [DOWN/HOUR-ADJ.] key, power key, function keys ([AUX], [TUNER],....etc.) is invalid in the clock adjusting enable state. But, state can be released by pushing [DISPLAY] key before to adjust clock.
- f. When the [MEMORY/CLOCK-ADJUSTMENT] key is pushed in the clock adjusting enable state, the second of the clock is set to the zero and that state are released.

g. Setting the second to the zero is shown below

1. In case the [UP/MIN-ADJ.], [DOWN/HOUR-ADJ.] key is used in the clock adjusting enable state.



2. The [MEMORY (CLOCK-ADJUSTMENT)] is pushed for less than 5 sec again after setting the clock adjusting enable state.



h. The minute or the hour step up by 1 step/1push, when the [UP/MIN-ADJ.] key or the [DOWN/HOUR-ADJ.] key is pushed for less than 500mS in clock adjusting enable state. The minute or the hour step up continuously by 1 step / 250mS, when the [UP/HOUR-ADJ.] key or the [DOWN/MIN-ADJ.] key is pushed for more than 500mS.

i. If the [UP/HOUR-ADJ.] key, the [DOWN/MIN-ADJ.] key is not pushed for 5 sec in clock adjusting enable state, that state will be released. In this case, the second is not set the zero.

j. The clock is 24H display in Europe area (A2/A1/A0 = "000").
In other area, the clock is 12H display. (with "AM" and "PM" mark)

k. If the key related radio is pushed when those keys are valid in clock display, the display change to the frequency display and the action of the key pushed is executed.

TIMER

1. PRINCIPAL FUNCTION

Setting timer function

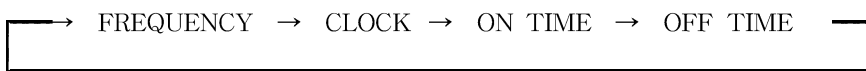
2. KEY AND SWITCH TO BE USED

[UP/MIN-ADJ.] key, [DOWN/HOUR-ADJ.] key, [DISPLAY] key, [MEMORY/CLOCK-ADJUSTMENT] key, T0, T1 jumper, [BAND/TIMER CLEAR] key, EVERY TIMER switch

3. FUNCTIONS

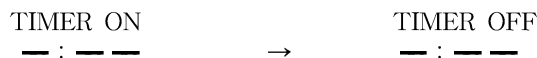
a. The timer function is enable only in case the T0/T1 jumper is 1/1.

b. The display is changed by pushing [DISPLAY] key as shown below. (TUNER MODE)



c. The ON TIME is displayed with the "TIMER" mark and the "ON" mark.
The OFF TIME is displayed with the "TIMER" mark and the "OFF" mark.
The display of the ON TIME and the OFF TIME is displayed for 5 sec.
After 5 sec., their display return back to the clock display.
But, the display is kept during the timer setting state.

d. In case that the timer function is off, the display is as shown below.

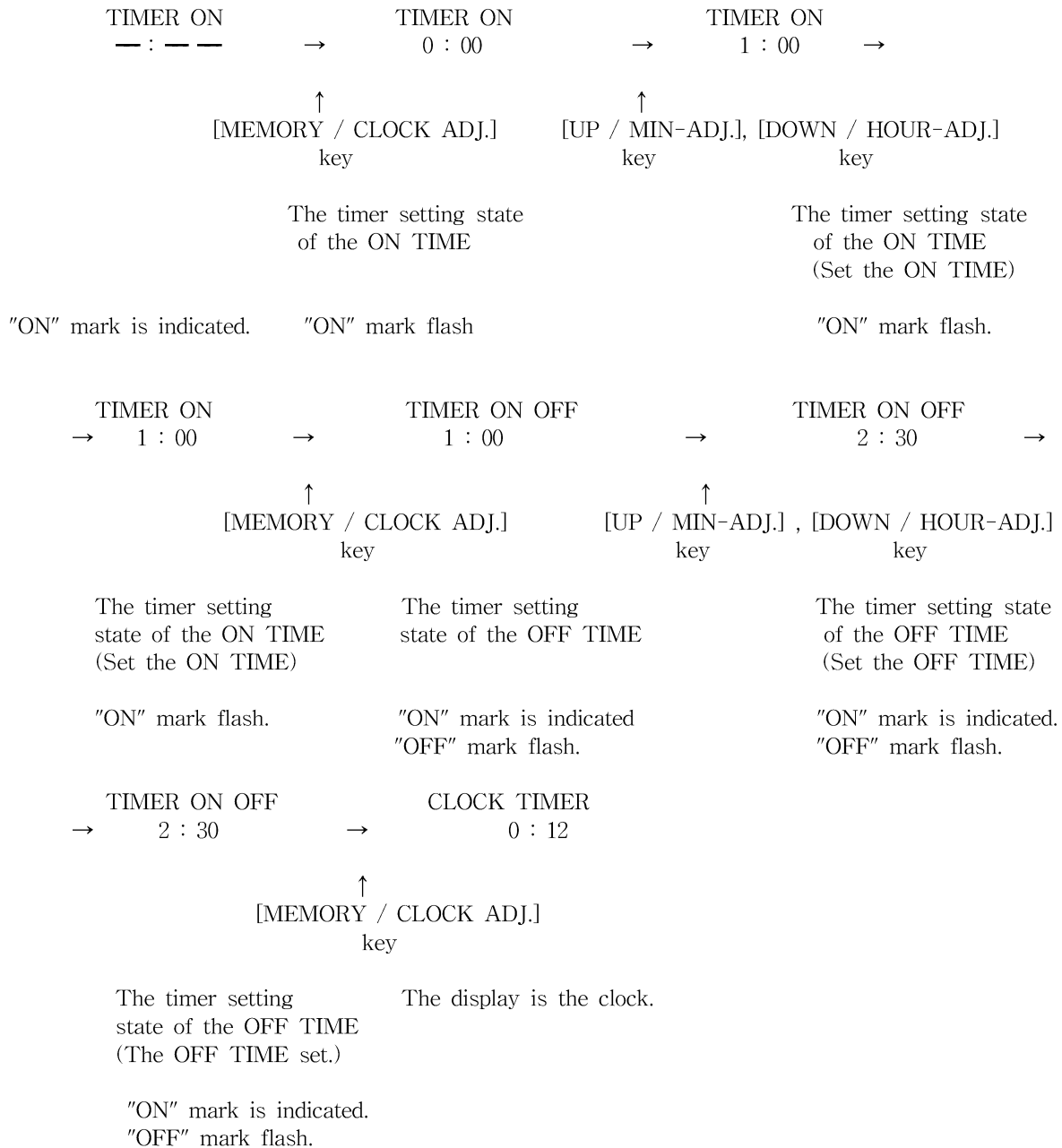


e. It is in the timer setting state to push the [MEMORY/CLOCK-ADJ.] key during the ON TIME or the OFF TIME. During the timer setting state, the "ON" mark flash in case of the ON TIME, the "OFF" mark flash in case of the OFF TIME. In that state, the ON TIME and the OFF TIME can be set by pushing the [UP/MIN-ADJ.] key and the [DOWN/HOUR-ADJ.] key. The way of setting time is same way as the clock adjustment.

f. The keys except the [MEMORY/CLOCK-ADJ.] key, the [UP/MIN-ADJ.] key, the [DOWN/HOUR-ADJ.] key and the [BAND/TIMER CLEAR] key, [POWER] key, function keys ([AUX], [TUNER]...etc.) is invalid during the timer setting state.

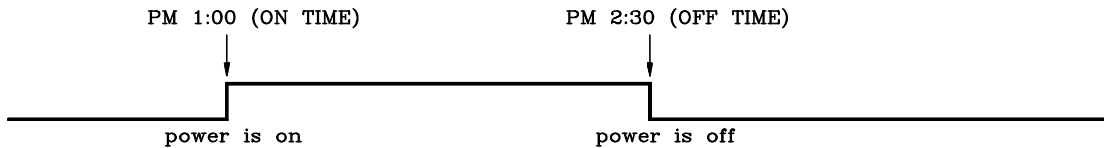
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- g. The ON TIME is memorized by pushing the [MEMORY/CLOCK-ADJ.] key during the timer setting state of the ON TIME. Then the timer setting state is changed from one of ON TIME to one of OFF TIME. In this time, in case change the ON TIME, the time that is same as the ON TIME is set on the OFF TIME. If not change the ON time, the OFF time is kept old time. The OFF TIME is memorized by pushing the [MEMORY/CLOCK-ADJ.] key during the timer setting state of the OFF TIME. Then the timer setting state is released and the display return back to the clock.



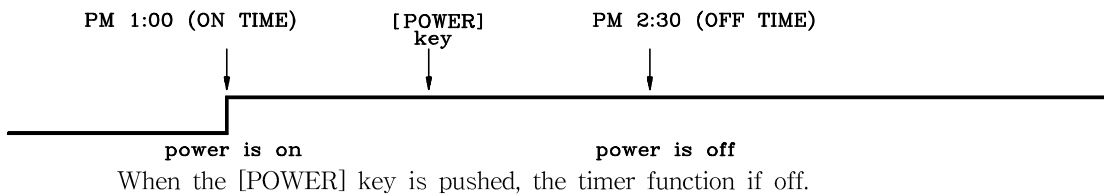
- h. In the power off, only in case that the timer function is on, the ON TIME and the OFF TIME can be displayed by pushing the [DISPLAY] key.
- i. The timer function is executed only when the power is off.
- j. The actions of the timer function are as shown below.
The keys except the [DISPLAY] key, the [LOUDNESS] key, the [VR-UP] key, the [VR-DOWN] key, the [MUTE] key, the [POWER] key is invalid when the power is on by timer function.

1. normal action of the timer

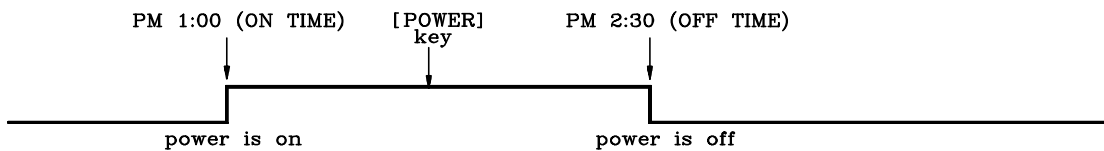


2. The [POWER] key is pushed after power was on by the timer function.

* In case that the EVERY TIMER switch is off.

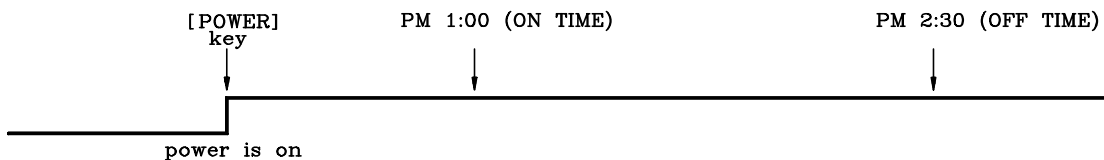


* In case that the EVERY TIMER switch is on.



When the [POWER] key is pushed, the condition is same as the power on that is by pushing the [POWER] key. But, the timer function is not off. After that, the power is off when the time of the clock reach the OFF TIME.

3. The [POWER] key is pushed in the power off before the ON TIME.



* In case that the EVERY TIMER switch is off.

When the [POWER] key is pushed, the power is on and the timer function is off.

* In case that the EVERY TIMER switch is on.

When the [POWER] key is pushed, only the power is on. The timer function is not off.

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- k. The timer function is off by pushing [BAND / TIMER CLEAR] key, during the ON TIME or the OFF TIME is displayed when power is on.
- l. It is valid to be off the power by timer function only when the power is on by the timer function.
- m. In case the EVERY TIMER switch is on, the timer function is not off after the timer is executed. In case the EVERY TIMER switch is off, the timer function is off after the timer is executed. The timer function been set is valid only one time.

FIELD STRENGTH DETECT

1. PRINCIPAL FUNCTION

Display the field strength level of the station.

2. I/O TO BE USED

A/D-IN INPUT

3. FUNCTIONS

- a. The field strength level is displayed on the LCD in case that the diode of the METER/VR jumper is set. In that case, the DC level for the display of the volume is not outputted.
- b. The V1~V5 mark on the LCD that is correspond to the DC level on the A/D INPUT is indicated.
- c. The V1~V5 mark is indicated as shown below.

	V1	V1~V2	V1~V3	V1~V4	V1~V5
hexadecimal data	00~07	08~0F	10~1F	20~2F	30~3F
vs. reference voltage (%)	0~12.7	12.8~25.4	25.5~50.8	50.9~76.2	76.3~100

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INITIALIZE

1. PRINCIPAL FUNCTION

Setting initial state when the power supply is on.

2. KEY TO BE USED

Nothing

3. FUNCTIONS

a. The content of the preset memory is set as shown below.

BAND	AREA	PRESET MEMORY					UNIT
FM	FIXED MEMORY	M1	M2	M3	M4	M5	MHz
	RANDOM MEMORY	M1	M2	M3	M4	M5	
	EUROPE SOUTH AMERICA	87.5	90.1	98.1	106.1	108.0	
	USA 1	87.5	90.1	98.1	106.1	108.1	
	USA 2 AUSTRALIA MIDDLE AND NEAR EAST LATIN AMERICA	87.5	90.1	98.1	106.1	108.0	
	JAPAN	76.0	80.0	83.0	86.0	90.0	
MW	FIXED MEMORY	M1	M2	M3	M4	M5	kHz
	RANDOM MEMORY	M11	M12	M13	M14	M15	
	EUROPE	522	612	999	1404	1620	
	USA 1,2	520	610	1000	1400	1720	
	LATIN AMERICA	520	610	1000	1400	1620	
	AUSTRALIA MIDDLE AND NEAR EAST LATIN AMERICA	531	612	999	1404	1602	
JAPAN	522	612	999	1404	1629		
LW	FIXED MEMORY	M1	M2	M3	M4	M5	kHz
	RANDOM MEMORY	M16	M17	M18	M19	M20	
	EUROPE	146	164	218	272	281	

b. The receiving band is set FM. (FM1)

c. The level of the volume is set 50 [dB]

d. The loudness function is set to be off. The MONO function is set to be off.

e. The time of the clock is set "0:00" in case of the Europe area, "AM 12:00" in case of the other area.

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THE ACTION OF WHEN A KEY PUSHED DURING THE FUNCTION IS EXECUTING.

a. In case of the preset scan function and the seek tuning function.

KEY	DURING THE PRESET SCAN FUNCTION	DURING THE SEEK FUNCTION
M1 ~ M10	The function is stopped and the action of the key pushed is executed.	
M+10	The function is stopped and the action of the key pushed is executed by pushing this key with [M1]~[M10] key. when only these key are pushed, the function is not stopped.	
M+20		
MEMORY	INVALID	
BAND	The function is stopped and the action of the key pushed is executed.	
UP	The function is stopped and the action of the key pushed is executed.	If the direction of the seek tuning and the direction of the key pushed is the same direction, the seek tuning is stopped. If that direction is difference, the direction of seek tuning is changed and the function is not stopped.
DOWN		
AUTO / MANUAL	The function is stopped and the action of the key pushed is executed.	The function is stopped and the action of the key pushed is executed.
MEMORY SCAN	Only the function is stopped.	The function is stopped and the action of the key pushed is executed.
MONO	The function is not stopped and the action of the key pushed is executed.	
DISPLAY	INVALID	
VR-UP	The function is not stopped and the action of the key pushed is executed.	
VR-DOWN		
MUTE		
LOUDNESS		
POWER	The function is stopped and the action of the key pushed is executed.	
CD	In case the jumper of clock-priority is no set, The function is not stopped and the action of the key pushed is executed. But, if the key that is on transmission is pushed, the function is stopped and the action of the key pushed is executed In case the jumper of clock-priority is set, the function is stopped and the action of the key pushed is executed when all key key is pushed.	
PHONO		
TUNER		
TV		
VCR		
AUX		
TAPE		

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b. In case of the memory writing enable state and the clock adjusting enable state

KEY	MEMORY WRITING ENABLE STATE	CLOCK ADJUSTING ENABLE STATE
M1 ~ M10	The receiving station is memorized in the memory of the key pushed.	INVALID
M+10	The receiving station is memorized in the memory of the key pushed by pushing these key with [M1]~[M10] key.	
M+20		
MEMORY	The state is released.	The second is reset, and the state is released.
BAND	The state is released and the action of key pushed is executed.	INVALID
UP		The minutes is adjusted.
DOWN		The hour is adjusted.
AUTO / MANUAL		INVALID
MEMORY SCAN		
MONO		
DISPLAY	The state is released and the action of key pushed is executed.	The state is released in case clock is no adjusted. In other case, it is invalid.
VR-UP	The state is not released and the action of key pushed is executed.	INVALID
VR-DOWN		
MUTE		
LOUDNESS		
POWER	The state is released and the action of key pushed is executed.	

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KEY	MEMORY WRITING ENABLE STATE	CLOCK ADJUSTING ENABLE STATE
CD	<p>In case the jumper of clock-priority is no set, the state is not released and the action of key pushed is executed.</p> <p>But, if the key on the transmission is pushed the state is released and the action of the key pushed is executed.</p> <p>In case the jumper of clock-priority is set, the state is released and the action of the key is executed, when all key is pushed.</p>	<p>The state is not released and the action of the key pushed is executed.</p>
PHONO		
TUNER		
TV		
VCR		
AUX		
TAPE		

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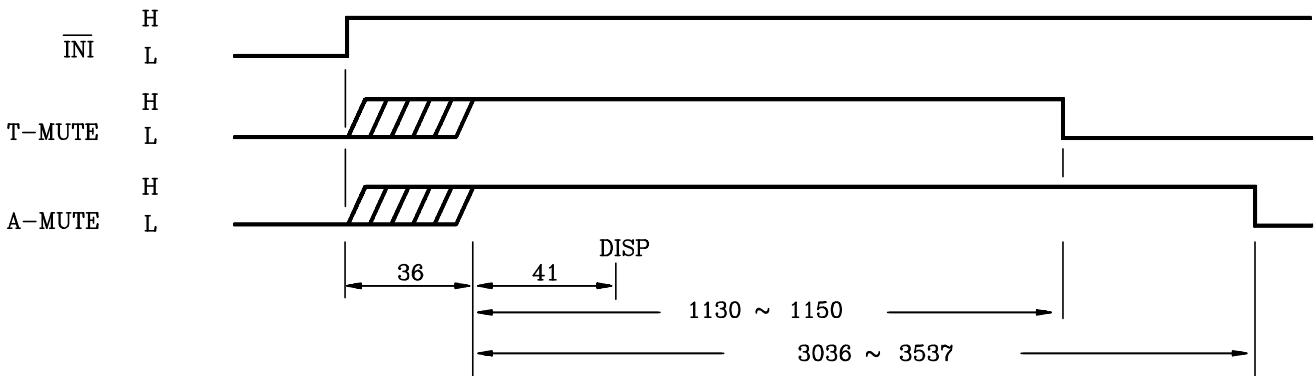
TIMING

- PLL The timing to set the PLL data
- PLL off The timing to stop the PLL
- DISP The timing to set the display data
- IO timing to the outputs of the I/O ports (PIN47 ~ PIN61)
- OUT timing to the outputs of the out ports (PIN43 ~ PIN46)
- 1'st The timing to check the IF frequency (The IF tolerance is WIDE)
- 2'nd The timing to check the IF frequency (The IF tolerance is NARROW)
- SIO The timing to set the sio data

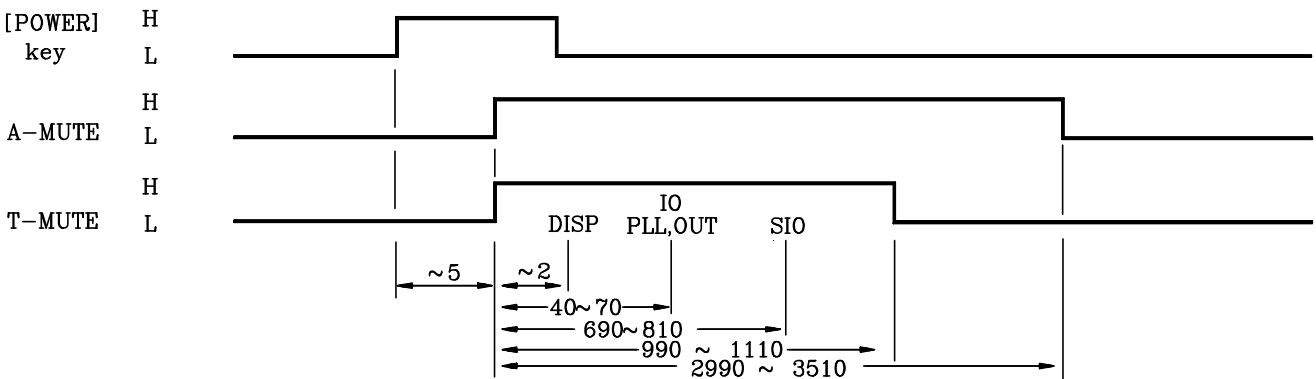
CAUTION!!) If there is not instruction about the numerical value, their unit is milliseconds.

1. $\overline{\text{INI}}$

a. $\overline{\text{INI}}$ "L" → "H" ($\overline{\text{INH}} = \text{"H"}$)

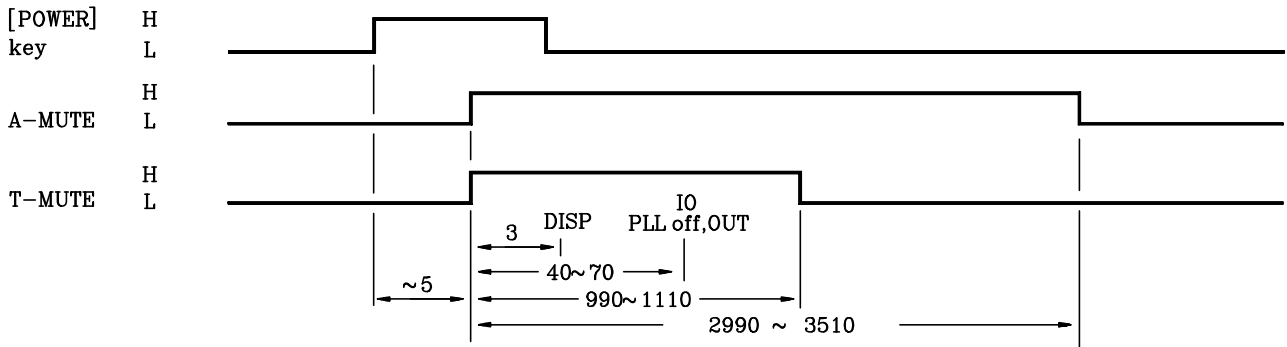


2. POWER ON

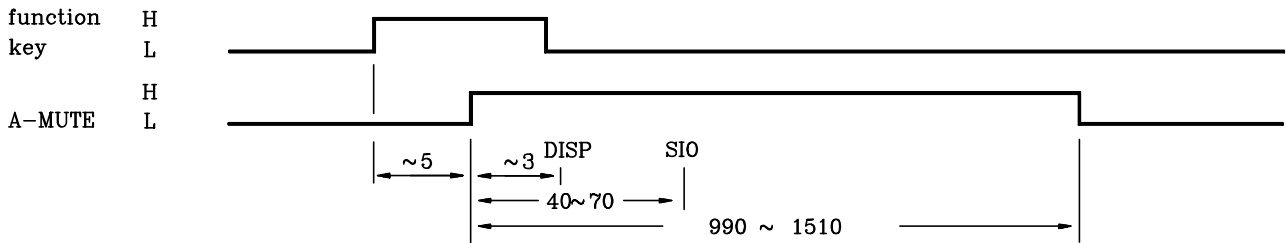


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3. POWER OFF

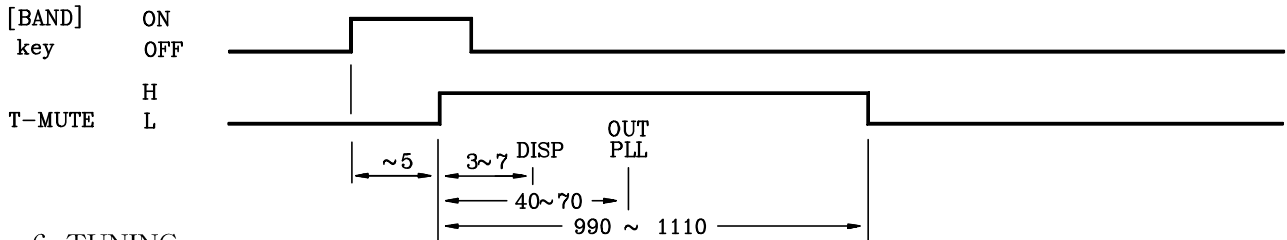


4. FUNCTION CHANGE



* function key : [TAPE] key, [TUNER] key, [AUX] key, [PHONO] key, [CD] key, [VCR] key, [TV] key

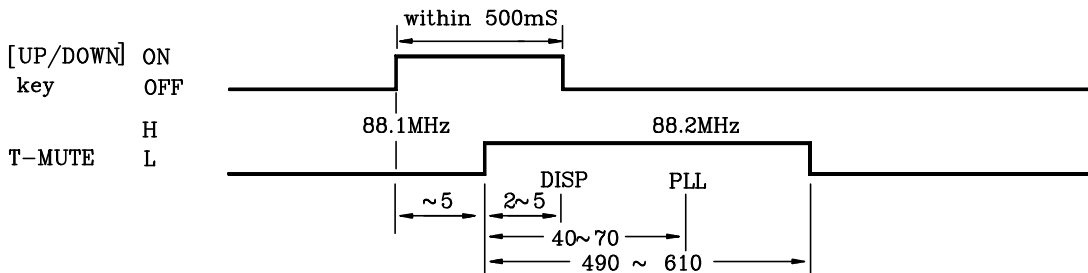
5. BAND CHANGE



6. TUNING

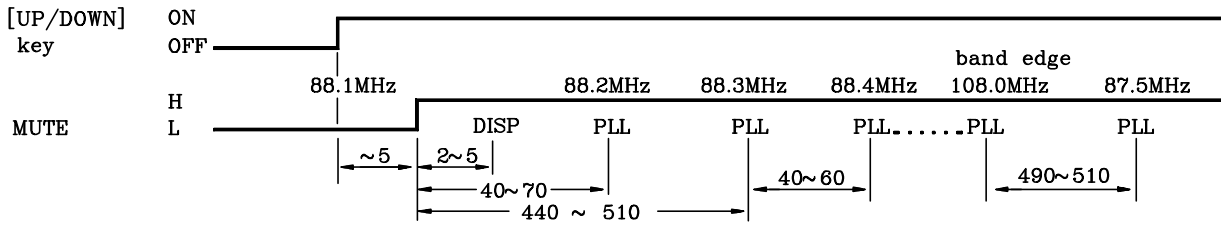
a. UP/DOWN TUNING (MANUAL MODE)

In case of 1 STEP/1 PUSH

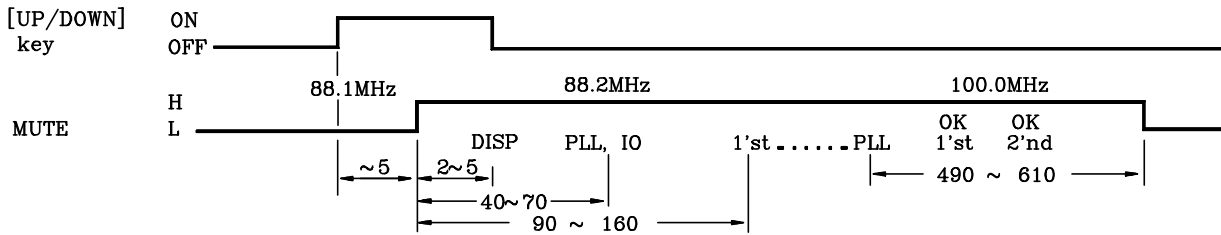


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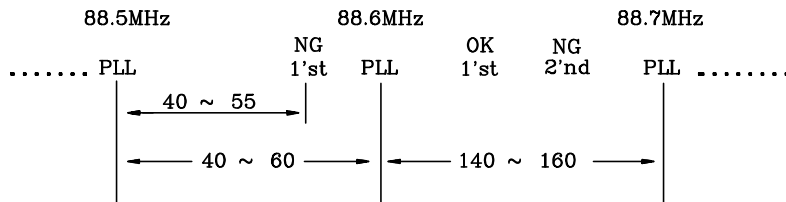
In case of pushing continue



b. UP/DOWN TUNING (AUTO MODE)

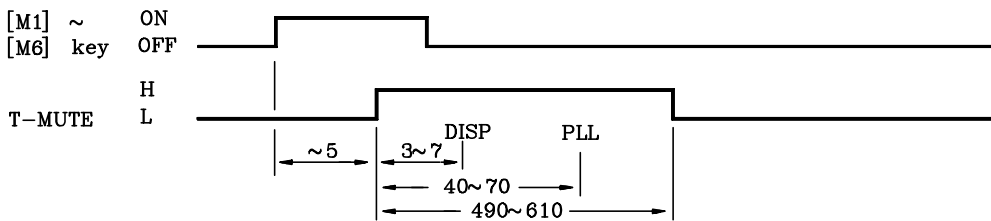


c. DURING SEARCH TUNING (AUTO MODE)

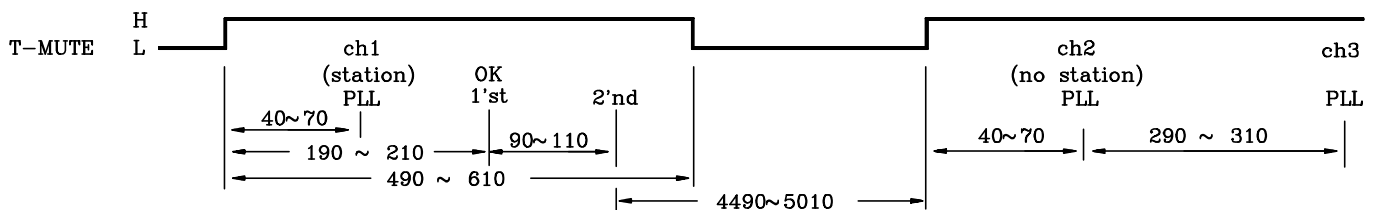


7. PRESET MEMORY

In case of calling the preset memory (In case that band dose not changed)

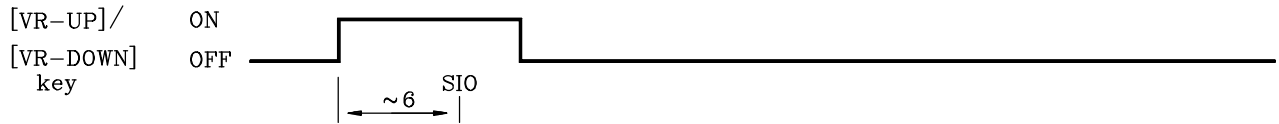


8. MEMORY SCAN (In case that band does not changed)



9. VOLUME UP/DOWN

In case of 1 STEP/1 PUSH



In case of pushing continue

