

FM-STEREO/FM-AM SIGNAL

SG-5150

FM-AM SIGNAL

SG-5155

SERVICE MANUAL

KENWOOD

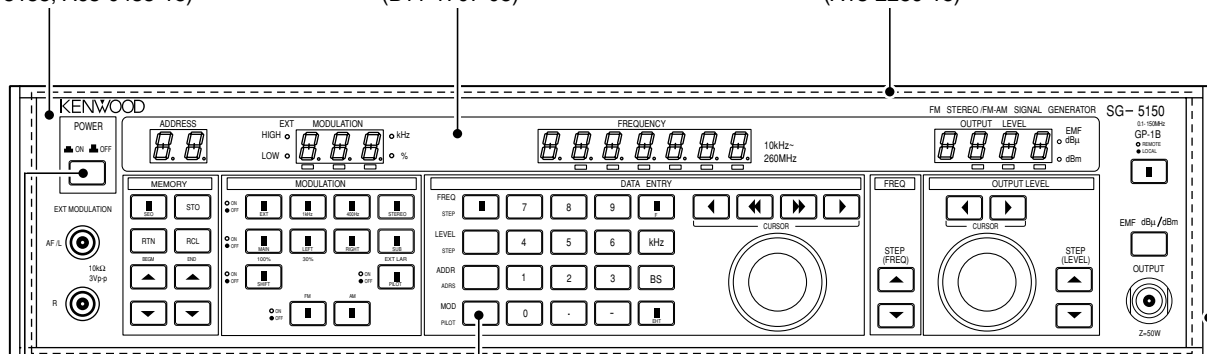
KENWOOD TMI CORPORATION

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B51-1162-00 (K/K) PDF

FRONT PANEL
(SG-5150; A63-0434-18)
(SG-5155; A63-0435-18)

FILTER
(B11-1707-08)

FRAME; FRONT PANEL(TOP AND BOTTOM)
(A13-2286-18)



PUSH KNOB; POWER
(K24-3025-08)

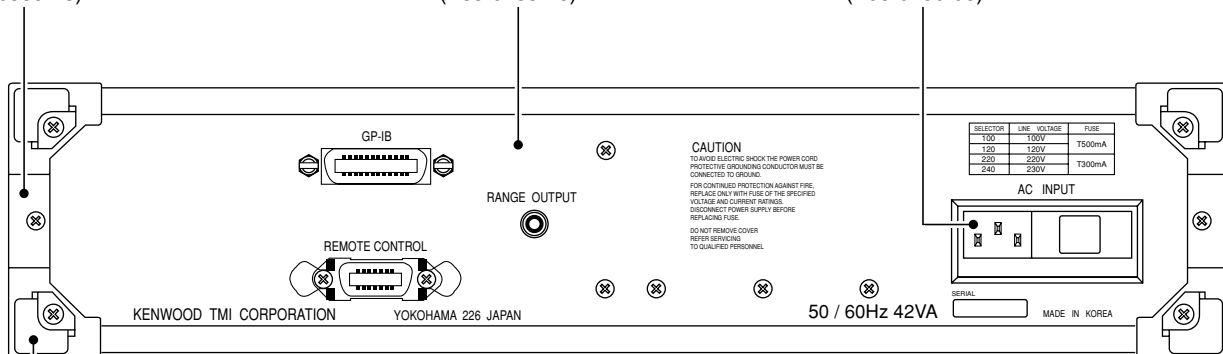
PUSH BUTTON
(SG-5150; K24-3026-18)
(SG-5155; K24-3027-18)

FRAME; FRONT PANEL(SIDE)
(A13-2287-08)

BRACKET; REAR PANEL(2 USED)
(J29-0539-18)

REAR PANEL
(A83-0235-18)

AC INLET
(E03-0230-08)



CORD WRAP
(J02-0561-18)

SG-5150/SG-5155

WARNING

The following instructions are for use by qualified personnel only. To avoid electric shock, do not perform any servicing other than contained in the operating instructions unless you are qualified to do so.

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SG-5150/SG-5155

SPECIFICATIONS

ITEMS	
CARRIER FREQUENCY	
Range	100 kHz to 150 MHz
Resolution	100 Hz
Accuracy	$\pm 5 \times 10^{-6}$ (5 ppm: At 10 to 35°C)
RF OUTPUT	
Range	-20 dB μ V to 100 dB μ V (Open circuit) -133 dBm to -13 dBm (50 Ω termination)
Resolution	0.1 dB
Output level accuracy	± 1.0 dB (≥ 0 dB μ V) ☐ CF ≤ 110 MHz ± 2.0 dB (< 0 dB μ V) ☐ ± 1.0 dB (≥ 20 dB μ V) ☐ CF > 110 MHz ± 2.0 dB (< 20 dB μ V) ☐
Output impedance	50 Ω (VSWR < 1.2)
Frequency flatness	± 1 dB (100 dB μ V)
Spurious output	
Harmonics	30 dBc or less
Non harmonics	40 dBc or less (CF < 35 MHz) 60 dBc or less (CF = 35 MHz to 150 MHz)
Residual FM component	> 70 dB (CF = 10.7 MHz, 76 MHz to 110 MHz) Referenced to 75 kHz Deviation, AF = 1 kHz (Demod. BW = 50 Hz to 15 kHz, De-emp = 50 μ s)
Residual AM component	> 50 dB (CF = 100 kHz to 30 MHz) Referenced to 30 % AM, AF = 1 kHz Except at CF = 80 MHz / N N = 3, 4, 5 ... (Demod. BW = 50 Hz to 15 kHz)
MODULATION	
Modulation type	FM, AM, {FM stereo}
Internal modulation frequency	400 Hz, 1 kHz ± 2 %
External modulation signal input impedance	10 k Ω ± 10 %, unbalanced
External modulation signal input voltage (p-p)	3 V ± 2 %
External input signal level (p-p)	3 V ± 3 % or less (AF ≤ 20 kHz)
Monitor LED OFF level (p-p)	3 V ± 5 % or less (20 kHz $< AF < 100$ kHz)
FM modulation	
Maximum frequency deviation	100 kHz (CF ≥ 1 MHz) CF $\times 10$ % (CF < 1 MHz)
Resolution	0.1 kHz
Accuracy	Maximum indication ± 10 % (CF ≥ 1 MHz, AF = 1 kHz)
Distortion	< 0.06 % (CF = 10.7 MHz, 76 MHz to 110 MHz) < 0.1 % (elsewhere) (Dev = 75 kHz, AF = 1 kHz, De-emp = 50 μ s, Demod. BW = 50 Hz to 15 kHz)
External input signal freq. flatness	20 Hz to 100 kHz ± 1 dB (CF = 100 kHz to 110 MHz) (Dev = 75 kHz, Referenced to AF = 1 kHz, Demod. BW = 20 Hz to 200 kHz)
External input signal distortion	< 0.06 % (CF = 10.7 MHz, 76 MHz to 110 MHz) < 0.1 % (elsewhere) (Dev = 75 kHz, AF = 1 kHz, De-emp = 50 μ s, Demod. BW = 50 Hz to 15 kHz)
AM modulation	
Modulation factor	0 % to 60 %
Resolution	0.1 %

SG-5150/SG-5155

SPECIFICATIONS

ITEMS	
Accuracy	Indication $\pm 5\%$ (CF = 100 kHz to 110 MHz, AF = 1 kHz) Indication $\pm 10\%$ (110 MHz < CF $\leq$ 150 MHz, AF = 1 kHz)
Distortion	< 0.5 % (CF = 200 kHz to 30 MHz) < 1.5 % (elsewhere) (AM = 30 %, AF = 1 kHz, Demod. BW = 50 Hz to 15 kHz) Except at CF = 80 MHz / N N = 3, 4, 5 •••
External input signal freq. flatness	50 Hz to 10 kHz ± 1 dB (CF = 400 kHz to 30 MHz) (AM = 30 %, Referenced to AF = 1 kHz, Demod. BW = 20 Hz to 15 kHz)
External input signal distortion	< 0.65 % (CF = 400 kHz to 30 MHz) (AM = 30 %, AF = 1 kHz, Demod. BW = 20 Hz to 15 kHz)
FM stereo modulation {SG-5150}	
Modulation factor	0 % to 90 % (Pilot modulation excluded)
Resolution	0.1 %
Accuracy	Indication $\pm 10\%$ (CF = 10.7 MHz, 76 MHz to 110 MHz, AF = 1 kHz)
Distortion	< 0.07 % (CF = 10.7 MHz, 76 MHz to 110 MHz) < 0.1 % (elsewhere) (Mod. = stereo main 90 %, Pilot = Off, AF = 1 kHz, Demod. BW = 50 Hz to 15 kHz, De-emp = 50 μ s)
External input signal freq. flatness	50 Hz to 15 kHz ± 1 dB (CF = 10.7 MHz, 76 MHz to 110 MHz) (Mod. = stereo main 90 %, Pilot = Off, Referenced to AF = 1 kHz, Demod. BW = 20 Hz to 200 kHz)
Separation	> 50 dB (AF = 400 Hz to 1 kHz) > 35 dB (AF = 100 Hz to 10 kHz) > 30 dB (AF = 50 Hz to 15 kHz) CF = 10.7 MHz, 76 MHz to 110 MHz (Mod. = stereo main 90 %, Pilot = Off)
Pilot signal frequency	19 kHz ± 2 Hz
Modulation range	0 % to 15 %
Resolution	1 %
Accuracy	$\pm 10\%$ (CF = 10.7 MHz, 76 MHz to 110 MHz)
OTHERS	
Preset Key setting	AM -- {30 %}, <30 %, 60 %> FM-- {3.5 kHz, 22.5 kHz, 75 kHz}, <22.5kHz, 75 kHz> {FM stereo -- 30 %, 100 %}
Memories	100 points
Source voltage	115VAC, 230 VAC $\pm 10\%$, 50/60 Hz
Power consumption	Approx. 42 VA
Dimensions	427 (W) x 100 (H) x 282 (D) mm
Max . Dimensions	435 (W) x 114 (H) x 324 (D) mm
Weight	Approx. 8.5 kg
Environmental (Indoor use only)	
Within Specifications	10 °C to 35 °C , under 85 % RH
Operating Temperature and Humidity	0 °C to 40 °C , under 85 % RH
Altitude	Up to 2000 m
Overvoltage Category	II
Pollution Degree	2
Regulatory Information	
EMI	EN55011(1991) Group 1 Class A
EMS	EN50082-2 (1995)
LVD	EN61010-1(1993) + A2 (1995)

■ The above specifications are subject to change without notice.

SG-5150/SG-5155

SAFETY

SAFETY

Before connecting the instrument to a power source, carefully read the following information, then verify that the proper power cord is used and the proper line fuse is installed for power source. The specified voltage is shown on the rear panel. If the power cord is not applied for specified voltage, there is always a certain amount of danger from electric shock.

Line voltage

This instrument operates using ac-power input voltages that 100/120/220/230 V at frequencies from 50 Hz to 60Hz.

Power cord

The ground wire of the 3-wire ac power plug places the chassis and housing of the oscilloscope at earth ground. Do not attempt to defeat the ground wire connection or float the oscilloscope ; to do so may pose a great safety hazard. The appropriate power cord is supplied by an option that is specified when the instrument is ordered. The optional power cords are shown as follows in Fig.1

Line fuse

The fuse holder is located on the rear panel and contains the line fuse. Verify that the proper fuse is installed by replacing the line fuse.

Voltage conversion

This oscilloscope may be operated from either a 100V to 230V, 50/60 Hz power source. Use the following procedure to change from 100 to 230 volt operation or vice versa.

1. Remove the fuse holder.
2. Replace fuse F1 with a fuse of appropriate value, 1 amp for 100 VAC to 120 VAC operation. 630 m amp for 220 VAC to 230 VAC operation.
3. Reinsert it for appropriate voltage range.
4. When performing the reinsertion of fuse holder for the voltage conversion, the appropriate power cord should be used. (See Fig. 1.)

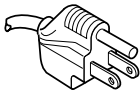
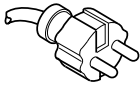
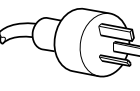
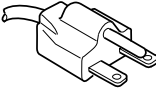
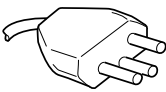
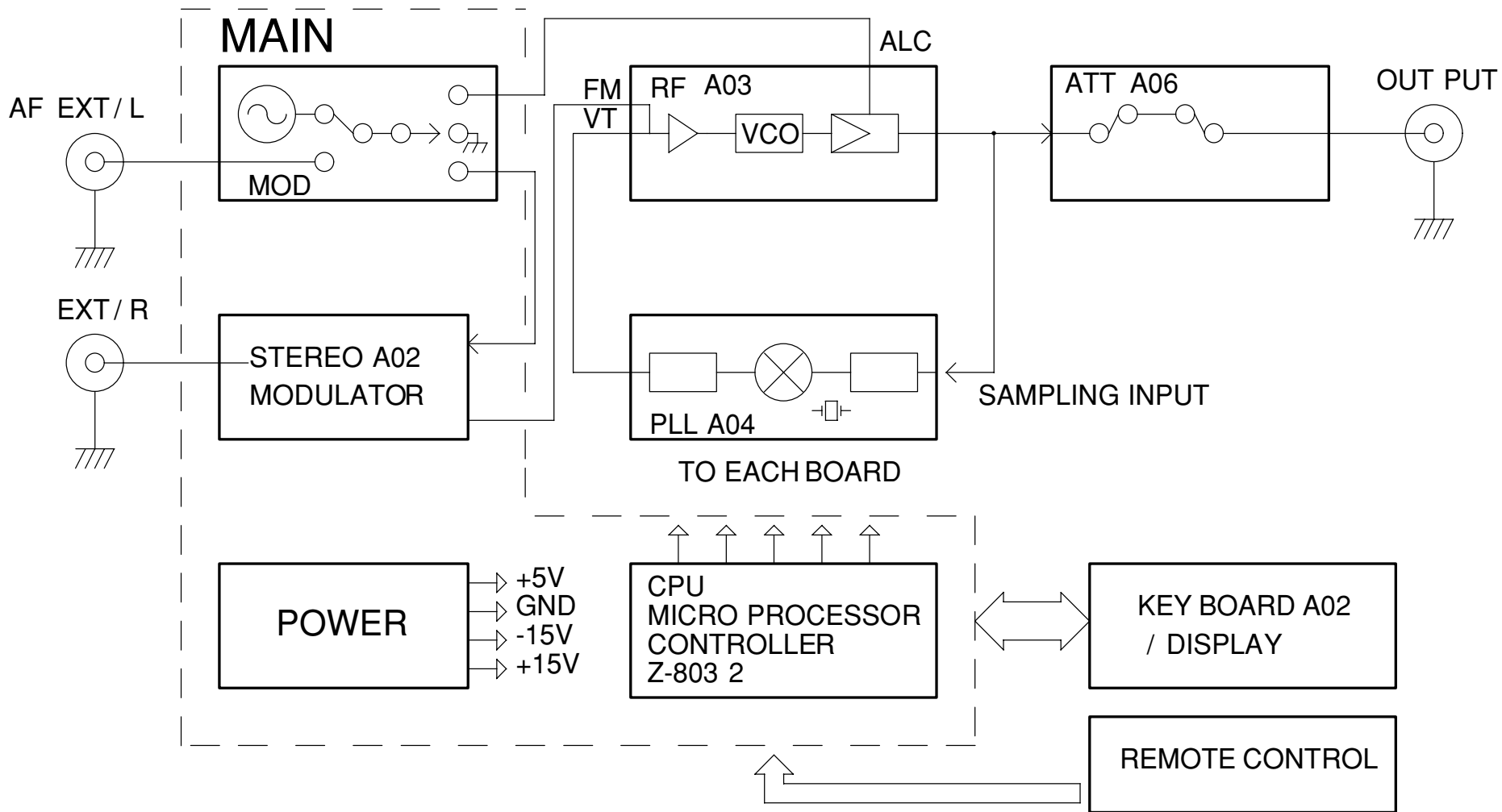
Plug configuration	power cord and plug type	Factory installed instrument fuse	Line cord plug fuse	Parts No. for power cord
	North American 120 volt/60 Hz Rated 15 amp (12 amp max ; NEC)	0.7A, 250V slow blow 5x20mm	None	E30-1951-05
	Universal Europe 220 volt/50 Hz Rated 16 amp	0.3A, 250V slow blow 5x20 mm	None	E30-1952-05
	U.K. 240 volt/50 Hz Rated 5 amp	0.3A, 250V slow blow 5x20 mm	5A Type C	E30-1947-15
	Australian 240 volt/50 Hz Rated 10 amp	0.3A, 250V slow blow 5x20 mm	None	E30-1953-05
	North American 240 volt/60 Hz Rated 15 amp (12 amp max ; NEC)	0.3A, 250V slow blow 5x20mm	None	—
	Switzerland 230 volt/50Hz Rated 10 amp	0.3A, 250V slow blow 5x20 mm	None	—

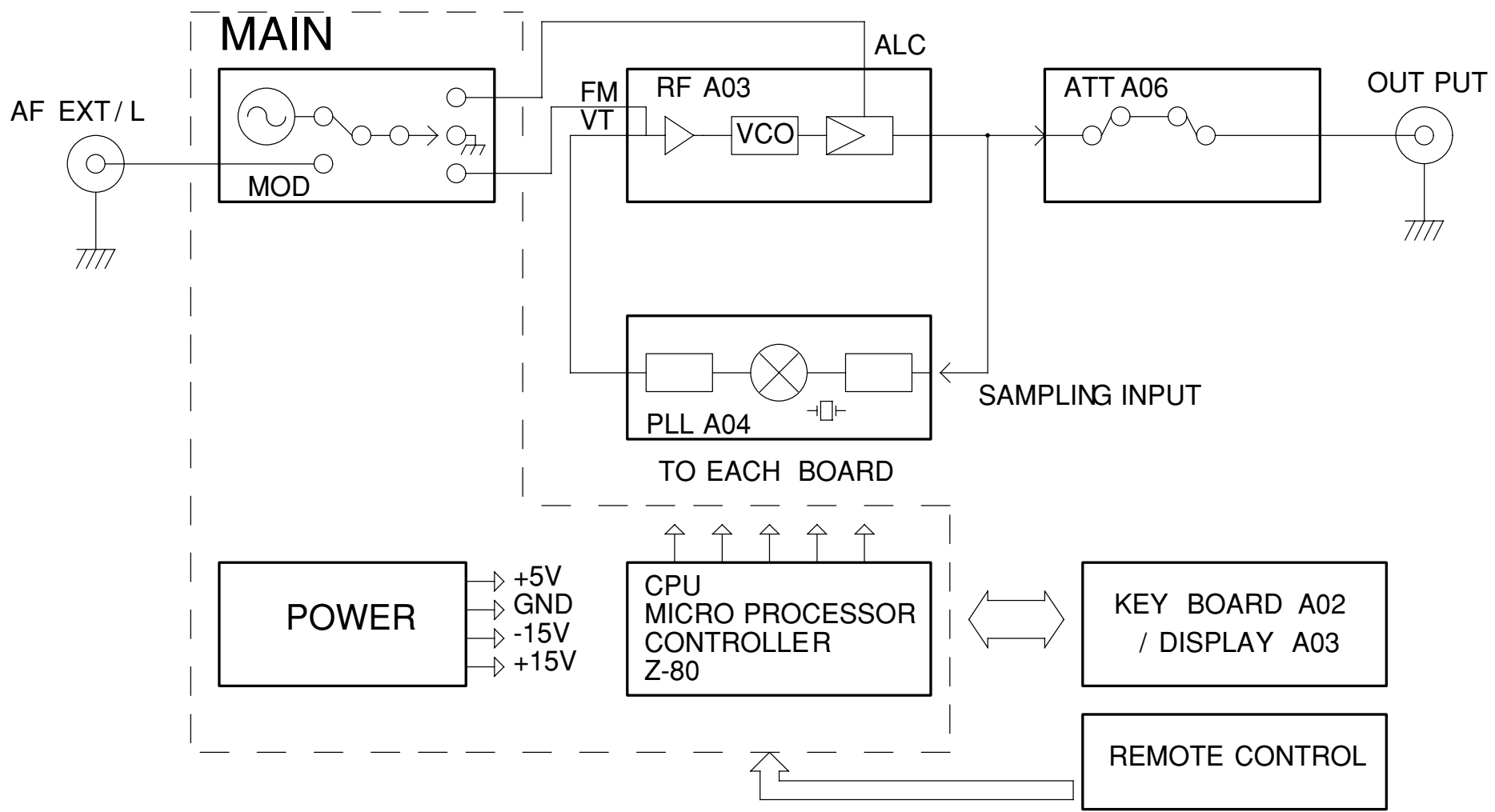
Fig.1 Power Input Voltage Configuration

SG-5150/SG-5155

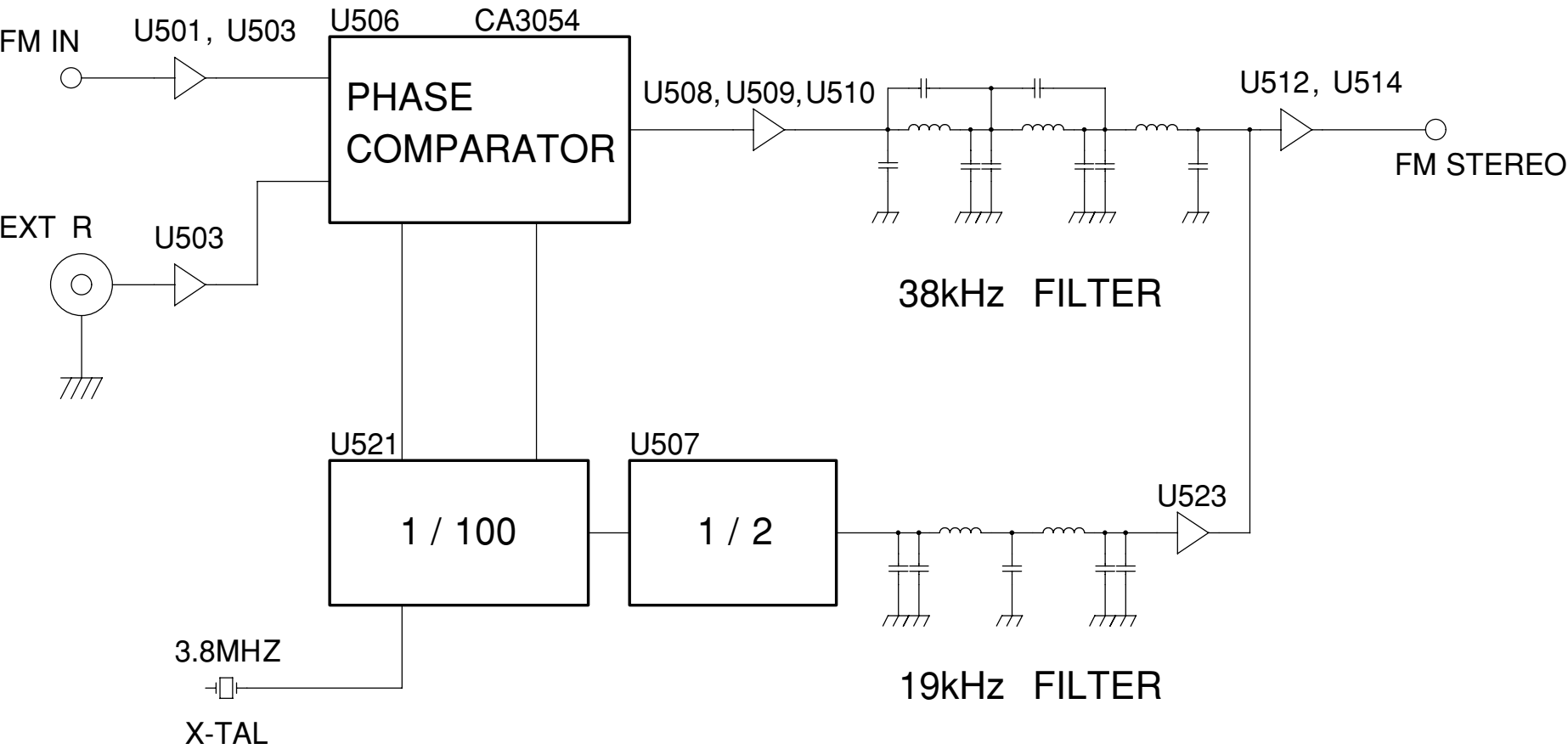
SG-5150 BLOCK DIAGRAM



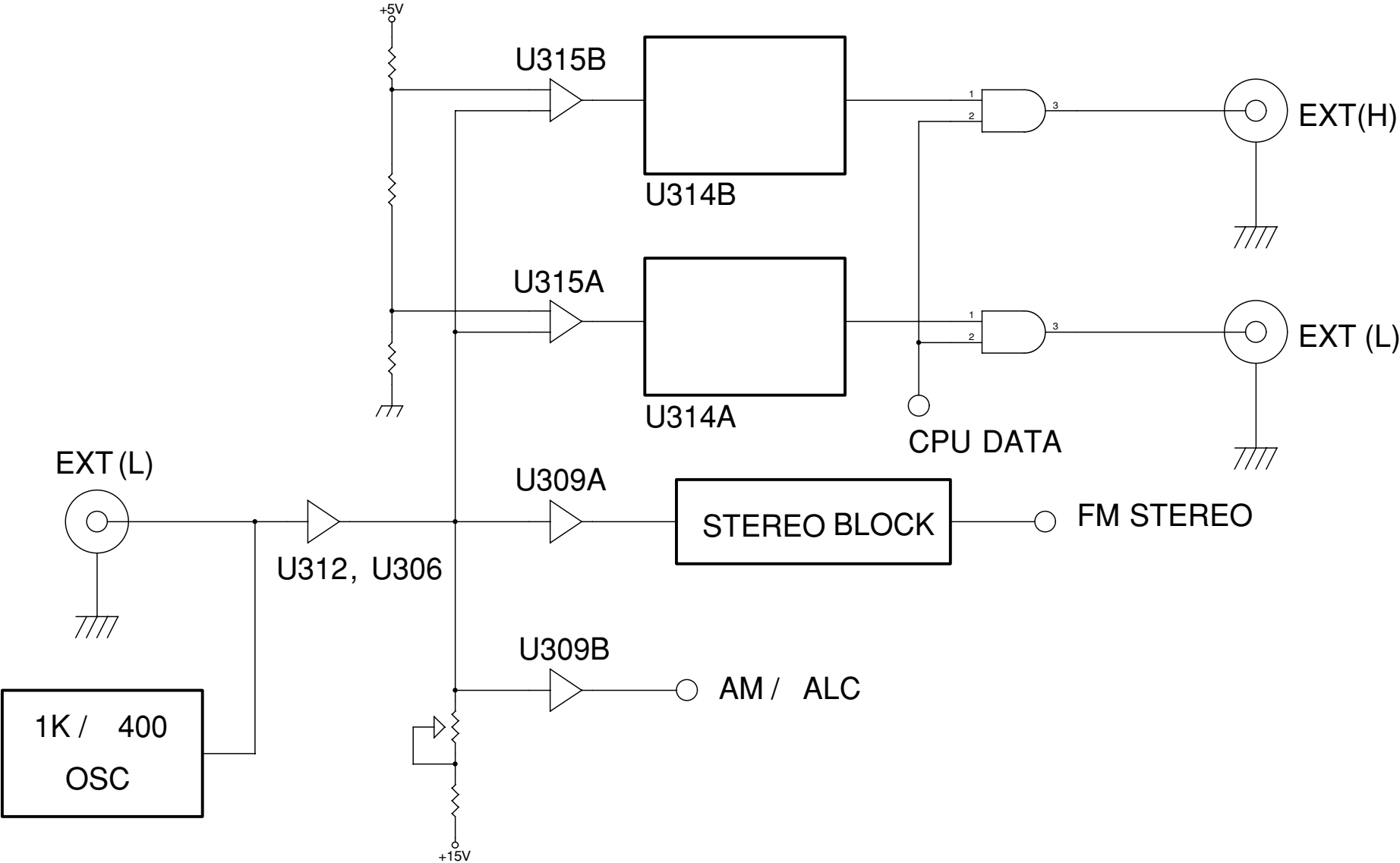
SG-5150/SG-5155 SG-5155 BLOCK DIAGRAM



CPU UNIT(W02-2492-08)

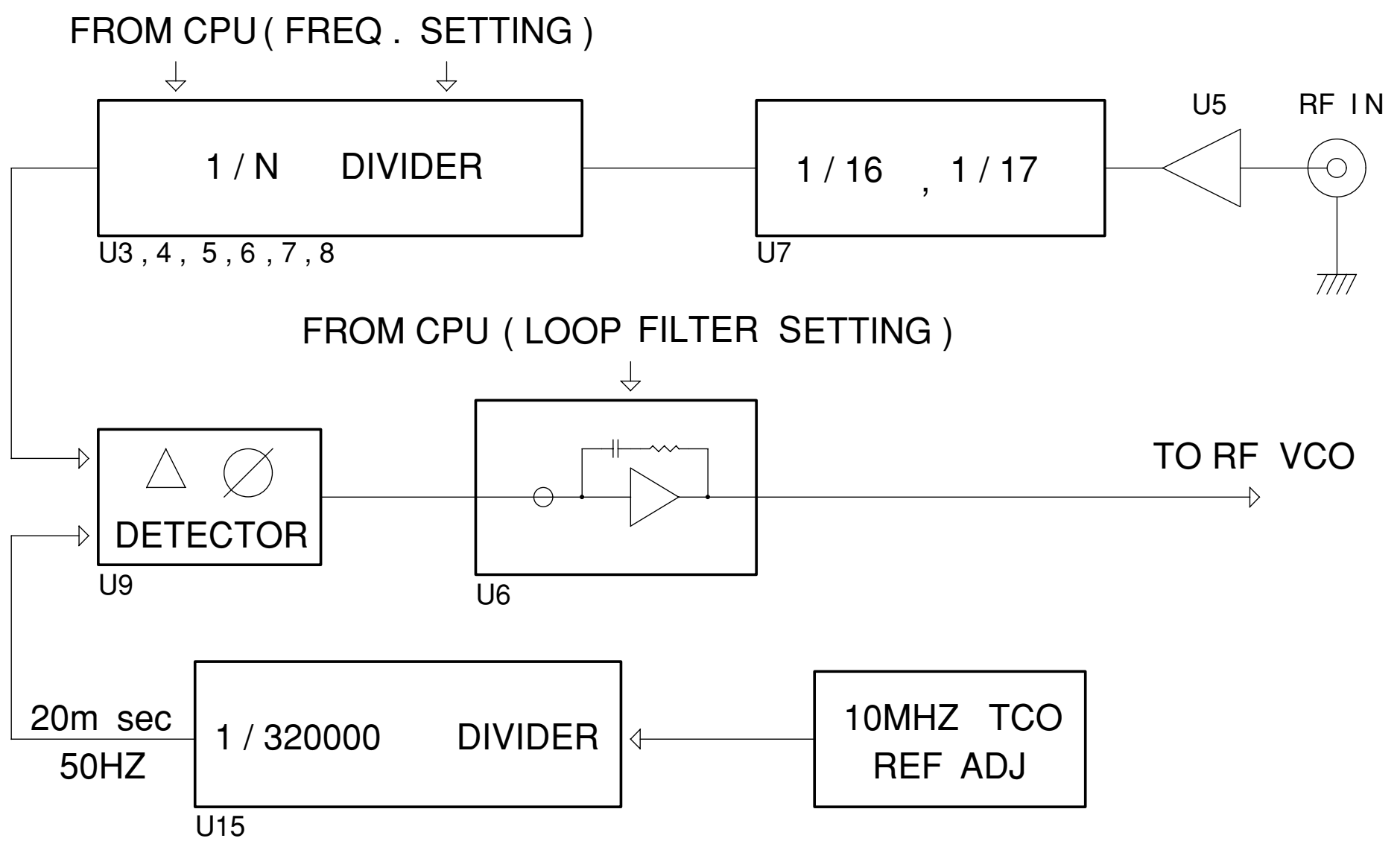


CPU UNIT(W02-2492-08)

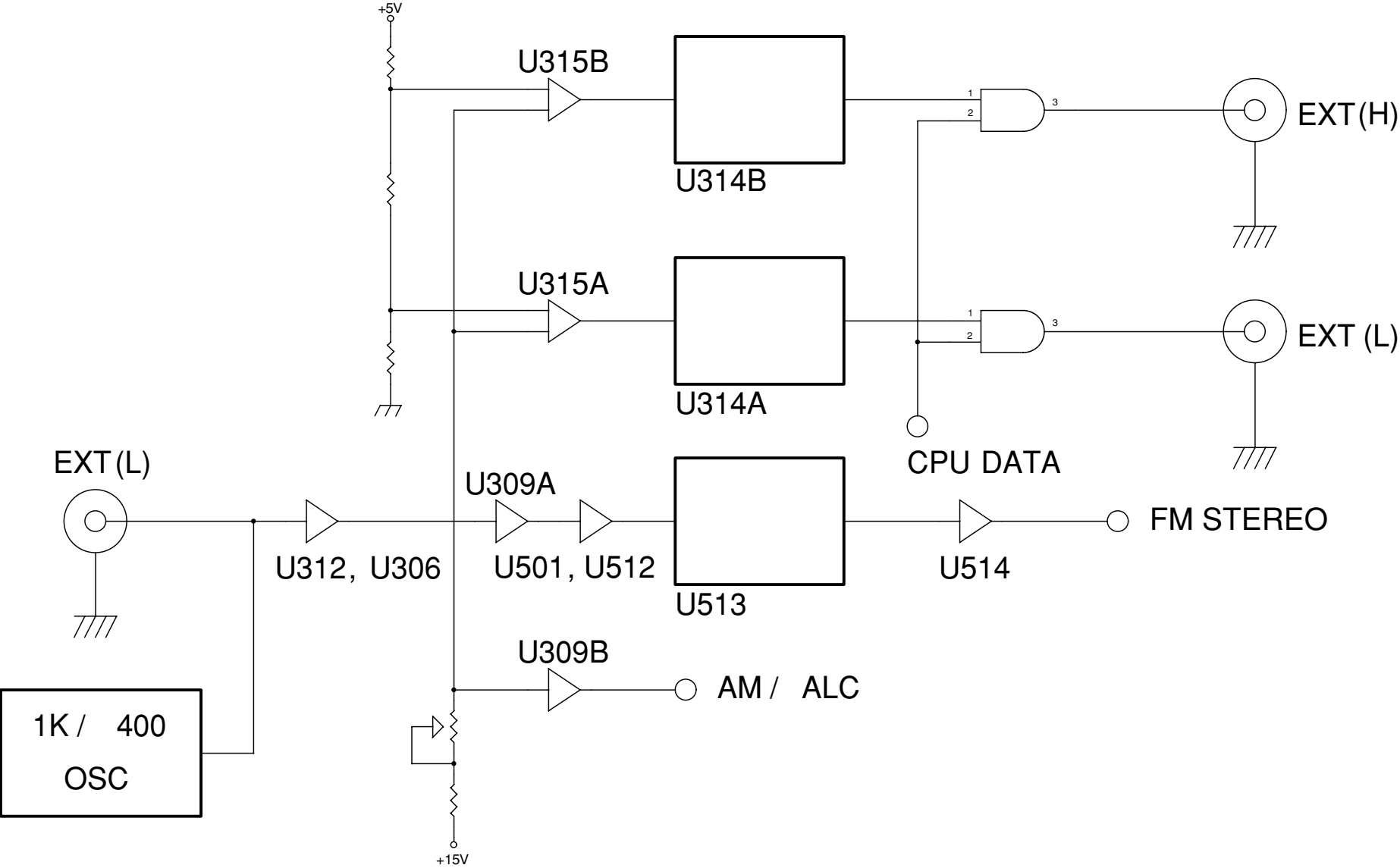


SG-5150/SG-5155
BLOCK DIAGRAM

CONTROL UNIT (W02-2494-08)



CPU UNIT (W02-2499-08)



BLOCK DIAGRAM

SG-5150/SG-5155

SG-5150/SG-5155

ADJUSTMENT

To obtain the best performance, periodically calibrate the unit. Sometimes, only one mode need be calibrated, while at other times, all modes should be calibrated. When one mode is calibrated, it must be noted that the other modes may be affected. When calibrating all modes, perform the calibration in the specified sequence.

The following calibration required an accurate measuring instrument and an insulated adjusting flat blade screwdriver. If they are not available, contact your dealer. For optimum adjustment, turn the power on and warm up the unit sufficiently (more than 30 minutes) before starting. Before calibrating the unit check the power supply voltage.

TEST EQUIPMENT REQUIRED

The following instrument or their equivalent should be used for making adjustment.

Test Equipment	Model	Maker
Oscilloscope	2235	Tektronix
Spectrum Analyzer	R4131A	Advantest
Digital Multimeter	45, 85, 87	Fluke
Audio Analyzer	8903B	HP (Agilent Technology)
Measuring Receiver	8902A	HP (Agilent Technology)

PREPARATION FOR ADJUSTMENT

1. Level adjustment

Adjust the level value of spectrum to be 94.07 dB μ , after set SG-5150 or SG-5155 to frequency (100 MHz), level(100 dB μ). (cpu: VR305)

2. Adjusting VT

Oscillation range of frequency (unit : MHz)	CONTROL terminal	Adjusting frequency VT	
		Frequency	VT (TP2)
150 to 115	1	150.000 MHz	12 V
114 to 80	H	114.999 MHz	10.5 V
79 to 55	M	89.999 MHz	10.5 V
54 to 35	L	54.999 MHz	10.5 V

Connect DVM+ to TP terminal in RF board. Set each frequency, and then adjust VT voltage with banding core for each frequency. Confirm Locking condition of 55 MHz with spectrum analyzer after adjusting.

3. Adjusting MIXER BAND VT

Set frequency, level to be 34.999 MHz, 100 dB μ . Confirm locking condition of 34.999MHz with spectrum. Connect DVM+ to TP3 terminal in RF board, and adjust VT to be 6 V by turning L14 in RF board.

4. Connect to oscilloscope after setting frequency, level 0.1 MHz, 100 dB μ . Move cousing to FREQUENCY DISPLAY 0.1 MHz.

Confirm Locking (INC) from 0.1 MHz to 1 MHz by variation of rotary encoder switch.

Confirm Locking (DEC) from 1 MHz to 0.1 MHz by variation of rotary encoder switch

5. EXT FM CAL

Set EXT frequency to be 1 kHz with level 3 V peak to peak (for 8903). Set frequency, level, FM deviation to 150 MHz, 100 dB μ , 100 kHz. Set filter of 8901 to be 50 Hz (high pass filter), 15 kHz (low pass filter). After connecting remote cable between computer and 5150/5155, carry out GWBASIC.

Then, type "LOAD FM1501". Here, press STO, 5 in front KEY.

JPr OPN is displayed in frequency display window and then, open jumper in cpu unit.

After fixing indicating value in level window to be 150 by using FREQUENCY STEP KEY or LEVEL STEP KEY, Adjust indicating value of 8901 to be 100 kHz by variation VR304 in cpu unit. Then, press RUN(F2) by using panel unit of computer to perform FM CAL.

6. EXT H/L LED Adjustment

Set EXT frequency, level of 8903 to be 1 kHz, 1.038 V with 1 mV step. Perform LOW LED adjustment by adjusting VR306 in cpu unit.

(The level point of LOW LED light-on : 1.038 V, the level point of LOW LED light-out : 1.039 V),

7. FM deviation adjustment and distortion of INT FM

Set frequency, level, INT frequency, FM deviation to be 150 MHz, 100 dB μ , 1 kHz, 100 kHz. Set filter of 8901 to be 50 Hz (HPF), 15 kHz (LPF) and Adjust FM deviation of 8901 to be 100 kHz by turning VR302, VR301 in cpu unit. To confirm distortion, set FM deviation to be 75 kHz and then vary frequency (150 MHz, 115 MHz, 114 MHz, 100 MHz, 80 MHz, 79 MHz, 55 MHz, 54 MHz, 35 MHz, 34 MHz, 1 MHz)

Confirm distortion value (below 75 MHz : less than 0.1%, over 75 MHz : less than 0.05%)

8. AM modulation adjustment and distortion

Set frequency, level, INT AM to be 100 MHz, 100 dB μ , 60%. Adjust AM filter of 8901 to be 50 Hz, 15 kHz and adjust the value of 8901 to 60% by turning VR303 in cpu unit. Confirm AM LINEARITY (5% from 0.1 MHz, to 114 MHz, 10% from 115 MHz, to 150 MHz)

(check point: 1 MHz, 34 MHz, 35 MHz, 54 MHz, 55 MHz, 79 MHz, 80 MHz, 110 MHz < 114 MHz, 115 MHz, 150 MHz > 114 MHz)

To confirm AM distortion, set INT AM to be 30% and then, confirm AM distortion (0.5% below 34 MHz at 1.5% from 35 MHz to 114 MHz, 3% over 115 MHz)

(check point: 1 MHz, 10 MHz, 34 MHz $\leq$ 34 MHz:

35MHz $\leq$ 50 MHz, 70 MHz, 100 MHz, 114 MHz $\leq$ 114 MHz: 115MHz, 150MHz $\geq$ 114 MHz)

SG-5150/SG-5155

ADJUSTMENT

CPU UNIT (W02-2492-08/SG-5150 W02-2499-08/SG-5155)

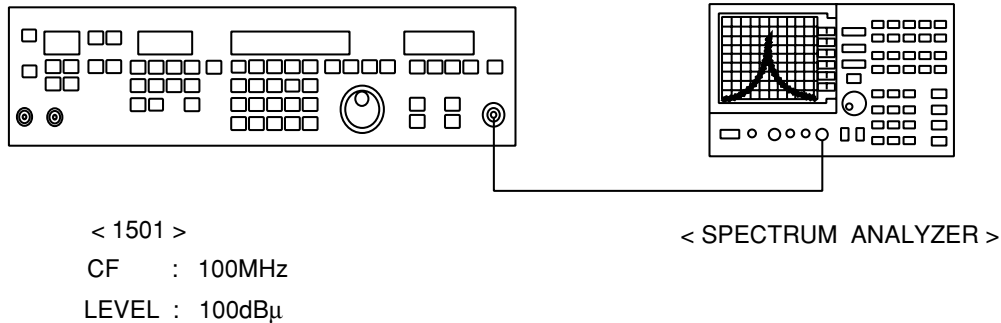
TEST EQUIPMENT REQUIRED

Test Equipment	Model	Maker
Oscilloscope	2 2 3 5	Tektronix
Digital Multimeter	45, 85, 87	Fluke

1. AF

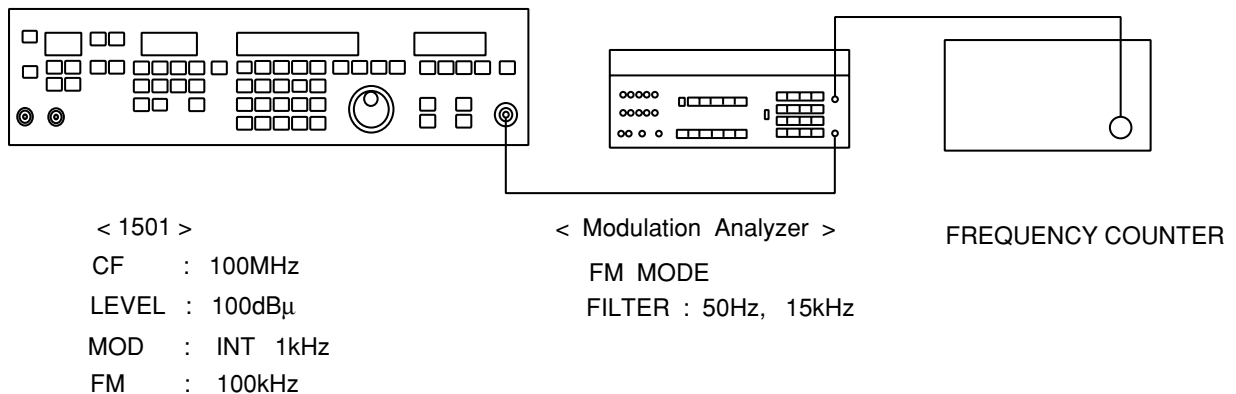
(1) Adjustment ALC LEVEL

Set frequency, level of zig set to be 100 MHz, 100 dB μ .



Adjust indicating value of spectrum analyzer to be 94.07 dB μ (VR305) under the above conditions.

(2) Adjustment of INT frequency

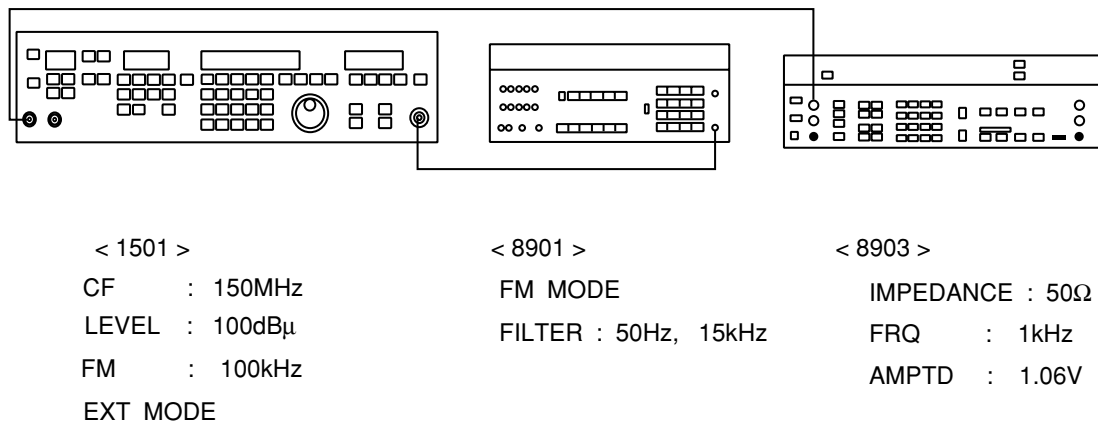


Confirm the indicating frequency in frequency counter is 1 kHz under the above conditions. If the frequency is not appropriate, adjust frequency to be 1 kHz by turning C301(103 pF). The value of INT will be fitted automatically by adjusting 1 kHz.

- Error rate of 1 kHz : ± 10 Hz
- Error rate of 400 Hz : ± 8 Hz

(3) FM CAL

①



SG-5150/SG-5155

ADJUSTMENT

Type "LOAD FM 1501" after connecting remote cable between computer and 5150/5155. After setting above conditions, [STO] [5] of 5150/5155 front key. When JPr.opn is displayed in frequency display window, open jumper in cpu unit. Adjust indicating value of 8901 to be 100 kHz by varying VR304, after fixing value in LEVEL window to 1501 by using [FREQ]→ [▲]/[▼] or [LEVEL]→/key. Press Run (F2) by using computer panel unit and then, perform FM CAL.

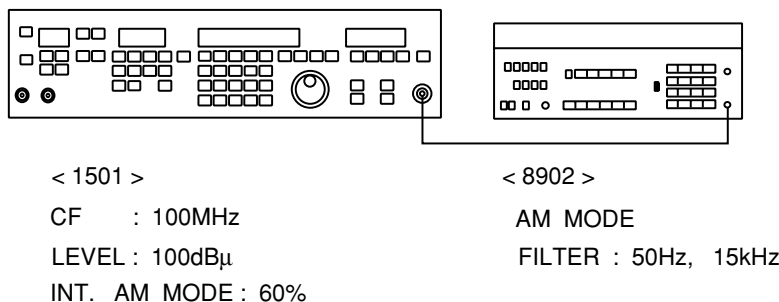
② Adjustment of FM deviation

Set INT frequency of 5150/5155 to 1 kHz after making as same condition as FM CAL.

Adjust indication value (FM deviation) of 8901 to be 100 kHz by varying VR301 and VR302.

※ Caution (Vary VR301. And vary next VR302 as the direction as shown as in Figure.)

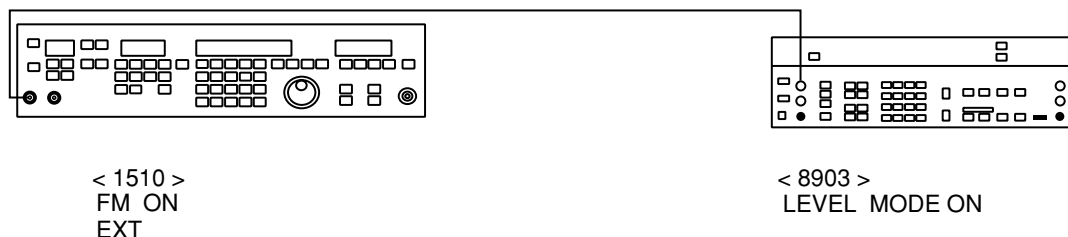
(4) AM modulation



Vary and adjust the indicating value of 8901 to be 60% by varying VR303 after setting above conditions.

(5) Adjustment of EXT H/L

Apply the signal (EXT frequency 1 kHz, level 3 V peak to peak) to EXT L terminal, and adjust VR306 to turn on LOW lamp when the signal voltage is 1.038 V.



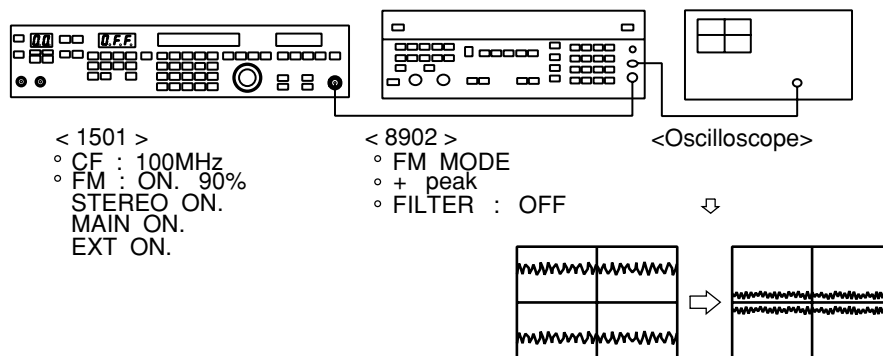
※ Note

- Oscillation of 1 kHz, 400 Hz is oscillated by time constant of R307, R309(39.7 K), R306, R308(15.8 K), C301, C302(103 pF).
The role of U302 (MC14052) is switch for oscillation condition.
- Pin no. 7 of power terminal MC14053 [pin no.16 (+5 V), pin no.7 (-5 V)] set to GND, and switch ON, the resistance between terminals will be about 200 Ω, and pin no.7 set to -5 V, the resistance will be about 100 Ω.

2. STEREO (SG-5150)

Adjustment NULL

Adjust noise signal to be about 200 Hz by adjusting VR506 (NULL) observing oscilloscope, after setting following conditions.

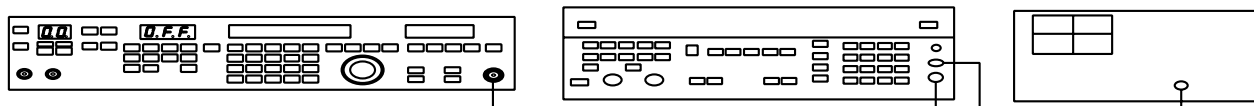


SG-5150/SG-5155

ADJUSTMENT

※ Adjustment of main waveform

Adjust waveform by VR501 (M-S) observing oscilloscope to get clear pulse, after setting following conditions.



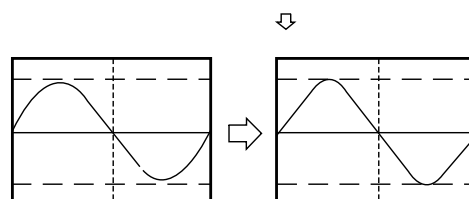
< 1501 >

- CF : 100MHz
- FM ON, 90%
STEREO ON.
RIGHT ON.
1kHz ON.

< 8902 >

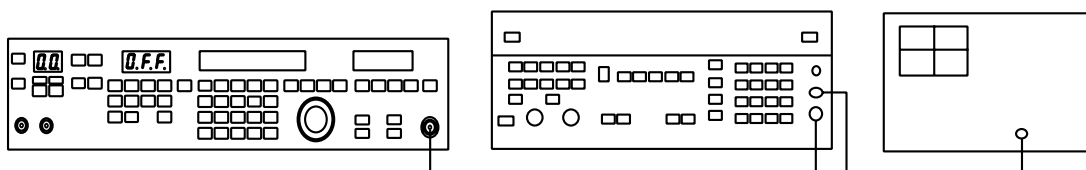
- FM MODE
- + peak
- FILTER : OFF

< Oscilloscope >



※ Adjustment of SEPARATION

Balancing the waveform as shown in the picture by adjusting VR507 (SEP) observing oscilloscope, after setting following conditions.



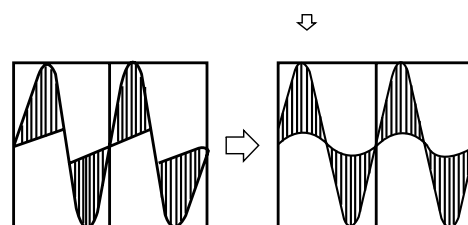
< 1501 >

- CF : 100MHz
- FM ON, 90%
STEREO ON.
LEFT ON.
1kHz ON.

< 8902 >

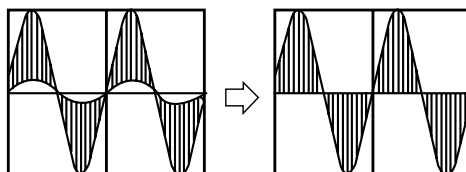
- FM MODE
- + peak
- FILTER : OFF

< Oscilloscope >



※ Adjustment of LEFT waveform

- Adjust LEFT side waveform by VR503(L-SEP) to be same as the picture flat observing LEFT side waveform with oscilloscope, after setting following conditions.
- Keep conditions of 1501, 8902 to be same as the above continuously.

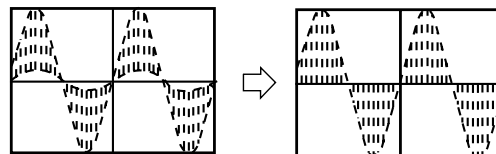
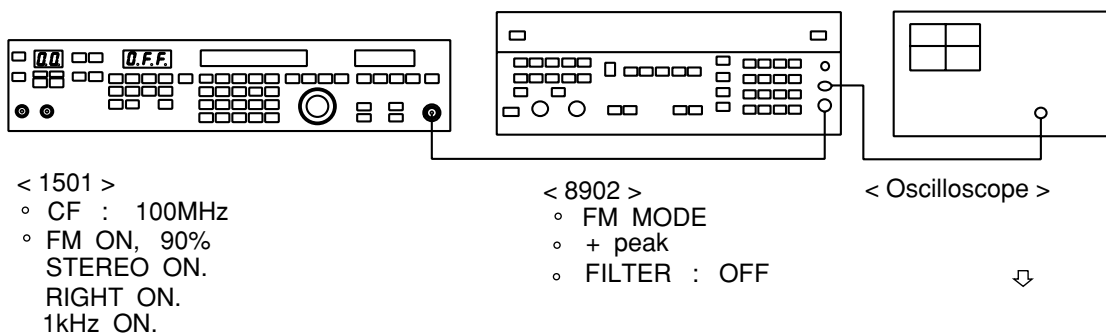


※ Adjustment of RIGHT waveform

Adjust waveform by VR504 (R-SEP) to be same as the picture observing RIGHT side waveform with oscilloscope, after setting following conditions.

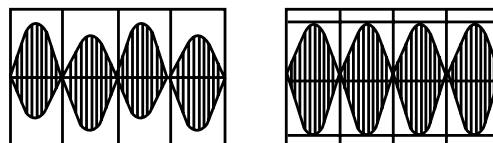
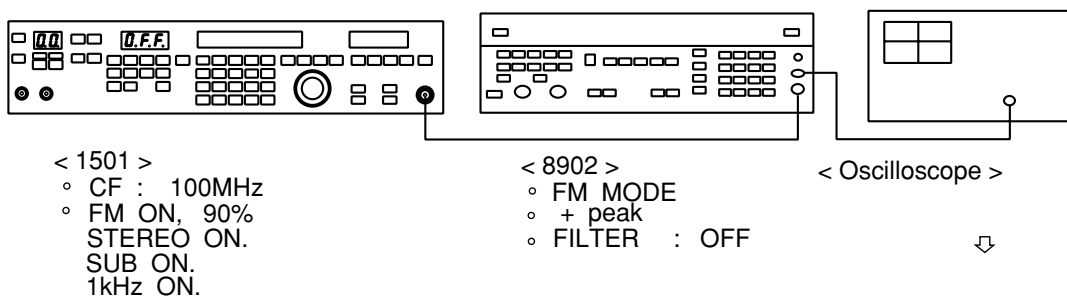
SG-5150/SG-5155

ADJUSTMENT



※ Adjustment of SUB pulse

Adjust waveform by VR 502(SUB) for +PEAK and -PEAK to be same level, as shown on the picture observing SUB waveform with oscilloscope, after setting following conditions.



OSCILLATE UNIT (W02-2493-18)

TEST EQUIPMENT REQUIRED

Test Equipment	model	maker
Digital Multimeter	45, 85, 87	Fluke
Spectrum Analyzer	R4131A	Advantest

ADJUSTMENT

0.1 MHz to 34 MHz oscillation frequency

This is a subtracted frequency between 114 to 80.1 MHz from VCO and 80 MHz from local oscillator.

VT adjustment of 80 MHz local oscillator is done by adjusting banding core being inside local oscillator. (TP3)

Frequency Oscillation Range	Frequency of VT adjustment	
0.1 to 34	Frequency	VT
	34.999	6VDC

* New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnés dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

1

Ref. No	Parts No.	Name & Description
OVERALL SG-5150(Y76-1050-00)/SG-5155(Y76-1060-00)		
	A01-4130-18 A01-4131-18 A10-1542-18 A13-2284-18 A13-2285-18	CASE; TOP CASE; BOTTOM CHASSIS FRAME; RIGHT FRAME; LEFT
	A13-2286-18 A13-2287-08 A22-1372-18 A63-0434-18 A63-0435-18	FRAME; FRONT PANEL (TOP AND BOTTOM) FRAME; FRONT PANEL (SIDE) SUB PANEL FRONT PANEL (SG-5150) FRONT PANEL (SG-5155)
	A83-0235-18	REAR PANEL
	B03-0606-18 B03-0607-18 B11-1707-08 B63-0311-00 B63-0312-10	SIDE DECORATION PLATE; FLAME (LEFT) SIDE DECORATION PLATE; HANDLE (2 USED) FILTER INSTRUCTION MANUAL; JAPANESE INSTRUCTION MANUAL; ENGLISH
	D21-0948-08	EXTENSION SHAFT
	E03-0230-08 E04-0518-08 E04-0519-08 E30-1951-05 E30-1947-15	AC INLET COAXIAL CONNECTOR BNC RECEPTACLE UL/CSA POWER CORD BS POWER CORD
	E30-1952-05 E30-1953-05 E30-1967-05	CEE POWER CORD SAA POWER CORD JIS POWER CORD
	F01-2395-18 F05-3018-05 F05-4016-05 F06-5015-05 F07-1543-08	HEAT SINK FUSE (6.4*30) 0.2A/250V FUSE (5*20) T0.4A/250V FUSE (6.3*32) T0.5A/250V COVER; GP-IB
	F10-2584-18 F10-2585-18 F10-2586-18 F11-1554-18 F11-1555-08	SHIELD PLATE; SUB PANEL SHIELD COVER; REAR SHIELD COVER; FRONT SHIELD CASE SHIELD CASE; TOP (LARGE)
	F11-1556-08	SHIELD CASE; BOTTOM (SMALL)
	G13-0795-08 G13-0796-08	RUBBER TAPE; CPU UNIT BRACKET (BLACK) RUBBER; BETWEEN THE HANDLE AND CHASSIS
	H10-2905-18 H25-0857-08 H53-0371-18 H53-0372-18	FOAMED STYREN PAD VINYL COVER CARTON BOX (SG-5150) CARTON BOX (SG-5155)
	J02-0559-08 J02-0560-08 J02-0561-18 J02-0562-08 J02-0563-08	RUBBER FOOT; SIDE (4 USED) RUBBER FOOT; BOTTOM (2 USED) CORD WRAP TILT STAND; LEVER TILT STAND; BLACK
	J02-0564-08 J21-9056-08 J21-9057-18	THOOTHED LOCK WASHER; TILT STAND BRACKET; POWER TRANSFORMER (LARGE) BRACKET; POWER TRANSFORMER (SMALL)

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2

Ref. No	Parts No.	Name & Description
	J21-9126-08 J21-9127-18 J29-0539-18 J42-0850-08	BRACKET; REMOTE BRACKET; PANEL GUIDE BRACKET; REAR PANEL (2 USED) BUCHING
	K01-0568-08 K24-3025-08 K24-3026-18 K24-3027-18	HANDLE PUSH KNOB; POWER PUSH BUTTON (SG-5150) PUSH BUTTON (SG-5155)
	L07-1578-08	POWER TRANSFORMER
	N09-4554-18 N10-2030-41 N15-0040-41 N16-0030-41 N30-2004-41	SCREW, FLAT HD NUT, HEX (M3) PLAIN WASHER SPRING WASHER SCREW, PAN HD (M2*4)
	N30-2606-41 N30-3018-41 N30-3024-41 N30-4012-41 N32-3008-41	SCREW, PAN HD (M2.6*6) SCREW, PAN HD (M3*18) SCREW, PAN HD (M3*24) SCREW, PAN HD (M4*12) SCREW, FLAT HD (M3*8)
	N32-4008-41 N35-3006-41 N35-3008-41 N35-4012-41 N35-4016-41	SCREW, FLAT HD (M4*8) SCREW, BINDING HD (M3*6) SCREW, BINDING HD (M3*8) SCREW, BINDING HD (M4*12) SCREW, BINDING HD (M4*16)
	S68-0691-08	PUSH SWITCH
	W02-4067-08 W02-4068-08 W02-4069-08 W02-4070-08 W02-4071-08	CPU UNIT (SG-5150) CPU UNIT (SG-5155) PANEL UNIT (SG-5150) PANEL UNIT (SG-5155) OSCILLATE UNIT
	W02-4072-08 W02-4073-08 W02-4074-08 W02-4075-08	CONTROL UNIT INTERFACE UNIT (REMOTE) INTERFACE UNIT (GPIB) ATTENUATOR UNIT

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SG-5150/SG-5155
PARTS LIST(UNIT)

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1

Ref. No.	Parts No.	Name & Description			
PANEL UNIT (W02-2491-18)					
	J73-0743-08	PCB (UNMOUNTED)			
AR1	R90-0229-05	RES. NETWORK	10K	5%	1/8W
AR2	R90-0229-05	RES. NETWORK	10K	5%	1/8W
AR3	R90-0229-05	RES. NETWORK	10K	5%	1/8W
C1	C91-1128-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C2	C91-1128-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C3	C91-1128-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C4	C91-1128-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C5	C91-1128-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C6	C91-1128-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C17	CE04EW1E101M	CAP. ELECTRO	100μ	20%	25V
C22	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C23	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C24	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C70	C91-1128-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C71	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C73	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C74	C91-1128-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C75	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C76	CF92V1H153J	CAP. METAL FILM	0.015μ	5%	50V
C77	CF92V1H153J	CAP. METAL FILM	0.015μ	5%	50V
C78	CF92V1H153J	CAP. METAL FILM	0.015μ	5%	50V
C79	CF92V1H153J	CAP. METAL FILM	0.015μ	5%	50V
C100	CC45SL1H221J	CAP. CERAMIC	220p	5%	50V
C101	CC45SL1H221J	CAP. CERAMIC	220p	5%	50V
C102	CC45SL1H221J	CAP. CERAMIC	220p	5%	50V
C103	CC45SL1H221J	CAP. CERAMIC	220p	5%	50V
C104	CC45SL1H221J	CAP. CERAMIC	220p	5%	50V
C105	CE04EW1E101M	CAP. ELECTRO	100μ	20%	25V
D1	LD-201MG	LED, GREEN			
D2	LD-201MG	LED, GREEN			
D3	LD-201MG	LED, GREEN			
D4	LD-201VR	LED, RED			
D5	LD-201VR	LED, RED			
D7	LD-201MG	LED, GREEN			
D8	LD-201MG	LED, GREEN			
D9	LD-201MG	LED, GREEN			
D10	LD-201MG	LED, GREEN			
D11	LD-201MG	LED, GREEN			
D12	LD-201MG	LED, GREEN			
D13	LD-201MG	LED, GREEN			
D14	LD-201MG	LED, GREEN			
D15	LD-201MG	LED, GREEN			
D16	LD-201VR	LED, RED			
D17	LD-201VR	LED, RED			
D18	LD-201VR	LED, RED			
D19	LD-201VR	LED, RED			
D20	1N4148	DIODE			
D21	1N4148	DIODE			
D22	1N4148	DIODE			
D23	1N4148	DIODE			
DSP01	B30-3090-08	LED; 7-SEGMENT			

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Ref. No	Parts No.	Name & Description			
DSP02	B30-3090-08	LED; 7-SEGMENT			
DSP03	B30-3090-08	LED; 7-SEGMENT			
DSP04	B30-3090-08	LED; 7-SEGMENT			
DSP05	B30-3090-08	LED; 7-SEGMENT			
DSP06	B30-3090-08	LED; 7-SEGMENT			
DSP07	B30-3090-08	LED; 7-SEGMENT			
DSP08	B30-3090-08	LED; 7-SEGMENT			
DSP09	B30-3090-08	LED; 7-SEGMENT			
DSP010	B30-3090-08	LED; 7-SEGMENT			
DSP011	B30-3090-08	LED; 7-SEGMENT			
DSP012	B30-3090-08	LED; 7-SEGMENT			
DSP013	B30-3090-08	LED; 7-SEGMENT			
DSP014	B30-3090-08	LED; 7-SEGMENT			
DSP015	B30-3090-08	LED; 7-SEGMENT			
DSP016	B30-3090-08	LED; 7-SEGMENT			
J1	E40-7812-08	PIN CONNECTOR	2P		
J2	E40-7117-05	PIN CONNECTOR	20P		
Q1	2SA1267	TR. SI, PNP			
Q2	2SA1267	TR. SI, PNP			
Q3	2SA1267	TR. SI, PNP			
Q4	2SA1267	TR. SI, PNP			
Q5	2SA1267	TR. SI, PNP			
Q6	2SA1267	TR. SI, PNP			
Q7	2SA1267	TR. SI, PNP			
Q8	2SC3402	TR. SI, NPN			
Q9	2SC3402	TR. SI, NPN			
R4	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R5	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R6	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R7	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R8	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R9	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R12	RN14BK2E3300F	RES. METAL FILM	330	1%	1/4W
R13	RN14BK2E3300F	RES. METAL FILM	330	1%	1/4W
R14	RN14BK2E2002F	RES. METAL FILM	20K	1%	1/4W
R15	RN14BK2E5600F	RES. METAL FILM	560	1%	1/4W
R50	RN14BK2E4701F	RES. METAL FILM	4.7K	1%	1/4W
R51	RN14BK2E4701F	RES. METAL FILM	4.7K	1%	1/4W
R70	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R71	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R72	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R73	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R74	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R75	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R77	RN14BK2E2002F	RES. METAL FILM	20K	1%	1/4W
R78	RN14BK2E5600F	RES. METAL FILM	560	1%	1/4W
R100	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R101	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R102	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R103	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R104	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R107	RN14BK2E3300F	RES. METAL FILM	330	1%	1/4W
R108	RN14BK2E3300F	RES. METAL FILM	330	1%	1/4W
R109	RN14BK2E3300F	RES. METAL FILM	330	1%	1/4W
R110	RN14BK2E3300F	RES. METAL FILM	330	1%	1/4W

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R111	RN14BK2E3300F	RES. METAL FILM	330	1% 1/4W
R112	RN14BK2E3300F	RES. METAL FILM	330	1% 1/4W
R113	RN14BK2E3300F	RES. METAL FILM	330	1% 1/4W
R114	RN14BK2E3300F	RES. METAL FILM	330	1% 1/4W
R115	RN14BK2E3300F	RES. METAL FILM	330	1% 1/4W
R116	RN14BK2E3300F	RES. METAL FILM	330	1% 1/4W
R117	RN14BK2E3300F	RES. METAL FILM	330	1% 1/4W
R118	RN14BK2E3300F	RES. METAL FILM	330	1% 1/4W
R119	RN14BK2E3300F	RES. METAL FILM	330	1% 1/4W
R120	RN14BK2E3300F	RES. METAL FILM	330	1% 1/4W
R121	RN14BK2E3300F	RES. METAL FILM	330	1% 1/4W
R123	RN14BK2E3300F	RES. METAL FILM	330	1% 1/4W
R125	RN14BK2E3300F	RES. METAL FILM	330	1% 1/4W
R126	RN14BK2E5000F	RES. METAL FILM	500	1% 1/4W
SW2	S70-0648-08	TACT SWITCH		
SW3	S70-0648-08	TACT SWITCH		
SW4	S70-0648-08	TACT SWITCH		
SW5	S70-0648-08	TACT SWITCH		
SW6	S70-0647-08	TACT SWITCH, WITH LED (RED)		
SW7	S70-0648-08	TACT SWITCH		
SW8	S70-0648-08	TACT SWITCH		
SW9	S70-0648-08	TACT SWITCH		
SW10	S70-0647-08	TACT SWITCH, WITH LED (RED)		
SW11	S70-0647-08	TACT SWITCH, WITH LED (RED)		
SW12	S70-0647-08	TACT SWITCH, WITH LED (RED)		
SW13	S70-0647-08	TACT SWITCH, WITH LED (RED)		
SW14	S70-0647-08	TACT SWITCH, WITH LED (RED)		
SW15	S70-0647-08	TACT SWITCH, WITH LED (RED)		
SW16	S70-0647-08	TACT SWITCH, WITH LED (RED)		
SW17	S70-0647-08	TACT SWITCH, WITH LED (RED)		
SW18	S70-0647-08	TACT SWITCH, WITH LED (RED)		
SW19	S70-0647-08	TACT SWITCH, WITH LED (RED)		
SW20	S70-0647-08	TACT SWITCH, WITH LED (RED)		
SW21	S70-0647-08	TACT SWITCH, WITH LED (RED)		
SW22	S70-0648-08	TACT SWITCH		
SW23	S70-0648-08	TACT SWITCH		
SW24	S70-0648-08	TACT SWITCH		
SW25	S70-0648-08	TACT SWITCH		
SW26	S70-0648-08	TACT SWITCH		
SW27	S70-0648-08	TACT SWITCH		
SW28	S70-0648-08	TACT SWITCH		
SW29	S70-0648-08	TACT SWITCH		
SW30	S70-0648-08	TACT SWITCH		
SW31	S70-0648-08	TACT SWITCH		
SW32	S70-0648-08	TACT SWITCH		
SW33	S70-0648-08	TACT SWITCH		
SW34	S70-0648-08	TACT SWITCH		
SW35	S70-0648-08	TACT SWITCH		
SW36	S70-0648-08	TACT SWITCH		
SW37	S70-0648-08	TACT SWITCH		
SW38	S70-0647-08	TACT SWITCH, WITH LED (RED)		
SW39	S70-0648-08	TACT SWITCH		
SW40	S70-0648-08	TACT SWITCH		
SW41	S70-0647-08	TACT SWITCH, WITH LED (RED)		
SW42	S70-0648-08	TACT SWITCH		

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4

Ref. No	Parts No.	Name & Description
SW43	S70-0648-08	TACT SWITCH
SW44	S70-0648-08	TACT SWITCH
SW45	S70-0648-08	TACT SWITCH
SW47	S70-0648-08	TACT SWITCH
SW48	S70-0648-08	TACT SWITCH
SW49	S70-0648-08	TACT SWITCH
SW50	S70-0648-08	TACT SWITCH
SW51	S70-0648-08	TACT SWITCH
SW52	S70-0648-08	TACT SWITCH
SW54	S70-0647-08	TACT SWITCH, WITH LED (RED)
SW55	S70-0648-08	TACT SWITCH
SW56	W02-4010-08	ROTALY ENCODER
SW70	W02-4010-08	ROTALY ENCODER
U1	MC14532BCP	IC, 8-BIT PRIORITY ENCODER
U2	MC14532BCP	IC, 8-BIT PRIORITY ENCODER
U3	TC74HC244AP	IC, OCTAL BUS BUFFER (3-STATE)
U4	TC74HC138AP	IC, 3-TO-8 LINE DECODER
U5	MC14093BP	IC, QUAD 2-INPUT NAND SCHMITT TRIGGER
U6	MC14528BCP	IC, DUAL MONOSTABLE MULTIVIBRATOR
U12	MC14528BCP	IC, DUAL MONOSTABLE MULTIVIBRATOR
U23	MC14093BP	IC, QUAD 2-INPUT NAND SCHMITT TRIGGER
U99	TC74HC14AF	IC
U100	TC74HC595AF	IC
U101	TC74HC595AF	IC
U102	TC74HC595AF	IC
U103	TC74HC595AF	IC
U104	TC74HC595AF	IC
U105	TC74HC595AF	IC
U106	TC74HC595AF	IC
U107	TC74HC595AF	IC
U108	TC74HC595AF	IC
U109	TC74HC595AF	IC
U110	TC74HC595AF	IC
U111	TC74HC595AF	IC
U112	TC74HC595AF	IC
U113	TC74HC595AF	IC
U114	TC74HC595AF	IC
U115	TC74HC595AF	IC
U116	TC74HC595AF	IC
U117	TC74HC595AF	IC
U118	TC74HC595AF	IC
U119	TC74HC595AF	IC
U120	TC74HC595AF	IC
U121	TC74HC595AF	IC
U122	TC74HC595AF	IC
U123	TC74HC595AF	IC
U124	TC74HC595AF	IC
U125	LM317T	IC
CPU UNIT (W02-2492-08)		
A3	E02-0143-05	IC SOCKET (FOR U105)
	J73-0742-08	PCB (UNMOUNTED)
	F20-3034-05	INSULATOR SHEET

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SG-5150/SG-5155

PARTS LIST

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5

Ref. No	Parts No.	Name & Description			
AR1	R90-0645-05	RES. NETWORK	10K	5%	1/8W
BD201	RS405L	DIODE, BRIDGE			
BD202	RS405L	DIODE, BRIDGE			
BD203	RS405L	DIODE, BRIDGE			
C101	C91-2859-08	CAP. CERAMIC	0.22μ	10%	50V
C102	CC45FCH1H220J	CAP. CERAMIC	22p	5%	50V
C103	CC45FCH1H220J	CAP. CERAMIC	22p	5%	50V
C104	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C105	CE04EW1E470M	CAP. ELECTRO	47μ	20%	25V
C106	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C107	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C109	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C110	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C112	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C113	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C115	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C201	CE04EW1V472M	CAP. ELECTRO	4700μ	20%	35V
C202	CE04EW1V472M	CAP. ELECTRO	4700μ	20%	35V
C203	CE04EW1E101M	CAP. ELECTRO	100μ	20%	25V
C204	CE04EW1E101M	CAP. ELECTRO	100μ	20%	25V
C205	CE04EW1E101M	CAP. ELECTRO	100μ	20%	25V
C206	CE04EW1E101M	CAP. ELECTRO	100μ	20%	25V
C207	CE04EW1E101M	CAP. ELECTRO	100μ	20%	25V
C208	CE04EW1V472M	CAP. ELECTRO	4700μ	20%	35V
C209	CE04EW1V472M	CAP. ELECTRO	4700μ	20%	35V
C301	C91-2867-08	CAP. FILM	7500p	1%	25V
C302	C91-2860-08	CAP. FILM	0.01μ	1%	50V
C303	CE04EW1H100M	CAP. ELECTRO	10μ	20%	50V
C304	CE04EW1E220M	CAP. ELECTRO	22μ	20%	25V
C305	CE04EW1E220M	CAP. ELECTRO	22μ	20%	25V
C306	CE04EW1E220M	CAP. ELECTRO	22μ	20%	25V
C307	CE04EW1H010M	CAP. ELECTRO	1μ	20%	50V
C308	CE04EW1E101M	CAP. ELECTRO	100μ	20%	25V
C309	CE04EW1E101M	CAP. ELECTRO	100μ	20%	25V
C312	CC45FCH1H020C	CAP. CERAMIC	2p	0.25%	50V
C315	CC45FCH1H020C	CAP. CERAMIC	2p	0.25%	50V
C316	CE04EW1H4R7M	CAP. ELECTRO	4.7μ	20%	50V
C317	CE04EW1H4R7M	CAP. ELECTRO	4.7μ	20%	50V
C318	CE04EW1H4R7M	CAP. ELECTRO	4.7μ	20%	50V
C319	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C320	C91-2865-08	CAP. FILM	2200p	1%	25V
C321	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C322	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C323	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C325	CE04EW1E101M	CAP. ELECTRO	100μ	20%	25V
C328	CE04EW1E101M	CAP. ELECTRO	100μ	20%	25V
C335	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C350	CE04EW1E220M	CAP. ELECTRO	22μ	20%	25V
C501	CC45FCH1H100D	CAP. CERAMIC	10p	0.5%	50V
C502	CE04EW1H100M	CAP. ELECTRO	10μ	20%	50V
C503	CC45FCH1H100D	CAP. CERAMIC	10p	0.5%	50V
C504	CE04EW1H010M	CAP. ELECTRO	1μ	20%	50V
C505	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C506	CC45FCH1H330J	CAP. CERAMIC	33p	5%	50V

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PARTS LIST

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Ref. No	Parts No.	Name & Description			
C507	CE04EW1H100M	CAP. ELECTRO	10μ	20%	50V
C508	CC45FCH1H330J	CAP. CERAMIC	33p	5%	50V
C509	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C510	CE04EW1C221M	CAP. ELECTRO	220μ	20%	16V
C511	CC45FCH1H220J	CAP. CERAMIC	22p	5%	50V
C512	C91-2864-08	CAP. FILM	1500p	1%	25V
C513	C91-2864-08	CAP. FILM	1500p	1%	25V
C514	C91-2863-08	CAP. FILM	1000p	1%	25V
C515	C91-2863-08	CAP. FILM	1000p	1%	25V
C516	C91-2865-08	CAP. FILM	2200p	1%	25V
C517	C91-2863-08	CAP. FILM	1000p	1%	25V
C518	C91-2863-08	CAP. FILM	1000p	1%	25V
C519	C91-2865-08	CAP. FILM	2200p	1%	25V
C520	C91-2863-08	CAP. FILM	1000p	1%	25V
C521	CC45FCH1H470J	CAP. CERAMIC	47p	5%	50V
C522	CC45FCH1H470J	CAP. CERAMIC	47p	5%	50V
C523	CC45FCH1H470J	CAP. CERAMIC	47p	5%	50V
C524	CE04EW1H010M	CAP. ELECTRO	1μ	20%	50V
C525	CE04EW1H010M	CAP. ELECTRO	1μ	20%	50V
C526	CC45FCH1H180J	CAP. CERAMIC	18p	5%	50V
C527	C91-2868-08	CAP. FILM	470p		
C528	C91-2869-08	CAP. FILM	820p		
C529	C91-2866-08	CAP. FILM	3300p	1%	25V
C530	C91-2861-08	CAP. FILM	0.022μ	1%	25V
C531	C91-2862-08	CAP. FILM	0.082μ	1%	25V
C532	C91-2866-08	CAP. FILM	3300p	1%	25V
C533	C91-2861-08	CAP. FILM	0.022μ	1%	25V
C534	C91-2868-08	CAP. FILM	470p		
C535	C91-2869-08	CAP. FILM	820p		
C536	CE04EW1H100M	CAP. ELECTRO	10μ	20%	50V
C537	C91-2868-08	CAP. FILM	470p		
C538	CC45FCH1H100D	CAP. CERAMIC	10p	0.5%	50V
C539	CE04EW1H100M	CAP. ELECTRO	10μ	20%	50V
C540	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C541	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C542	CE04EW1E101M	CAP. ELECTRO	100μ	20%	25V
C543	CE04EW1C221M	CAP. ELECTRO	220μ	20%	16V
C544	CE04EW1E101M	CAP. ELECTRO	100μ	20%	25V
C545	CE04EW1E101M	CAP. ELECTRO	100μ	20%	25V
C546	CE04EW1E101M	CAP. ELECTRO	100μ	20%	25V
C547	CE04EW1E101M	CAP. ELECTRO	100μ	20%	25V
C548	CE04EW1E101M	CAP. ELECTRO	100μ	20%	25V
C549	CE04EW1C221M	CAP. ELECTRO	220μ	20%	16V
C550	CE04EW1E101M	CAP. ELECTRO	100μ	20%	25V
C551	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C552	CE04EW1E101M	CAP. ELECTRO	100μ	20%	25V
D201	1N4001	DIODE			
D202	1N4001	DIODE			
D301	1N4148	DIODE			
D302	1N4148	DIODE			
D303	1N4148	DIODE			
D304	1N4148	DIODE			
D305	1N4148	DIODE			
D306	1N751A	DIODE, ZENER			

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Ref. No	Parts No.	Name & Description			
D307	1N751A	DIODE, ZENER			
D501	1N4148	DIODE			
D502	1N751A	DIODE, ZENER			
D503	1N4148	DIODE			
D504	1N4148	DIODE			
D505	1N4148	DIODE			
D506	1N4148	DIODE			
D507	1N4148	DIODE			
D508	1N4148	DIODE			
D509	1N4148	DIODE			
JP101	E40-7117-05	PIN CONNECTOR	20P		
JP102	E40-7907-08	PIN CONNECTOR	16P		
JP103	E40-7117-05	PIN CONNECTOR	20P		
JP105	E40-7616-05	PIN CONNECTOR	2P		
JP201	E40-7812-08	PIN CONNECTOR	2P		
JP202	E40-7814-08	PIN CONNECTOR	7P		
JP301	E40-7812-08	PIN CONNECTOR	2P		
JP302	E40-7812-08	PIN CONNECTOR	2P		
JP501	E40-7813-08	PIN CONNECTOR	6P		
JP502	E40-7812-08	PIN CONNECTOR	2P		
JP503	E40-7812-08	PIN CONNECTOR	2P		
JP505	E40-7812-08	PIN CONNECTOR	2P		
JP506	E40-7811-08	PIN CONNECTOR	10P		
L101	L39-1413-08	TOROIDAL COIL	33µH		
L501	L40-1011-13	FERRI INDUCTOR	100µH	10%	
L502	L40-1011-13	FERRI INDUCTOR	100µH	10%	
L503	L40-1011-13	FERRI INDUCTOR	100µH	10%	
L504	L33-0879-08	FERRI INDUCTOR	2.2mH		
L505	L33-0879-08	FERRI INDUCTOR	2.2mH		
L506	L33-0879-08	FERRI INDUCTOR	2.2mH		
L507	L33-0879-08	FERRI INDUCTOR	2.2mH		
L508	L33-0879-08	FERRI INDUCTOR	2.2mH		
Q301	2N4858	FET			
Q302	2SC1815(GR)	TR. SI, NPN			
Q501	2N2907A	TR. SI, PNP			
Q502	2SA1346	TR. SI, PNP			
Q503	2SA1346	TR. SI, PNP			
Q504	2SA1346	TR. SI, PNP			
Q505	2SA1346	TR. SI, PNP			
Q506	2SA1266	TR. SI, PNP			
Q507	2SA1266	TR. SI, PNP			
Q508	2SA1266	TR. SI, PNP			
Q509	2SA1266	TR. SI, PNP			
Q510	TIP32	TR. SI, PNP			
Q511	2SA1266	TR. SI, PNP			
Q512	2SA1266	TR. SI, PNP			
Q513	2SA1266	TR. SI, PNP			
Q514	2SA1266	TR. SI, PNP			
R103	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R104	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R105	RN14BK2E4701F	RES. METAL FILM	4.7K	1%	1/4W
R106	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R108	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W

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Ref. No	Parts No.	Name & Description			
R109	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R110	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R111	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R112	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R113	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R114	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R115	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R116	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R117	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R118	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R119	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R120	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R121	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R122	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R123	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R124	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R125	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R126	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R128	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R129	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R130	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R131	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R132	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R301	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R302	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R303	RN14BK2E6801F	RES. METAL FILM	6.8K	1%	1/4W
R304	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R305	RN14BK2E5601F	RES. METAL FILM	5.6K	1%	1/4W
R306	RN14BK2E1582F	RES. METAL FILM	15.8K	1%	1/4W
R307	R92-4095-08	RES. METAL FILM	39.7K	1%	1/4W
R308	RN14BK2E1582F	RES. METAL FILM	15.8K	1%	1/4W
R309	R92-4095-08	RES. METAL FILM	39.7K	1%	1/4W
R310	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R311	RN14BK2E2302F	RES. METAL FILM	23K	1%	1/4W
R312	RN14BK2E2202F	RES. METAL FILM	22K	1%	1/4W
R313	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R314	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R315	RN14BK2E5603F	RES. METAL FILM	560K	1%	1/4W
R316	RN14BK2E2202F	RES. METAL FILM	22K	1%	1/4W
R317	RN14BK2E2202F	RES. METAL FILM	22K	1%	1/4W
R318	RN14BK2E1501F	RES. METAL FILM	1.5K	1%	1/4W
R319	RN14BK2E4702F	RES. METAL FILM	47K	1%	1/4W
R320	RN14BK2E4702F	RES. METAL FILM	47K	1%	1/4W
R321	RN14BK2E1501F	RES. METAL FILM	1.5K	1%	1/4W
R322	RN14BK2E1801F	RES. METAL FILM	1.8K	1%	1/4W
R323	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R324	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R325	RN14BK2E1502F	RES. METAL FILM	15K	1%	1/4W
R326	RN14BK2E4701F	RES. METAL FILM	4.7K	1%	1/4W
R329	RN14BK2E2002F	RES. METAL FILM	20K	1%	1/4W
R330	RN14BK2E2202F	RES. METAL FILM	22K	1%	1/4W
R331	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R335	RN14BK2E1502F	RES. METAL FILM	15K	1%	1/4W
R336	RN14BK2E1503F	RES. METAL FILM	150K	1%	1/4W
R337	RN14BK2E2700F	RES. METAL FILM	270	1%	1/4W

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PARTS LIST

SG-5150/SG-5155

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Ref. No	Parts No.	Name & Description			
R338	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R339	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R340	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R341	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R342	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R343	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R345	RN14BK2E1801F	RES. METAL FILM	1.8K	1%	1/4W
R346	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R347	RN14BK2E2401F	RES. METAL FILM	2.4K	1%	1/4W
R348	RN14BK2E1502F	RES. METAL FILM	15K	1%	1/4W
R349	RN14BK2E5101F	RES. METAL FILM	5.1K	1%	1/4W
R350	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R351	RN14BK2E5101F	RES. METAL FILM	5.1K	1%	1/4W
R352	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R353	RN14BK2E1502F	RES. METAL FILM	15K	1%	1/4W
R354	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R355	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R380	RN14BK2E8201F	RES. METAL FILM	8.2K	1%	1/4W
R381	RN14BK2E8201F	RES. METAL FILM	8.2K	1%	1/4W
R501	RN14BK2E4702F	RES. METAL FILM	47K	1%	1/4W
R502	RN14BK2E4702F	RES. METAL FILM	47K	1%	1/4W
R503	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R504	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R505	RN14BK2E1302F	RES. METAL FILM	13K	1%	1/4W
R506	RN14BK2E1502F	RES. METAL FILM	15K	1%	1/4W
R507	RN14BK2E1502F	RES. METAL FILM	15K	1%	1/4W
R508	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R509	RN14BK2E1801F	RES. METAL FILM	1.8K	1%	1/4W
R510	RN14BK2E7501F	RES. METAL FILM	7.5K	1%	1/4W
R511	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R512	RN14BK2E1502F	RES. METAL FILM	15K	1%	1/4W
R513	RN14BK2E1502F	RES. METAL FILM	15K	1%	1/4W
R514	RN14BK2E1333F	RES. METAL FILM	133K	1%	1/4W
R515	RN14BK2E6803F	RES. METAL FILM	680K	1%	1/4W
R516	RN14BK2E6803F	RES. METAL FILM	680K	1%	1/4W
R517	RN14BK2E6201F	RES. METAL FILM	6.2K	1%	1/4W
R518	RN14BK2E1501F	RES. METAL FILM	1.5K	1%	1/4W
R519	RN14BK2E1501F	RES. METAL FILM	1.5K	1%	1/4W
R520	RN14BK2E1202F	RES. METAL FILM	12K	1%	1/4W
R521	RN14BK2E9101F	RES. METAL FILM	9.1K	1%	1/4W
R522	RN14BK2E9101F	RES. METAL FILM	9.1K	1%	1/4W
R523	RN14BK2E1500F	RES. METAL FILM	150	1%	1/4W
R524	RN14BK2E1500F	RES. METAL FILM	150	1%	1/4W
R525	RN14BK2E6200F	RES. METAL FILM	620	1%	1/4W
R526	RN14BK2E6200F	RES. METAL FILM	620	1%	1/4W
R527	RN14BK2E1302F	RES. METAL FILM	13K	1%	1/4W
R528	RN14BK2E4301F	RES. METAL FILM	4.3K	1%	1/4W
R529	RN14BK2E4301F	RES. METAL FILM	4.3K	1%	1/4W
R530	RN14BK2E3901F	RES. METAL FILM	3.9K	1%	1/4W
R531	RN14BK2E4700F	RES. METAL FILM	470	1%	1/4W
R532	RN14BK2E4301F	RES. METAL FILM	4.3K	1%	1/4W
R533	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R534	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R535	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R536	RN14BK2E5361F	RES. METAL FILM	5.36K	1%	1/4W

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R537	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R538	RN14BK2E2701F	RES. METAL FILM	2.7K	1%	1/4W
R539	RN14BK2E9100F	RES. METAL FILM	910	1%	1/4W
R540	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R541	RN14BK2E2401F	RES. METAL FILM	2.4K	1%	1/4W
R543	RN14BK2E7502F	RES. METAL FILM	75K	1%	1/4W
R545	RN14BK2E1203F	RES. METAL FILM	120K	1%	1/4W
R546	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R547	RN14BK2E2001F	RES. METAL FILM	2K	1%	1/4W
R548	RN14BK2E3901F	RES. METAL FILM	3.9K	1%	1/4W
R549	RN14BK2E8201F	RES. METAL FILM	8.2K	1%	1/4W
R550	RN14BK2E4701F	RES. METAL FILM	4.7K	1%	1/4W
R551	RN14BK2E2201F	RES. METAL FILM	2.2K	1%	1/4W
R552	RN14BK2E1800F	RES. METAL FILM	180	1%	1/4W
R553	RN14BK2E1800F	RES. METAL FILM	180	1%	1/4W
R554	RN14BK2E4701F	RES. METAL FILM	4.7K	1%	1/4W
R555	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R556	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R557	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R558	RN14BK2E4701F	RES. METAL FILM	4.7K	1%	1/4W
R559	RN14BK2E9101F	RES. METAL FILM	9.1K	1%	1/4W
R560	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R561	RN14BK2E1801F	RES. METAL FILM	1.8K	1%	1/4W
R562	RN14BK2E6200F	RES. METAL FILM	620	1%	1/4W
R563	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R564	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R565	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R566	RN14BK2E1333F	RES. METAL FILM	133K	1%	1/4W
R567	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R568	RN14BK2E1602F	RES. METAL FILM	16K	1%	1/4W
R569	RN14BK2E2701F	RES. METAL FILM	2.7K	1%	1/4W
R570	RN14BK2E2701F	RES. METAL FILM	2.7K	1%	1/4W
R571	RN14BK2E2701F	RES. METAL FILM	2.7K	1%	1/4W
R572	RN14BK2E2701F	RES. METAL FILM	2.7K	1%	1/4W
R573	RN14BK2E2701F	RES. METAL FILM	2.7K	1%	1/4W
R574	RN14BK2E4R70F	RES. METAL FILM	4.7	1%	1/4W
R575	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R576	RN14BK2E1501F	RES. METAL FILM	1.5K	1%	1/4W
R577	RN14BK2E2202F	RES. METAL FILM	22K	1%	1/4W
R578	RN14BK2E2701F	RES. METAL FILM	2.7K	1%	1/4W
R579	RN14BK2E22R0F	RES. METAL FILM	22	1%	1/4W
R580	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R581	RN14BK2E5000F	RES. METAL FILM	500	1%	1/4W
R582	RN14BK2E2701F	RES. METAL FILM	2.7K	1%	1/4W
R583	RN14BK2E2701F	RES. METAL FILM	2.7K	1%	1/4W
U101	M5L8255A	IC, PLUG. PERIPHERAL INTERFACE			
U102	P-80C32-25	IC			
U103	TC74HC373AP	IC, OCTAL D-TYPE LATCH (3-STATE)			
U104	DS1225Y	IC			
U105	T93-0963-08	PROGRAMED ROM			
U106	SN74LS14N	IC, HEX SCHMITT TRIGGER			
U107	TC74HC139AP	IC, DUAL 2-TO-4 LINE DECODER			
U108	SN74LS08N	IC, QUAD 2-INPUT AND GATE			
U109	TC74HC32AP	IC, QUAD 2-INPUT OR GATE			
U110	TC74HC4078AP	IC, 8-INPUT OR/NOR GATE			

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Ref. No	Parts No.	Name & Description
U111	MC14028BCP	IC, BCD TO DECIMAL DECODER
U112	PST518B	IC, LEVEL DETECTOR
U201	TA7805S	IC
U202	TA7815S	IC
U203	TA79015S	IC
U204	TA7805S	IC
U205	TA7805S	IC
U301	TL082CP	IC, JFET INPUT OP-AMP
U302	HD14052BP	IC, DUAL 4-CH ANALOG MPX/DE-MPX
U303	HD14053BP	IC, TRIPLE 2-CH ANALOG MPX/DE-MPX
U304	AD7533KN	IC, 10 BIT D/A
U305	MC14094BCP	IC, 8-STAGE SHIFT/STORE REGISTE
U306	TL081CP	IC, JFET INPUT OP-AMP
U307	HD14053BP	IC, TRIPLE 2-CH ANALOG MPX/DE-MPX
U308	MC14094BCP	IC, 8-STAGE SHIFT/STORE REGISTE
U309	TL084CN	IC, JFET INPUT OP-AMP
U310	AD7533KN	IC, 10 BIT D/A
U311	MC14094BCP	IC, 8-STAGE SHIFT/STORE REGISTE
U312	TL081CP	IC, JFET INPUT OP-AMP
U313	MC14081BCP	IC, B-SUFFIX SERIES CMOS GATES
U314	MC14528BCP	IC, DUAL MONOSTABLE MULTIVIBRATOR
U315	LM393	IC, LOW POWER LOW OFF SET VOLTAGE DUAL COMPARATOR
U501	TL084CN	IC, JFET INPUT OP-AMP
U502	HD14053BP	IC, TRIPLE 2-CH ANALOG MPX/DE-MPX
U503	TL084CN	IC, JFET INPUT OP-AMP
U504	HD14053BP	IC, TRIPLE 2-CH ANALOG MPX/DE-MPX
U505	AD7533KN	IC, 10 BIT D/A
U506	CA3054	IC, DIFFERENTIAL/CASCODE AMP
U507	SN74LS107AN	IC, DUAL JK FLIP-FLOP
U508	LM318N	IC, OPERATIONAL AMPLIFIERS
U509	LM318N	IC, OPERATIONAL AMPLIFIERS
U510	LM318N	IC, OPERATIONAL AMPLIFIERS
U511	HD14053BP	IC, TRIPLE 2-CH ANALOG MPX/DE-MPX
U512	LF356	IC
U513	AD7533KN	IC, 10 BIT D/A
U514	TL081CP	IC, JFET INPUT OP-AMP
U515	HD14066BP	IC, QUAD. ANALOG SW/QUAD. MPX
U516	MC14094BCP	IC, 8-STAGE SHIFT/STORE REGISTE
U517	MC14094BCP	IC, 8-STAGE SHIFT/STORE REGISTE
U518	MC14094BCP	IC, 8-STAGE SHIFT/STORE REGISTE
U519	MC14094BCP	IC, 8-STAGE SHIFT/STORE REGISTE
U520	SN74LS00N	IC, QUAD 2-INPUT NAND GATE
U521	SN74LS390N	IC, DUAL DECADE COUNTER
U522	MC14093BCP	IC, QUAD 2-INPUT NAND SCHMITT TRIGGER
U523	TL084CN	IC, JFET INPUT OP-AMP
U524	MC14094BCP	IC, 8-STAGE SHIFT/STORE REGISTE
U525	MC14094BCP	IC, 8-STAGE SHIFT/STORE REGISTE
VR301	R32-0850-05	RES. SEMI FIXED 10K 20%
VR302	R32-0837-05	RES. SEMI FIXED 2K 20%
VR303	R32-0850-05	RES. SEMI FIXED 10K 20%
VR304	R32-0850-05	RES. SEMI FIXED 10K 20%
VR305	R32-0836-05	RES. SEMI FIXED 100K 20%
VR306	R32-0837-05	RES. SEMI FIXED 2K 20%
VR501	R32-0839-05	RES. SEMI FIXED 5K 20%
VR502	R32-0850-05	RES. SEMI FIXED 10K 20%

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Ref. No	Parts No.	Name & Description
VR503	R32-0836-05	RES. SEMI FIXED 100K 20%
VR504	R32-0836-05	RES. SEMI FIXED 100K 20%
VR505	R32-0839-05	RES. SEMI FIXED 5K 20%
VR506	R32-0839-05	RES. SEMI FIXED 5K 20%
VR507	R32-0837-05	RES. SEMI FIXED 2K 20%
VR508	R32-0839-05	RES. SEMI FIXED 5K 20%
VR509	R32-0842-05	RES. SEMI FIXED 50K 20%
VR510	R32-0850-05	RES. SEMI FIXED 10K 20%
VR511	R32-0850-05	RES. SEMI FIXED 10K 20%
XT1	L77-2591-08	CRYSTAL RESONATOR
Y1	L77-2592-08	CRYSTAL RESONATOR
OSCILLATE UNIT (W02-2493-18)		
	J32-0876-05 J73-0744-18	BOSS; HEX (M3) PCB (UNMOUNTED)
	C91-2870-08 C91-2871-08	CAP. LEAD THROUGH 1000p CAP. LEAD THROUGH 22p
AR1	R90-0277-05	RES. NETWORK 33K 5% 1/8W
C1	CK45FB1H103K	CAP. CERAMIC 0.01μ 10% 50V
C2	CK45FB1H103K	CAP. CERAMIC 0.01μ 10% 50V
C3	CE04EW1C221M	CAP. ELECTRO 220μ 20% 16V
C4	CK45FB1H103K	CAP. CERAMIC 0.01μ 10% 50V
C5	CK45FB1H103K	CAP. CERAMIC 0.01μ 10% 50V
C6	CK45FB1H103K	CAP. CERAMIC 0.01μ 10% 50V
C7	CK45FB1H103K	CAP. CERAMIC 0.01μ 10% 50V
C8	CE04EW1C221M	CAP. ELECTRO 220μ 20% 16V
C9	CK45FB1H103K	CAP. CERAMIC 0.01μ 10% 50V
C10	CK45FB1H103K	CAP. CERAMIC 0.01μ 10% 50V
C11	CC45FCH1H020C	CAP. CERAMIC 2p 0.25% 50V
C12	CC45FCH1H020C	CAP. CERAMIC 2p 0.25% 50V
C13	CK45FB1H103K	CAP. CERAMIC 0.01μ 10% 50V
C14	CK45FB1H103K	CAP. CERAMIC 0.01μ 10% 50V
C15	CC45FCH1H020C	CAP. CERAMIC 2p 0.25% 50V
C16	CC45FCH1H020C	CAP. CERAMIC 2p 0.25% 50V
C17	CC45FCH1H020C	CAP. CERAMIC 2p 0.25% 50V
C18	CK45FB1H103K	CAP. CERAMIC 0.01μ 10% 50V
C19	CC45FCH1H020C	CAP. CERAMIC 2p 0.25% 50V
C20	CC45FCH1H020C	CAP. CERAMIC 2p 0.25% 50V
C21	CC45FCH1H020C	CAP. CERAMIC 2p 0.25% 50V
C22	CK45FB1H103K	CAP. CERAMIC 0.01μ 10% 50V
C23	CK45FB1H102K	CAP. CERAMIC 1000p 10% 50V
C24	CK45FB1H102K	CAP. CERAMIC 1000p 10% 50V
C25	CK45FB1H102K	CAP. CERAMIC 1000p 10% 50V
C26	CK45FB1H102K	CAP. CERAMIC 1000p 10% 50V
C27	C91-2874-08	CAP. FILM 1500p 25V
C28	C91-2872-08	CAP. FILM 0.1μ
C29	CC45FCH1H330J	CAP. CERAMIC 33p 5% 50V
C30	C91-2877-08	CAP. FILM 1μ 50V
C31	CK45FB1H102K	CAP. CERAMIC 1000p 10% 50V
C32	CK45FB1H102K	CAP. CERAMIC 1000p 10% 50V
C33	CC45FCH1H100D	CAP. CERAMIC 10p 0.5% 50V
C34	CC45FCH1H390J	CAP. CERAMIC 39p 5% 50V
C35	CK45FB1H102K	CAP. CERAMIC 1000p 10% 50V

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SG-5150/SG-5155
PARTS LIST

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Ref. No	Parts No.	Name & Description			
C36	CC45FCH1H180J	CAP. CERAMIC	18p	5%	50V
C37	CC45FCH1H390J	CAP. CERAMIC	39p	5%	50V
C38	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C39	CM93BD2A151J	CAP. MICA	150p	5%	100V
C40	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C41	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C42	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C43	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C44	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C46	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C47	CM93BD2A121J	CAP. MICA	120p	5%	100V
C48	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C49	CE04EW1E101M	CAP. ELECTRO	100μ	20%	25V
C50	CM93BD2A151J	CAP. MICA	150p	5%	100V
C51	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C52	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C54	CC45FCH1H560J	CAP. CERAMIC	56p	5%	50V
C55	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C56	CC45FCH1H150J	CAP. CERAMIC	15p	5%	50V
C57	CC45FCH1H150J	CAP. CERAMIC	15p	5%	50V
C58	CC45FCH1H150J	CAP. CERAMIC	15p	5%	50V
C59	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C60	CC45FCH1H220J	CAP. CERAMIC	22p	5%	50V
C61	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C62	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C63	C91-2875-08	CAP. FILM	0.1μ		
C64	C91-2875-08	CAP. FILM	0.1μ		
C65	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C66	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C68	CE04EW1C221M	CAP. ELECTRO	220μ	20%	16V
C69	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C70	C91-2877-08	CAP. FILM	1μ		50V
C71	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C72	C91-2878-08	CAP. FILM	4.7μ		63V
C73	C91-2876-08	CAP. FILM	0.47μ		50V
C74	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C75	CE04EW1C221M	CAP. ELECTRO	220μ	20%	16V
C76	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C77	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C78	CE04EW1E101M	CAP. ELECTRO	100μ	20%	25V
C79	CC45FCH1H470J	CAP. CERAMIC	47p	5%	50V
C80	CC45FCH1H470J	CAP. CERAMIC	47p	5%	50V
C81	C91-2863-08	CAP. FILM	1000p		
C82	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C83	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C84	CE04EW1E101M	CAP. ELECTRO	100μ	20%	25V
C85	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C86	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C87	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C88	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C89	CK73FB1H102K	CAP. CHIP	1000p	10%	50V
C90	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C91	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C92	CC45FCH1H030C	CAP. CERAMIC	3p	0.25%	50V
C93	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V

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Ref. No	Parts No.	Name & Description			
C94	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C95	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C96	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C97	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C98	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C99	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C100	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C101	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C102	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C103	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C104	CE04EW1E101M	CAP. ELECTRO	100μ	20%	25V
C105	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C106	CC45FCH1H050C	CAP. CERAMIC	5p	0.25%	50V
C107	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C108	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C109	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C110	CE04EW1H4R7M	CAP. ELECTRO	4.7μ	20%	50V
C118	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C119	CE04EW1C221M	CAP. ELECTRO	220μ	20%	16V
C120	CE04EW1C221M	CAP. ELECTRO	220μ	20%	16V
C121	CE04EW1C221M	CAP. ELECTRO	220μ	20%	16V
C122	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C123	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C124	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C125	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C127	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C128	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C129	CC45FCH1H030C	CAP. CERAMIC	3p	0.25%	50V
C130	CC45FCH1H151J	CAP. CERAMIC	150p	5%	50V
C131	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C132	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C133	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C134	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C135	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C136	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C137	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C138	CC45FCH1H470J	CAP. CERAMIC	47p	5%	50V
C140	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
D1	V101	DIODE, VARICAP			
D2	V101	DIODE, VARICAP			
D3	V101	DIODE, VARICAP			
D4	V101	DIODE, VARICAP			
D5	V101	DIODE, VARICAP			
D6	V101	DIODE, VARICAP			
D7	V101	DIODE, VARICAP			
D8	V101	DIODE, VARICAP			
D9	V101	DIODE, VARICAP			
D10	V101	DIODE, VARICAP			
D11	V101	DIODE, VARICAP			
D12	V101	DIODE, VARICAP			
D13	V101	DIODE, VARICAP			
D14	V101	DIODE, VARICAP			
D15	V101	DIODE, VARICAP			
D16	V101	DIODE, VARICAP			
D17	1SV68	DIODE, VARICAP			

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Ref. No	Parts No.	Name & Description			
D18	1SV68	DIODE, VARICAP			
D19	1SV68	DIODE, VARICAP			
D20	1SV68	DIODE, VARICAP			
D21	1SV80	DIODE			
D22	1SV80	DIODE			
D23	1SV68	DIODE, VARICAP			
D24	1N4148	DIODE			
D25	1N4148	DIODE			
D27	1SS97	DIODE			
D28	1SS97	DIODE			
D29	1SV80	DIODE			
D33	1N4148	DIODE			
D34	1N4148	DIODE			
D35	1N4148	DIODE			
D36	1N4148	DIODE			
J1	E40-7815-08	PIN CONNECTOR	12P		
J2	E04-0520-08	COAXIAL CONNECTOR			
L1	L32-0811-08	OSCILLATION COIL			
L2	L32-0813-08	OSCILLATION COIL			
L3	L32-0814-08	OSCILLATION COIL			
L4	L32-0814-08	OSCILLATION COIL			
L5	L40-3301-17	FERRI INDUCTOR	33µH	10%	
L6	L40-3301-17	FERRI INDUCTOR	33µH	10%	
L7	L40-3301-17	FERRI INDUCTOR	33µH	10%	
L8	L40-3301-17	FERRI INDUCTOR	33µH	10%	
L9	L40-3301-17	FERRI INDUCTOR	33µH	10%	
L10	L40-1091-17	FERRI INDUCTOR	1µH	10%	
L11	L40-1091-17	FERRI INDUCTOR	1µH	10%	
L12	L37-0085-08	COIL			
L13	L37-0086-08	COIL			
L14	L32-0812-08	OSCILLATION COIL			
L15	L40-3301-17	FERRI INDUCTOR	33µH	10%	
L16	L40-3301-17	FERRI INDUCTOR	33µH	10%	
L17	L37-0087-08	COIL			
L18	L37-0087-08	COIL			
L19	L40-1011-13	FERRI INDUCTOR	100µH	10%	
L20	L39-1414-08	TOROIDAL COIL			
L21	L39-1414-08	TOROIDAL COIL			
L22	L39-1414-08	TOROIDAL COIL			
L23	L40-1011-13	FERRI INDUCTOR	100µH	10%	
L24	L40-8291-13	FERRI INDUCTOR	8.2µH	10%	
L25	L40-4791-13	FERRI INDUCTOR	4.7µH	10%	
L26	L40-1011-13	FERRI INDUCTOR	100µH	10%	
L28	KTD5-110	THERMISTOR			
L29	L40-3301-17	FERRI INDUCTOR	33µH	10%	
LD1	B30-3091-08	LED; RED			
Q1	2SA1346	TR. SI, PNP			
Q2	2SC3401	TR. SI, NPN			
Q3	2SA1346	TR. SI, PNP			
Q4	2SC3401	TR. SI, NPN			
Q5	2SA1346	TR. SI, PNP			
Q6	2SC3401	TR. SI, NPN			
Q7	2SA1346	TR. SI, PNP			
Q8	2SC3401	TR. SI, NPN			

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Q9	2SC2570A	TR. SI, NPN			
Q10	2SC2570A	TR. SI, NPN			
Q11	2SC2570A	TR. SI, NPN			
Q12	2SC2570A	TR. SI, NPN			
Q13	2SC2570A	TR. SI, NPN			
Q14	2SC2570A	TR. SI, NPN			
Q15	2SC2570A	TR. SI, NPN			
Q16	2SC2570A	TR. SI, NPN			
Q17	2SC2570A	TR. SI, NPN			
Q18	2SC2570A	TR. SI, NPN			
Q19	2SC2570A	TR. SI, NPN			
Q20	2SC2570A	TR. SI, NPN			
Q21	2SC2570A	TR. SI, NPN			
Q22	2SC3915	TR. SI, NPN			
Q23	2SC1215	TR. SI, NPN			
Q24	2SC1815(GR)	TR. SI, NPN			
Q25	2SC1815(GR)	TR. SI, NPN			
Q26	2SA1015(GR)	TR. SI, PNP			
Q27	2SC1815(GR)	TR. SI, NPN			
Q28	2SC1215	TR. SI, NPN			
Q29	2SC2570A	TR. SI, NPN			
Q30	2SC2570A	TR. SI, NPN			
Q31	2SC1215	TR. SI, NPN			
Q33	2SC1215	TR. SI, NPN			
Q34	2SC1215	TR. SI, NPN			
Q35	2SC1215	TR. SI, NPN			
Q36	MRF559	TR. SI, NPN			
Q37	2SC1815(GR)	TR. SI, NPN			
Q38	2SC1815(GR)	TR. SI, NPN			
Q39	2SC1815(GR)	TR. SI, NPN			
Q40	2SC1815(GR)	TR. SI, NPN			
Q52	2SC1815(GR)	TR. SI, NPN			
R1	RN14BK2E5601F	RES. METAL FILM	5.6K	1%	1/4W
R2	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R3	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R4	RN14BK2E3301F	RES. METAL FILM	3.3K	1%	1/4W
R5	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R6	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R7	RN14BK2E6801F	RES. METAL FILM	6.8K	1%	1/4W
R8	R92-4097-08	RES. METAL FILM	7K	1%	1/4W
R9	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R10	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R11	RN14BK2E3301F	RES. METAL FILM	3.3K	1%	1/4W
R12	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R13	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R14	RN14BK2E6801F	RES. METAL FILM	6.8K	1%	1/4W
R15	RN14BK2E5601F	RES. METAL FILM	5.6K	1%	1/4W
R16	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R17	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R18	RN14BK2E3301F	RES. METAL FILM	3.3K	1%	1/4W
R19	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R20	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R21	RN14BK2E6801F	RES. METAL FILM	6.8K	1%	1/4W
R22	RN14BK2E3301F	RES. METAL FILM	3.3K	1%	1/4W
R23	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W

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PARTS LIST

SG-5150/SG-5155

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R24	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R25	RN14BK2E3301F	RES. METAL FILM	3.3K	1%	1/4W
R26	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R27	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R28	RN14BK2E6801F	RES. METAL FILM	6.8K	1%	1/4W
R29	RN14BK2C47R0F	RES. METAL FILM	47	1%	1/6W
R30	RN14BK2C2201F	RES. METAL FILM	2.2K	1%	1/6W
R31	RN14BK2C47R0F	RES. METAL FILM	47	1%	1/6W
R32	RN14BK2C47R0F	RES. METAL FILM	47	1%	1/6W
R33	RN14BK2C2201F	RES. METAL FILM	2.2K	1%	1/6W
R34	RN14BK2C47R0F	RES. METAL FILM	47	1%	1/6W
R35	RN14BK2C47R0F	RES. METAL FILM	47	1%	1/6W
R36	RN14BK2C2201F	RES. METAL FILM	2.2K	1%	1/6W
R37	RN14BK2C47R0F	RES. METAL FILM	47	1%	1/6W
R38	RN14BK2C47R0F	RES. METAL FILM	47	1%	1/6W
R39	RN14BK2C2201F	RES. METAL FILM	2.2K	1%	1/6W
R40	RN14BK2C47R0F	RES. METAL FILM	47	1%	1/6W
R41	RN14BK2E8200F	RES. METAL FILM	820	1%	1/4W
R42	RN14BK2E8200F	RES. METAL FILM	820	1%	1/4W
R43	RN14BK2E8200F	RES. METAL FILM	820	1%	1/4W
R44	RN14BK2E8200F	RES. METAL FILM	820	1%	1/4W
R45	RN14BK2E1500F	RES. METAL FILM	150	1%	1/4W
R47	RN14BK2E6800F	RES. METAL FILM	680	1%	1/4W
R48	RN14BK2C4701F	RES. METAL FILM	4.7K	1%	1/6W
R49	RN14BK2E2600F	RES. METAL FILM	260	1%	1/4W
R50	RN14BK2C10R0F	RES. METAL FILM	10	1%	1/6W
R51	RN14BK2E82R5F	RES. METAL FILM	82.5	1%	1/4W
R52	RN14BK2C10R0F	RES. METAL FILM	10	1%	1/6W
R53	RN14BK2E47R0F	RES. METAL FILM	47	1%	1/4W
R54	R92-4100-08	RES. METAL FILM	10M	2%	1/4W
R55	RN14BK2E1503F	RES. METAL FILM	150K	1%	1/4W
R56	RN14BK2C47R0F	RES. METAL FILM	47	1%	1/6W
R57	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R58	RN14BK2E1500F	RES. METAL FILM	150	1%	1/4W
R59	RN14BK2E2701F	RES. METAL FILM	2.7K	1%	1/4W
R60	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R61	RN14BK2E2202F	RES. METAL FILM	22K	1%	1/4W
R62	RN14BK2E4702F	RES. METAL FILM	47K	1%	1/4W
R63	RN14BK2E2001F	RES. METAL FILM	2K	1%	1/4W
R64	RN14BK2E4701F	RES. METAL FILM	4.7K	1%	1/4W
R65	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R66	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R67	RN14BK2E1500F	RES. METAL FILM	150	1%	1/4W
R68	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R69	RN14BK2E6800F	RES. METAL FILM	680	1%	1/4W
R70	RN14BK2E4701F	RES. METAL FILM	4.7K	1%	1/4W
R71	RN14BK2E3302F	RES. METAL FILM	33K	1%	1/4W
R72	RN14BK2E4701F	RES. METAL FILM	4.7K	1%	1/4W
R73	RN14BK2E3301F	RES. METAL FILM	3.3K	1%	1/4W
R74	RN14BK2E2202F	RES. METAL FILM	22K	1%	1/4W
R75	RN14BK2C47R0F	RES. METAL FILM	47	1%	1/6W
R76	RN14BK2C47R0F	RES. METAL FILM	47	1%	1/6W
R77	R92-4103-08	RES. METAL FILM	74	1%	1/4W
R78	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R79	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W

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R80	RN14BK2C4701F	RES. METAL FILM	4.7K	1%	1/6W
R82	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R83	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R84	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R85	RN14BK2E4702F	RES. METAL FILM	47K	1%	1/4W
R86	RN14BK2E4702F	RES. METAL FILM	47K	1%	1/4W
R87	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R88	RN14BK2E1333F	RES. METAL FILM	133K	1%	1/4W
R89	R92-4101-08	RES. METAL FILM	4.7M	1%	1/4W
R90	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R92	RN14BK2E2201F	RES. METAL FILM	2.2K	1%	1/4W
R93	RN14BK2E2201F	RES. METAL FILM	2.2K	1%	1/4W
R94	RN14BK2E4703F	RES. METAL FILM	470K	1%	1/4W
R95	R92-4102-08	RES. METAL FILM	2M	2%	1/4W
R96	RN14BK2E4700F	RES. METAL FILM	470	1%	1/4W
R97	RN14BK2E5601F	RES. METAL FILM	5.6K	1%	1/4W
R98	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R99	RN14BK2E2201F	RES. METAL FILM	2.2K	1%	1/4W
R100	RN14BK2C68R0F	RES. METAL FILM	68	1%	1/6W
R101	RN14BK2E2202F	RES. METAL FILM	22K	1%	1/4W
R102	RN14BK2C47R0F	RES. METAL FILM	47	1%	1/6W
R103	RN14BK2E2200F	RES. METAL FILM	220	1%	1/4W
R104	RN14BK2E3300F	RES. METAL FILM	330	1%	1/4W
R105	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R106	RN14BK2E2200F	RES. METAL FILM	220	1%	1/4W
R107	RN14BK2E1822F	RES. METAL FILM	18.2K	1%	1/4W
R109	R92-4096-08	RES. METAL FILM	9.75K	2%	1/4W
R110	RN14BK2C68R0F	RES. METAL FILM	68	1%	1/6W
R111	RN14BK2E47R0F	RES. METAL FILM	47	1%	1/4W
R112	RS14DB2H561F	RES. METAL FILM	560	1%	1/2W
R113	RS14DB2H471F	RES. METAL FILM	470	1%	1/2W
R115	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R118	RN14BK2E5600F	RES. METAL FILM	560	1%	1/4W
R119	RN14BK2E2701F	RES. METAL FILM	2.7K	1%	1/4W
R120	RN14BK2E2401F	RES. METAL FILM	2.4K	1%	1/4W
R121	R92-0150-05	RES. METAL FILM	0	-20+80%	1/4W
R122	RN14BK2E7500F	RES. METAL FILM	750	1%	1/4W
R123	RN14BK2E2201F	RES. METAL FILM	2.2K	1%	1/4W
R124	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R125	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R126	RN14BK2C1000F	RES. METAL FILM	100	1%	1/6W
R127	RS14DB3D102F	RES. METAL FILM	1K	1%	1W
R128	R92-4098-08	RES. METAL FILM	50	1%	1/4W
R129	R92-4099-08	RES. METAL FILM	151	1%	1/4W
R130	RN14BK2E37R4F	RES. METAL FILM	37.4	1%	1/4W
R131	R92-4099-08	RES. METAL FILM	151	1%	1/4W
R132	R92-4173-08	RES. CHIP (0.8*0.5)	560	5%	
R162	R92-4104-08	RES. METAL FILM	116	1%	1/4W
R163	R92-4174-08	RES. METAL FILM	52.8	1%	1/4W
R164	R92-4104-08	RES. METAL FILM	116	1%	1/4W
R165	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R166	RN14BK2C2700F	RES. METAL FILM	270	1%	1/6W
R167	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R168	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R169	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W

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Ref. No	Parts No.	Name & Description			
R170	RS14DB2H1500F	RES. METAL FILM	150	1%	1/2W
R171	RN14BK2E1004F	RES. METAL FILM	1M	1%	1/4W
R173	RN14BK2E1301F	RES. METAL FILM	1.3K	1%	1/4W
R174	RN14BK2E4701F	RES. METAL FILM	4.7K	1%	1/4W
U1	SN76514	IC, DOUBLE BALANCED MIXER			
U2	LM301N	IC, OPERATIONAL AMPLIFIERS			
U3	TL081CP	IC, JFET INPUT OP-AMP			
U4	PLL2001	IC			
U5	ERA3	IC			
U6	LF356N	IC, MONOLITHIC JFET OPERATIONAL AMPLIFIER			
U7	MC12026	IC			
U9	MC14568BCP	IC, PHASE COMPARATOR AND PROGRAMMABLE COUNTERS			
U10	MC14094BCP	IC, 8-STAGE SHIFT/STORE REGISTE			
U11	TC74HC14AP	IC, HEX SCHMITT INVERTER			
VR1	R32-0843-05	RES. SEMI FIXED	200		
Y1	L77-2593-08	CRYSTAL RESONATOR			
Y3	L77-2594-08	CRYSTAL RESONATOR			
CONTROL UNIT (W02-2494-08)					
	J73-0745-08	PCB (UNMOUNTED)			
C1	C91-1128-05	CAP. CERAMIC	0.1µ	-20+80%	50V
C2	C91-1128-05	CAP. CERAMIC	0.1µ	-20+80%	50V
C3	C91-1128-05	CAP. CERAMIC	0.1µ	-20+80%	50V
C4	C91-1128-05	CAP. CERAMIC	0.1µ	-20+80%	50V
C5	C91-1128-05	CAP. CERAMIC	0.1µ	-20+80%	50V
C6	C91-1128-05	CAP. CERAMIC	0.1µ	-20+80%	50V
C7	C91-1128-05	CAP. CERAMIC	0.1µ	-20+80%	50V
J1	E40-7816-08	PIN CONNECTOR	12P		
U1	SN74LS00AN	IC, QUAD 2-INPUT NAND GATE			
U2	SN74LS163AN	IC, 4-BIT BINARY COUNTER, SYNCHRONOUS RESET			
U3	MC14526BCP	IC, PROGRAMMABLE BINARY DIVIDE-BY-N COUNTER			
U4	MC14526BCP	IC, PROGRAMMABLE BINARY DIVIDE-BY-N COUNTER			
U5	MC14526BCP	IC, PROGRAMMABLE BINARY DIVIDE-BY-N COUNTER			
U6	MC14526BCP	IC, PROGRAMMABLE BINARY DIVIDE-BY-N COUNTER			
U7	MC14526BCP	IC, PROGRAMMABLE BINARY DIVIDE-BY-N COUNTER			
U8	MC14526BCP	IC, PROGRAMMABLE BINARY DIVIDE-BY-N COUNTER			
U10	MC14001BCP	IC, PROGRAMMABLE BINARY DIVIDE-BY-N COUNTER			
U11	MC14078BCP	IC, PROGRAMMABLE BINARY DIVIDE-BY-N COUNTER			
U12	MC14094BCP	IC, 8-STAGE SHIFT/STORE REGISTE			
U13	MC14094BCP	IC, 8-STAGE SHIFT/STORE REGISTE			
U14	MC14094BCP	IC, 8-STAGE SHIFT/STORE REGISTE			
U15	SN74LS390N	IC, DUAL DECADE COUNTER			
INTERFACE UNIT (REMOTE SUB) (W02-2495-08)					
	J73-0746-08	PCB (UNMOUNTED)			
AR1	R90-0229-05	RES. NETWORK	10K	5%	1/8W
C1	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C2	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C3	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C4	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C5	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C6	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V

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C7	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C8	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C9	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C10	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C11	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C12	CE04EW1E470M	CAP. ELECTRO	47µ	20%	25V
C13	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
JP1		PIN CONNECTOR	16P		
JP2	E40-7817-08	PIN CONNECTOR	14P		
L1	L40-1011-13	FERRI INDUCTOR	100µH	10%	
U1	SN74LS30N	IC, 8-INPUT NAND GATE			
ATTENUATOR UNIT (W02-2496-08)					
	J73-0747-08	PCB (UNMOUNTED)			
C1	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C2	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C3	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C4	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C5	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C6	CK45FB1H102K	CAP. CERAMIC	1000p	10%	50V
C7	CC45FCH1H080C	CAP. CERAMIC	8p	0.25p	50V
C8	CC45FCH1H100C	CAP. CERAMIC	10p	0.25p	50V
C9	CC45FCH1H080C	CAP. CERAMIC	8p	0.25p	50V
J1	E40-7813-08	PIN CONNECTOR	6P		
K1	S76-0669-08	RELAY			
K2	S76-0669-08	RELAY			
K3	S76-0669-08	RELAY			
K4	S76-0669-08	RELAY			
K5	S76-0669-08	RELAY			
K6	S76-0669-08	RELAY			
L1	L40-2791-17	FERRI INDUCTOR	2.7µH	10%	
L2	L40-2791-17	FERRI INDUCTOR	2.7µH	10%	
L3	L40-2791-17	FERRI INDUCTOR	2.7µH	10%	
L4	L40-2791-17	FERRI INDUCTOR	2.7µH	10%	
L5	L40-2791-17	FERRI INDUCTOR	2.7µH	10%	
L6	L40-2791-17	FERRI INDUCTOR	2.7µH	10%	
R1	RN14BK2E68R1F	RES. METAL FILM	68.1	1%	1/4W
R2	RN14BK2E1540F	RES. METAL FILM	154	1%	1/4W
R3	RN14BK2E68R1F	RES. METAL FILM	68.1	1%	1/4W
R4	RN14BK2E52R3F	RES. METAL FILM	52.3	1%	1/4W
R5	R92-4105-08	RES. METAL FILM	998	1%	1/4W
R6	RN14BK2E52R3F	RES. METAL FILM	52.3	1%	1/4W
R7	R92-4104-08	RES. METAL FILM	116	1%	1/4W
R8	R92-4106-08	RES. METAL FILM	52.8	2%	1/4W
R9	R92-4104-08	RES. METAL FILM	116	1%	1/4W
R10	RN14BK2E52R3F	RES. METAL FILM	52.3	1%	1/4W
R11	R92-4105-08	RES. METAL FILM	998	1%	1/4W
R12	RN14BK2E52R3F	RES. METAL FILM	52.3	1%	1/4W
R13	RN14BK2E2210F	RES. METAL FILM	221	1%	1/4W
R14	RN14BK2E23R7F	RES. METAL FILM	23.7	1%	1/4W
R15	RN14BK2E2210F	RES. METAL FILM	221	1%	1/4W

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R16	RN14BK2E52R3F	RES. METAL FILM	52.3	1%	1/4W
R17	R92-4105-08	RES. METAL FILM	998	1%	1/4W
R18	RN14BK2E52R3F	RES. METAL FILM	52.3	1%	1/4W
PANEL UNIT (W02-2498-18)					
	J73-0743-08	PCB (UNMOUNTED)			
AR1	R90-0229-05	RES. NETWORK	10K	5%	1/8W
AR2	R90-0229-05	RES. NETWORK	10K	5%	1/8W
AR3	R90-0229-05	RES. NETWORK	10K	5%	1/8W
C1	C91-1128-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C2	C91-1128-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C3	C91-1128-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C4	C91-1128-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C5	C91-1128-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C6	C91-1128-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C17	CE04EW1E101M	CAP. ELECTRO	100μ	20%	25V
C22	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C23	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C24	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C70	C91-1128-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C71	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C73	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C74	C91-1128-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C75	CK45FB1H103K	CAP. CERAMIC	0.01μ	10%	50V
C76	CF92V1H153J	CAP. METAL FILM	0.015μ	5%	50V
C77	CF92V1H153J	CAP. METAL FILM	0.015μ	5%	50V
C78	CF92V1H153J	CAP. METAL FILM	0.015μ	5%	50V
C79	CF92V1H153J	CAP. METAL FILM	0.015μ	5%	50V
C100	CC45SL1H221J	CAP. CERAMIC	220p	5%	50V
C101	CC45SL1H221J	CAP. CERAMIC	220p	5%	50V
C102	CC45SL1H221J	CAP. CERAMIC	220p	5%	50V
C103	CC45SL1H221J	CAP. CERAMIC	220p	5%	50V
C104	CC45SL1H221J	CAP. CERAMIC	220p	5%	50V
C105	CE04EW1E101M	CAP. ELECTRO	100μ	20%	25V
D1	LD-201MG	LED, GREEN			
D2	LD-201MG	LED, GREEN			
D3	LD-201MG	LED, GREEN			
D4	LD-201VR	LED, RED			
D5	LD-201VR	LED, RED			
D7	LD-201MG	LED, GREEN			
D8	LD-201MG	LED, GREEN			
D9	LD-201MG	LED, GREEN			
D10	LD-201MG	LED, GREEN			
D11	LD-201MG	LED, GREEN			
D12	LD-201MG	LED, GREEN			
D13	LD-201MG	LED, GREEN			
D14	LD-201MG	LED, GREEN			
D15	LD-201MG	LED, GREEN			
D16	LD-201VR	LED, RED			
D17	LD-201VR	LED, RED			
D18	LD-201VR	LED, RED			
D19	LD-201VR	LED, RED			
D20	1N4148	DIODE			
D21	1N4148	DIODE			

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Ref. No	Parts No.	Name & Description			
D22	1N4148	DIODE			
D23	1N4148	DIODE			
DSP01	B30-3090-08	LED; 7-SEGMENT			
DSP02	B30-3090-08	LED; 7-SEGMENT			
DSP03	B30-3090-08	LED; 7-SEGMENT			
DSP04	B30-3090-08	LED; 7-SEGMENT			
DSP05	B30-3090-08	LED; 7-SEGMENT			
DSP06	B30-3090-08	LED; 7-SEGMENT			
DSP07	B30-3090-08	LED; 7-SEGMENT			
DSP08	B30-3090-08	LED; 7-SEGMENT			
DSP09	B30-3090-08	LED; 7-SEGMENT			
DSP010	B30-3090-08	LED; 7-SEGMENT			
DSP011	B30-3090-08	LED; 7-SEGMENT			
DSP012	B30-3090-08	LED; 7-SEGMENT			
DSP013	B30-3090-08	LED; 7-SEGMENT			
DSP014	B30-3090-08	LED; 7-SEGMENT			
DSP015	B30-3090-08	LED; 7-SEGMENT			
DSP016	B30-3090-08	LED; 7-SEGMENT			
J1	E40-7812-08	PIN CONNECTOR		2P	
J2	E40-7117-05	PIN CONNECTOR		20P	
Q1	2SA1267	TR. SI, PNP			
Q2	2SA1267	TR. SI, PNP			
Q3	2SA1267	TR. SI, PNP			
Q4	2SA1267	TR. SI, PNP			
Q5	2SA1267	TR. SI, PNP			
Q6	2SA1267	TR. SI, PNP			
Q7	2SA1267	TR. SI, PNP			
Q8	2SC3402	TR. SI, NPN			
Q9	2SC3402	TR. SI, NPN			
R4	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R5	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R6	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R7	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R8	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R9	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R12	RN14BK2E3300F	RES. METAL FILM	330	1%	1/4W
R13	RN14BK2E3300F	RES. METAL FILM	330	1%	1/4W
R14	RN14BK2E2002F	RES. METAL FILM	20K	1%	1/4W
R15	RN14BK2E5600F	RES. METAL FILM	560	1%	1/4W
R50	RN14BK2E4701F	RES. METAL FILM	4.7K	1%	1/4W
R51	RN14BK2E4701F	RES. METAL FILM	4.7K	1%	1/4W
R70	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R71	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R72	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R73	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R74	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R75	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R77	RN14BK2E2002F	RES. METAL FILM	20K	1%	1/4W
R78	RN14BK2E5600F	RES. METAL FILM	560	1%	1/4W
R100	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R101	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R102	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R103	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R104	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W

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Ref. No	Parts No.	Name & Description			
R107	RN14BK2E3300F	RES. METAL FILM	330	1%	1/4W
R112	RN14BK2E3300F	RES. METAL FILM	330	1%	1/4W
R113	RN14BK2E3300F	RES. METAL FILM	330	1%	1/4W
R114	RN14BK2E3300F	RES. METAL FILM	330	1%	1/4W
R116	RN14BK2E3300F	RES. METAL FILM	330	1%	1/4W
R117	RN14BK2E3300F	RES. METAL FILM	330	1%	1/4W
R120	RN14BK2E3300F	RES. METAL FILM	330	1%	1/4W
R121	RN14BK2E3300F	RES. METAL FILM	330	1%	1/4W
R123	RN14BK2E3300F	RES. METAL FILM	330	1%	1/4W
R125	RN14BK2E3300F	RES. METAL FILM	330	1%	1/4W
R126	RN14BK2E5000F	RES. METAL FILM	500	1%	1/4W
SW2	S70-0648-08	TACT SWITCH			
SW3	S70-0648-08	TACT SWITCH			
SW4	S70-0648-08	TACT SWITCH			
SW5	S70-0648-08	TACT SWITCH			
SW6	S70-0647-08	TACT SWITCH, WITH LED (RED)			
SW7	S70-0648-08	TACT SWITCH			
SW8	S70-0648-08	TACT SWITCH			
SW9	S70-0648-08	TACT SWITCH			
SW10	S70-0648-08	TACT SWITCH			
SW11	S70-0647-08	TACT SWITCH, WITH LED (RED)			
SW12	S70-0647-08	TACT SWITCH, WITH LED (RED)			
SW13	S70-0648-08	TACT SWITCH			
SW14	S70-0647-08	TACT SWITCH, WITH LED (RED)			
SW15	S70-0647-08	TACT SWITCH, WITH LED (RED)			
SW16	S70-0648-08	TACT SWITCH			
SW17	S70-0647-08	TACT SWITCH, WITH LED (RED)			
SW18	S70-0648-08	TACT SWITCH			
SW22	S70-0648-08	TACT SWITCH			
SW23	S70-0648-08	TACT SWITCH			
SW24	S70-0648-08	TACT SWITCH			
SW25	S70-0648-08	TACT SWITCH			
SW26	S70-0648-08	TACT SWITCH			
SW27	S70-0648-08	TACT SWITCH			
SW28	S70-0648-08	TACT SWITCH			
SW29	S70-0648-08	TACT SWITCH			
SW30	S70-0648-08	TACT SWITCH			
SW31	S70-0648-08	TACT SWITCH			
SW32	S70-0648-08	TACT SWITCH			
SW33	S70-0648-08	TACT SWITCH			
SW34	S70-0648-08	TACT SWITCH			
SW35	S70-0648-08	TACT SWITCH			
SW36	S70-0648-08	TACT SWITCH			
SW37	S70-0648-08	TACT SWITCH			
SW38	S70-0647-08	TACT SWITCH, WITH LED (RED)			
SW39	S70-0648-08	TACT SWITCH			
SW40	S70-0648-08	TACT SWITCH			
SW41	S70-0647-08	TACT SWITCH, WITH LED (RED)			
SW42	S70-0648-08	TACT SWITCH			
SW43	S70-0648-08	TACT SWITCH			
SW44	S70-0648-08	TACT SWITCH			
SW45	S70-0648-08	TACT SWITCH			
SW47	S70-0648-08	TACT SWITCH			
SW48	S70-0648-08	TACT SWITCH			

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Ref. No	Parts No.	Name & Description			
SW49	S70-0648-08	TACT SWITCH			
SW50	S70-0648-08	TACT SWITCH			
SW51	S70-0648-08	TACT SWITCH			
SW52	S70-0648-08	TACT SWITCH			
SW54	S70-0647-08	TACT SWITCH, WITH LED (RED)			
SW55	S70-0648-08	TACT SWITCH			
SW56	W02-4010-08	ROTALY ENCODER			
SW70	W02-4010-08	ROTALY ENCODER			
U1	MC14532BCP	IC, 8-BIT PRIORITY ENCODER			
U2	MC14532BCP	IC, 8-BIT PRIORITY ENCODER			
U3	TC74HC244AP	IC, OCTAL BUS BUFFER (3-STATE)			
U4	TC74HC138AP	IC, 3-TO-8 LINE DECODER			
U5	MC14093BP	IC, QUAD 2-INPUT NAND SCHMITT TRIGGER			
U6	MC14528BCP	IC, DUAL MONOSTABLE MULTIVIBRATOR (NOT RECOMMENDED FOR NEW DESIGNS)			
U12	MC14528BCP	IC, DUAL MONOSTABLE MULTIVIBRATOR (NOT RECOMMENDED FOR NEW DESIGNS)			
U23	MC14093BP	IC, QUAD 2-INPUT NAND SCHMITT TRIGGER			
U99	TC74HC14AF	IC			
U100	TC74HC595AF	IC			
U101	TC74HC595AF	IC			
U102	TC74HC595AF	IC			
U103	TC74HC595AF	IC			
U104	TC74HC595AF	IC			
U105	TC74HC595AF	IC			
U106	TC74HC595AF	IC			
U107	TC74HC595AF	IC			
U108	TC74HC595AF	IC			
U109	TC74HC595AF	IC			
U110	TC74HC595AF	IC			
U111	TC74HC595AF	IC			
U112	TC74HC595AF	IC			
U113	TC74HC595AF	IC			
U114	TC74HC595AF	IC			
U115	TC74HC595AF	IC			
U116	TC74HC595AF	IC			
U117	TC74HC595AF	IC			
U118	TC74HC595AF	IC			
U119	TC74HC595AF	IC			
U120	TC74HC595AF	IC			
U121	TC74HC595AF	IC			
U122	TC74HC595AF	IC			
U123	TC74HC595AF	IC			
U124	TC74HC595AF	IC			
U125	LM317T	IC			
CPU UNIT (W02-2499-08)					
A3	E02-0143-05	IC SOCKET (FOR U105)			
	J73-0742-08	PCB (UNMOUNTED)			
	F20-3034-05	INSULATOR SHEET			
BD201	RS405L	DIODE, BRIDGE			
BD202	RS405L	DIODE, BRIDGE			
BD203	RS405L	DIODE, BRIDGE			
C101	C91-2859-08	CAP. CERAMIC	0.22μ	10%	50V
C102	CC45FCH1H220J	CAP. CERAMIC	22p	5%	50V

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SG-5150/SG-5155

PARTS LIST

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Ref. No	Parts No.	Name & Description			
C103	CC45FCH1H220J	CAP. CERAMIC	22p	5%	50V
C104	C91-1315-05	CAP. CERAMIC	0.1µ	-20+80%	50V
C105	CE04EW1E470M	CAP. ELECTRO	47µ	20%	25V
C106	C91-1315-05	CAP. CERAMIC	0.1µ	-20+80%	50V
C107	C91-1315-05	CAP. CERAMIC	0.1µ	-20+80%	50V
C109	C91-1315-05	CAP. CERAMIC	0.1µ	-20+80%	50V
C110	C91-1315-05	CAP. CERAMIC	0.1µ	-20+80%	50V
C112	C91-1315-05	CAP. CERAMIC	0.1µ	-20+80%	50V
C113	C91-1315-05	CAP. CERAMIC	0.1µ	-20+80%	50V
C115	C91-1315-05	CAP. CERAMIC	0.1µ	-20+80%	50V
C201	CE04EW1V472M	CAP. ELECTRO	4700µ	20%	35V
C202	CE04EW1V472M	CAP. ELECTRO	4700µ	20%	35V
C203	CE04EW1E101M	CAP. ELECTRO	100µ	20%	25V
C204	CE04EW1E101M	CAP. ELECTRO	100µ	20%	25V
C205	CE04EW1E101M	CAP. ELECTRO	100µ	20%	25V
C206	CE04EW1E101M	CAP. ELECTRO	100µ	20%	25V
C207	CE04EW1E101M	CAP. ELECTRO	100µ	20%	25V
C208	CE04EW1V472M	CAP. ELECTRO	4700µ	20%	35V
C209	CE04EW1V472M	CAP. ELECTRO	4700µ	20%	35V
C301	C91-2867-08	CAP. FILM	7500p	1%	25V
C302	C91-2860-08	CAP. FILM	0.01µ	1%	50V
C303	CE04EW1H100M	CAP. ELECTRO	10µ	20%	50V
C304	CE04EW1E220M	CAP. ELECTRO	22µ	20%	25V
C305	CE04EW1E220M	CAP. ELECTRO	22µ	20%	25V
C306	CE04EW1E220M	CAP. ELECTRO	22µ	20%	25V
C307	CE04EW1H010M	CAP. ELECTRO	1µ	20%	50V
C308	CE04EW1E101M	CAP. ELECTRO	100µ	20%	25V
C309	CE04EW1E101M	CAP. ELECTRO	100µ	20%	25V
C312	CC45FCH1H020C	CAP. CERAMIC	2p	0.25%	50V
C315	CC45FCH1H020C	CAP. CERAMIC	2p	0.25%	50V
C316	CE04EW1H4R7M	CAP. ELECTRO	4.7µ	20%	50V
C317	CE04EW1H4R7M	CAP. ELECTRO	4.7µ	20%	50V
C318	CE04EW1H4R7M	CAP. ELECTRO	4.7µ	20%	50V
C319	C91-1315-05	CAP. CERAMIC	0.1µ	-20+80%	50V
C320	C91-2865-08	CAP. FILM	2200p	1%	25V
C321	C91-1315-05	CAP. CERAMIC	0.1µ	-20+80%	50V
C322	C91-1315-05	CAP. CERAMIC	0.1µ	-20+80%	50V
C323	C91-1315-05	CAP. CERAMIC	0.1µ	-20+80%	50V
C325	CE04EW1E101M	CAP. ELECTRO	100µ	20%	25V
C328	CE04EW1E101M	CAP. ELECTRO	100µ	20%	25V
C335	C91-1315-05	CAP. CERAMIC	0.1µ	-20+80%	50V
C350	CE04EW1E220M	CAP. ELECTRO	22µ	20%	25V
C521	CC45FCH1H470J	CAP. CERAMIC	47p	5%	50V
C542	CE04EW1E101M	CAP. ELECTRO	100µ	20%	25V
C543	CE04EW1C221M	CAP. ELECTRO	220µ	20%	16V
C548	CE04EW1E101M	CAP. ELECTRO	100µ	20%	25V
C549	CE04EW1C221M	CAP. ELECTRO	220µ	20%	16V
C550	CE04EW1E101M	CAP. ELECTRO	100µ	20%	25V
C552	CE04EW1E101M	CAP. ELECTRO	100µ	20%	25V
D201	1N4001	DIODE			
D202	1N4001	DIODE			
D301	1N4148	DIODE			
D302	1N4148	DIODE			
D303	1N4148	DIODE			
D304	1N4148	DIODE			

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Ref. No	Parts No.	Name & Description			
305	1N4148	DIODE			
D306	1N751A	DIODE, ZENER			
D307	1N751A	DIODE, ZENER			
D502	1N751A	DIODE, ZENER			
D503	1N4148	DIODE			
D504	1N4148	DIODE			
D505	1N4148	DIODE			
D506	1N4148	DIODE			
D507	1N4148	DIODE			
D508	1N4148	DIODE			
D509	1N4148	DIODE			
JP101	E40-7117-05	PIN CONNECTOR	20P		
JP102	E40-7907-08	PIN CONNECTOR	16P		
JP103	E40-7117-05	PIN CONNECTOR	20P		
JP105	E40-7616-05	PIN CONNECTOR	2P		
JP201	E40-7812-08	PIN CONNECTOR	2P		
JP202	E40-7814-08	PIN CONNECTOR	7P		
JP301	E40-7812-08	PIN CONNECTOR	2P		
JP501	E40-7813-08	PIN CONNECTOR	6P		
JP502	E40-7812-08	PIN CONNECTOR	2P		
JP503	E40-7812-08	PIN CONNECTOR	2P		
JP505	E40-7812-08	PIN CONNECTOR	2P		
JP506	E40-7811-08	PIN CONNECTOR	10P		
L101	L39-1413-08	TOROIDAL COIL	33µH		
L501	L40-1011-13	FERRI INDUCTOR	100µH	10%	
L502	L40-1011-13	FERRI INDUCTOR	100µH	10%	
L503	L40-1011-13	FERRI INDUCTOR	100µH	10%	
Q301	2N4858	FET			
Q302	2SC1815(GR)	TR. SI, NPN			
Q506	2SA1266	TR. SI, PNP			
Q507	2SA1266	TR. SI, PNP			
Q508	2SA1266	TR. SI, PNP			
Q509	2SA1266	TR. SI, PNP			
Q510	TIP32	TR. SI, PNP			
Q511	2SA1266	TR. SI, PNP			
Q512	2SA1266	TR. SI, PNP			
Q513	2SA1266	TR. SI, PNP			
Q514	2SA1266	TR. SI, PNP			
R103	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R104	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R105	RN14BK2E4701F	RES. METAL FILM	4.7K	1%	1/4W
R106	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R108	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R109	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R110	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R111	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R112	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R113	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R114	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R115	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R116	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R117	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W
R118	RN14BK2C3300F	RES. METAL FILM	330	1%	1/6W

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Ref. No	Parts No.	Name & Description		
R119	RN14BK2C3300F	RES. METAL FILM	330	1% 1/6W
R120	RN14BK2C3300F	RES. METAL FILM	330	1% 1/6W
R121	RN14BK2C3300F	RES. METAL FILM	330	1% 1/6W
R122	RN14BK2C3300F	RES. METAL FILM	330	1% 1/6W
R123	RN14BK2C3300F	RES. METAL FILM	330	1% 1/6W
R124	RN14BK2C3300F	RES. METAL FILM	330	1% 1/6W
R125	RN14BK2C3300F	RES. METAL FILM	330	1% 1/6W
R126	RN14BK2C3300F	RES. METAL FILM	330	1% 1/6W
R128	RN14BK2C3300F	RES. METAL FILM	330	1% 1/6W
R129	RN14BK2C3300F	RES. METAL FILM	330	1% 1/6W
R130	RN14BK2C3300F	RES. METAL FILM	330	1% 1/6W
R131	RN14BK2C3300F	RES. METAL FILM	330	1% 1/6W
R132	RN14BK2C3300F	RES. METAL FILM	330	1% 1/6W
R301	RN14BK2E1003F	RES. METAL FILM	100K	1% 1/4W
R302	RN14BK2E1003F	RES. METAL FILM	100K	1% 1/4W
R303	RN14BK2E6801F	RES. METAL FILM	6.8K	1% 1/4W
R304	RN14BK2E1002F	RES. METAL FILM	10K	1% 1/4W
R305	RN14BK2E5601F	RES. METAL FILM	5.6K	1% 1/4W
R306	RN14BK2E1582F	RES. METAL FILM	15.8K	1% 1/4W
R307	R92-4095-08	RES. METAL FILM	39.7K	1% 1/4W
R308	RN14BK2E1582F	RES. METAL FILM	15.8K	1% 1/4W
R309	R92-4095-08	RES. METAL FILM	39.7K	1% 1/4W
R310	RN14BK2E1002F	RES. METAL FILM	10K	1% 1/4W
R311	RN14BK2E2302F	RES. METAL FILM	23K	1% 1/4W
R312	RN14BK2E2202F	RES. METAL FILM	22K	1% 1/4W
R313	RN14BK2E1000F	RES. METAL FILM	100	1% 1/4W
R314	RN14BK2E1000F	RES. METAL FILM	100	1% 1/4W
R315	RN14BK2E5603F	RES. METAL FILM	560K	1% 1/4W
R316	RN14BK2E2202F	RES. METAL FILM	22K	1% 1/4W
R317	RN14BK2E2202F	RES. METAL FILM	22K	1% 1/4W
R318	RN14BK2E1501F	RES. METAL FILM	1.5K	1% 1/4W
R319	RN14BK2E4702F	RES. METAL FILM	47K	1% 1/4W
R320	RN14BK2E4702F	RES. METAL FILM	47K	1% 1/4W
R321	RN14BK2E1501F	RES. METAL FILM	1.5K	1% 1/4W
R322	RN14BK2E1801F	RES. METAL FILM	1.8K	1% 1/4W
R323	RN14BK2E1001F	RES. METAL FILM	1K	1% 1/4W
R324	RN14BK2E1001F	RES. METAL FILM	1K	1% 1/4W
R325	RN14BK2E1502F	RES. METAL FILM	15K	1% 1/4W
R326	RN14BK2E4701F	RES. METAL FILM	4.7K	1% 1/4W
R329	RN14BK2E2002F	RES. METAL FILM	20K	1% 1/4W
R330	RN14BK2E2202F	RES. METAL FILM	22K	1% 1/4W
R331	RN14BK2E1002F	RES. METAL FILM	10K	1% 1/4W
R335	RN14BK2E1502F	RES. METAL FILM	15K	1% 1/4W
R336	RN14BK2E1503F	RES. METAL FILM	150K	1% 1/4W
R337	RN14BK2E2700F	RES. METAL FILM	270	1% 1/4W
R338	RN14BK2E1002F	RES. METAL FILM	10K	1% 1/4W
R339	RN14BK2E1003F	RES. METAL FILM	100K	1% 1/4W
R340	RN14BK2E1003F	RES. METAL FILM	100K	1% 1/4W
R341	RN14BK2E1002F	RES. METAL FILM	10K	1% 1/4W
R342	RN14BK2E1002F	RES. METAL FILM	10K	1% 1/4W
R343	RN14BK2E1003F	RES. METAL FILM	100K	1% 1/4W
R345	RN14BK2E1801F	RES. METAL FILM	1.8K	1% 1/4W
R346	RN14BK2E1000F	RES. METAL FILM	100	1% 1/4W
R347	RN14BK2E2401F	RES. METAL FILM	2.4K	1% 1/4W
R348	RN14BK2E1502F	RES. METAL FILM	15K	1% 1/4W

L : Scandinavia

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△ indicates safety critical components .

* New Parts

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Teile ohne **Parts No.** werden nicht geliefert.

28

Ref. No	Parts No.	Name & Description		
R349	RN14BK2E5101F	RES. METAL FILM	5.1K	1% 1/4W
R350	RN14BK2E1003F	RES. METAL FILM	100K	1% 1/4W
R351	RN14BK2E5101F	RES. METAL FILM	5.1K	1% 1/4W
R352	RN14BK2E1003F	RES. METAL FILM	100K	1% 1/4W
R353	RN14BK2E1502F	RES. METAL FILM	15K	1% 1/4W
R354	RN14BK2E1000F	RES. METAL FILM	100	1% 1/4W
R355	RN14BK2E1000F	RES. METAL FILM	100	1% 1/4W
R381	RN14BK2E8201F	RES. METAL FILM	8.2K	1% 1/4W
R501	RN14BK2E4702F	RES. METAL FILM	47K	1% 1/4W
R502	RN14BK2E4702F	RES. METAL FILM	47K	1% 1/4W
R503	RN14BK2E1002F	RES. METAL FILM	10K	1% 1/4W
R504	RN14BK2E1002F	RES. METAL FILM	10K	1% 1/4W
R527	RN14BK2E1302F	RES. METAL FILM	13K	1% 1/4W
R543	RN14BK2E7502F	RES. METAL FILM	75K	1% 1/4W
R569	RN14BK2E2701F	RES. METAL FILM	2.7K	1% 1/4W
R570	RN14BK2E2701F	RES. METAL FILM	2.7K	1% 1/4W
R571	RN14BK2E2701F	RES. METAL FILM	2.7K	1% 1/4W
R572	RN14BK2E2701F	RES. METAL FILM	2.7K	1% 1/4W
R573	RN14BK2E2701F	RES. METAL FILM	2.7K	1% 1/4W
R574	RN14BK2E4702F	RES. METAL FILM	4.7	1% 1/4W
R575	RN14BK2E1003F	RES. METAL FILM	100K	1% 1/4W
R576	RN14BK2E1501F	RES. METAL FILM	1.5K	1% 1/4W
R578	RN14BK2E2701F	RES. METAL FILM	2.7K	1% 1/4W
R580	RN14BK2E1000F	RES. METAL FILM	100	1% 1/4W
R582	RN14BK2E2701F	RES. METAL FILM	2.7K	1% 1/4W
R583	RN14BK2E2701F	RES. METAL FILM	2.7K	1% 1/4W
U101	M5L8255A	IC, PLUG. PERIPHERAL INTERFACE		
U102	P-80C32-25	IC		
U103	TC74HC373AP	IC, OCTAL D-TYPE LATCH (3-STATE)		
U104	DS1225Y	IC		
U105	T93-0964-08	PROGRAMED ROM		
U106	SN74LS14N	IC, HEX SCHMITT TRIGGER		
U107	TC74HC139AP	IC, DUAL 2-TO-4 LINE DECODER		
U108	SN74LS08N	IC, QUAD 2-INPUT AND GATE		
U109	TC74HC32AP	IC, QUAD 2-INPUT OR GATE		
U110	TC74HC4078AP	IC, 8-INPUT OR/NOR GATE		
U111	MC14028BCP	IC, BCD TO DECIMAL DECODER		
U112	PST518B	IC, LEVEL DETECTOR		
U201	TA7805S	IC		
U202	TA7815S	IC		
U203	TA79015S	IC		
U204	TA7805S	IC		
U205	TA7805S	IC		
U301	TL082CP	IC, JFET INPUT OP-AMP		
U302	HD14052BP	IC, DUAL 4-CH ANALOG MPX/DE-MPX		
U303	HD14053BP	IC, TRIPLE 2-CH ANALOG MPX/DE-MPX		
U304	AD7533KN	IC, 10 BIT D/A		
U305	MC14094BCP	IC, 8-STAGE SHIFT/STORE REGISTE		
U306	TL081CP	IC, JFET INPUT OP-AMP		
U307	HD14053BP	IC, TRIPLE 2-CH ANALOG MPX/DE-MPX		
U308	MC14094BCP	IC, 8-STAGE SHIFT/STORE REGISTE		
U309	TL084CN	IC, JFET INPUT OP-AMP		
U310	AD7533KN	IC, 10 BIT D/A		
U311	MC14094BCP	IC, 8-STAGE SHIFT/STORE REGISTE		
U312	TL081CP	IC, JFET INPUT OP-AMP		

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PARTS LIST

SG-5150/SG-5155

* New Parts
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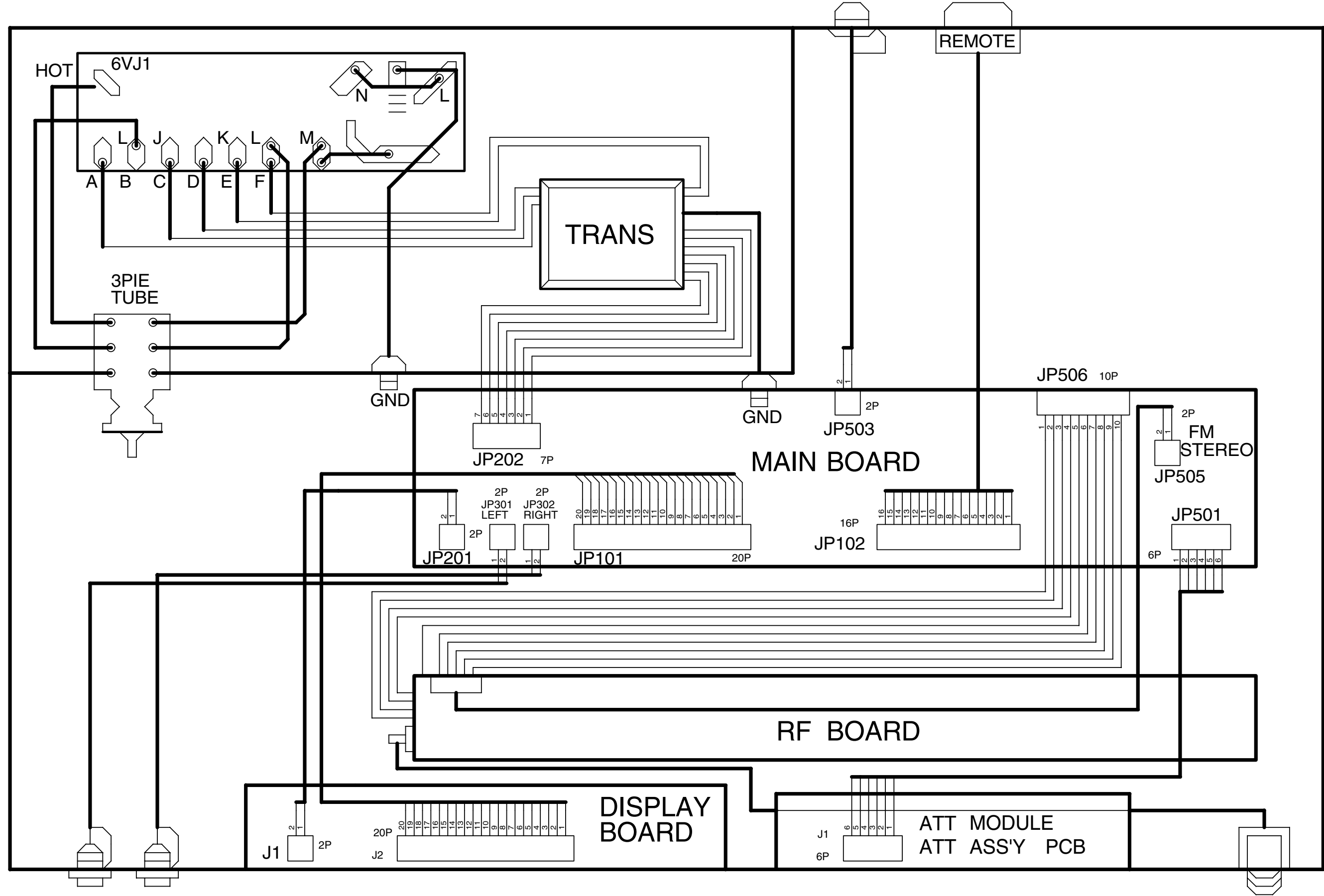
PARTS LIST

SG-5150/SG-5155

Ref. No	Parts No.	Name & Description			
U313	MC14081BCP	IC, B-SUFFIX SERIES CMOS GATES			
U314	MC14528BCP	IC, DUAL MONOSTABLE MULTIVIBRATOR			
U315	LM393	IC, LOW POWER LOW OFF SET VOLTAGE DUAL COMPARATOR			
U501	TL084CN	IC, JFET INPUT OP-AMP			
U511	HD14053BP	IC, TRIPLE 2-CH ANALOG MPX/DE-MPX			
U512	TL081CP	IC, JFET INPUT OP-AMP			
U513	AD7533KN	IC, 10 BIT D/A			
U514	TL081CP	IC, JFET INPUT OP-AMP			
U516	MC14094BCP	IC, 8-STAGE SHIFT/STORE REGISTE			
U517	MC14094BCP	IC, 8-STAGE SHIFT/STORE REGISTE			
U518	MC14094BCP	IC, 8-STAGE SHIFT/STORE REGISTE			
U519	MC14094BCP	IC, 8-STAGE SHIFT/STORE REGISTE			
U524	MC14094BCP	IC, 8-STAGE SHIFT/STORE REGISTE			
U525	MC14094BCP	IC, 8-STAGE SHIFT/STORE REGISTE			
VR301	R32-0850-05	RES. SEMI FIXED	10K	20%	
VR302	R32-0837-05	RES. SEMI FIXED	2K	20%	
VR303	R32-0850-05	RES. SEMI FIXED	10K	20%	
VR304	R32-0850-05	RES. SEMI FIXED	10K	20%	
VR305	R32-0836-05	RES. SEMI FIXED	100K	20%	
VR306	R32-0837-05	RES. SEMI FIXED	2K	20%	
XT1	L77-2591-08	CRYSTAL RESONATOR			
INTERFACE UNIT (GPIB) (W02-4074-08)					
	J73-0748-08	PCB (UNMOUNTED)			
C1	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C2	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C3	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C4	CE04EW1E101M	CAP. ELECTRO	100μ	20%	25V
C5	C91-1315-05	CAP. CERAMIC	0.1μ	-20+80%	50V
C6	CK45FB1H820K	CAP. CERAMIC	82p	10%	50V
C7	CK45FB1H820K	CAP. CERAMIC	82p	10%	50V
C8	CK45FB1H820K	CAP. CERAMIC	82p	10%	50V
C9	CK45FB1H820K	CAP. CERAMIC	82p	10%	50V
C10	CK45FB1H820K	CAP. CERAMIC	82p	10%	50V
C11	CK45FB1H820K	CAP. CERAMIC	82p	10%	50V
C13	CK45FB1H820K	CAP. CERAMIC	82p	10%	50V
C12	CK45FB1H820K	CAP. CERAMIC	82p	10%	50V
C13	CK45FB1H820K	CAP. CERAMIC	82p	10%	50V
C14	CK45FB1H820K	CAP. CERAMIC	82p	10%	50V
C15	CK45FB1H820K	CAP. CERAMIC	82p	10%	50V
C16	CK45FB1H820K	CAP. CERAMIC	82p	10%	50V
C17	CK45FB1H820K	CAP. CERAMIC	82p	10%	50V
C18	CK45FB1H820K	CAP. CERAMIC	82p	10%	50V
C19	CK45FB1H820K	CAP. CERAMIC	82p	10%	50V
C20	CK45FB1H820K	CAP. CERAMIC	82p	10%	50V
C21	CK45FB1H820K	CAP. CERAMIC	82p	10%	50V
J1	E40-7117-05	PIN CONNECTOR	20P		
J2	E58-0613-05	SOCKET			
U1	NAT9914BPD	IC			
U2	SN75160BN	IC, OCTAL GPIB TRANSCEIVER			
U3	SN75161BN	IC, OCTAL GPIB TRANSCEIVER			

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Y : AAFES(Europe) X : Australia M : Other Areas  indicates safety critical components .

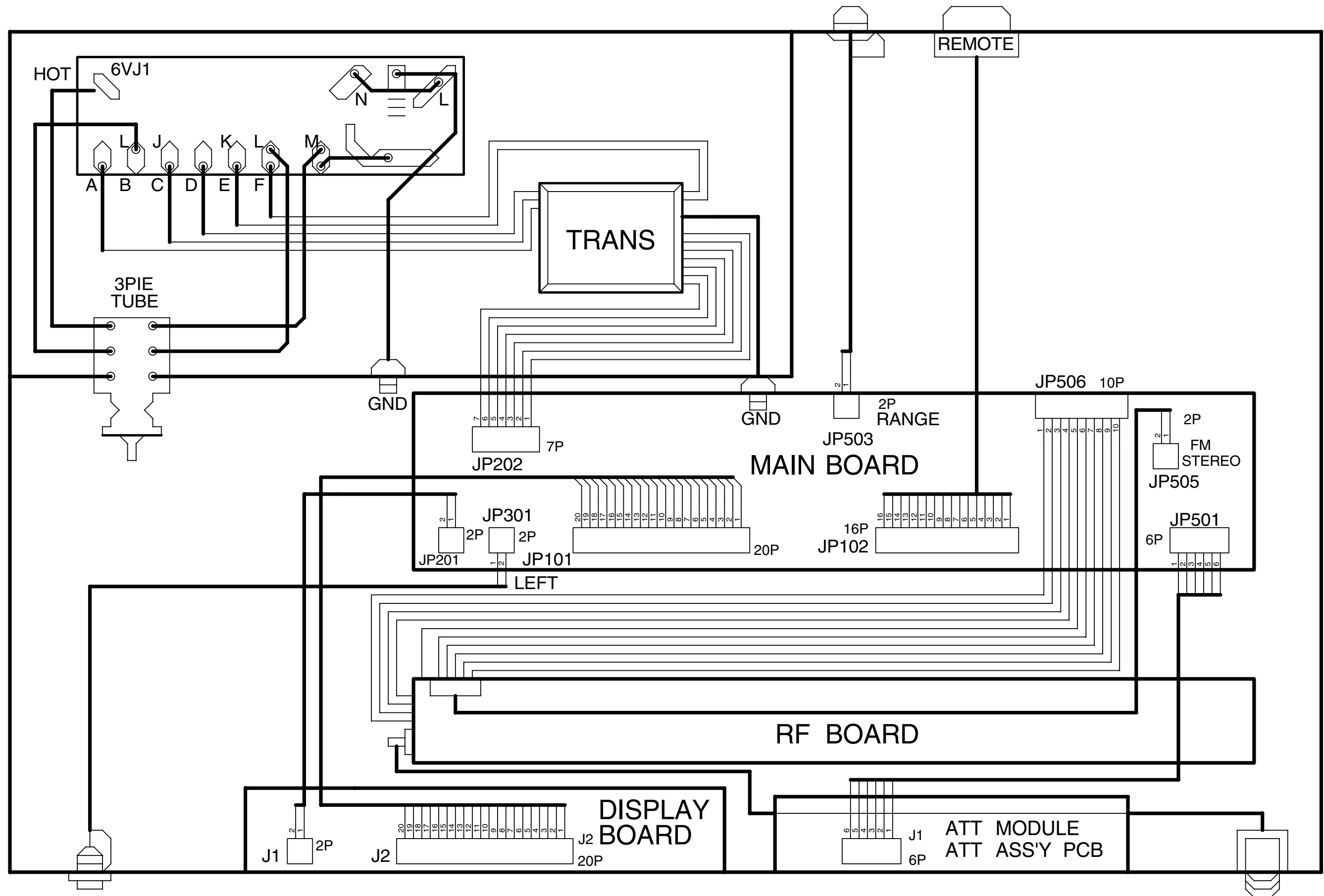
SG-5150 OVER ALL SCHEMATIC DIAGRAM



SG-5150/SG-5155

KENWOOD

SG-5155 OVER ALL SCHEMATIC DIAGRAM

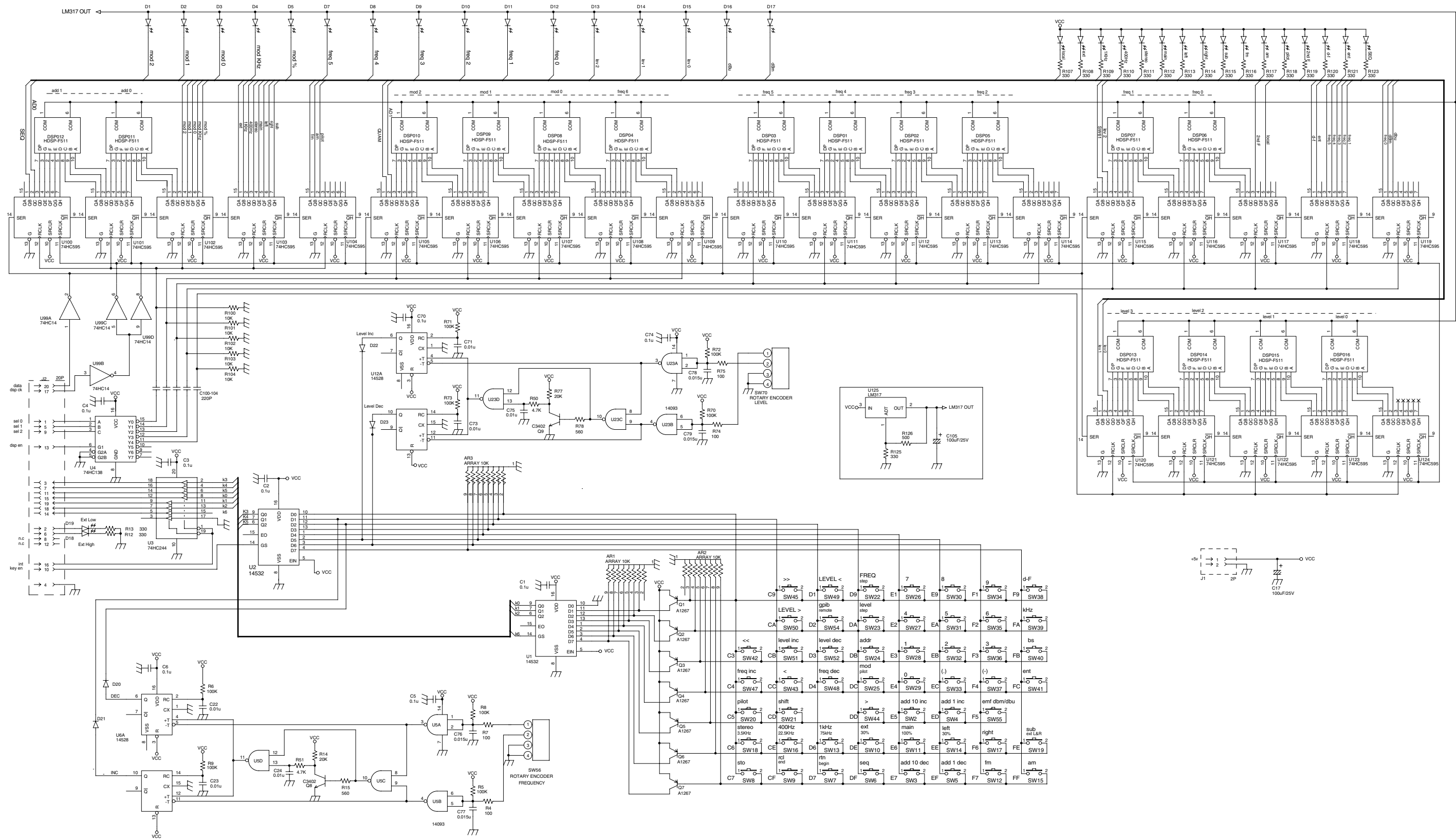


SG-5150/SG-5155

KENWOOD

SCHEMATIC DIAGRAM

PANEL UNIT / W02-2491-18 (SG-5150)

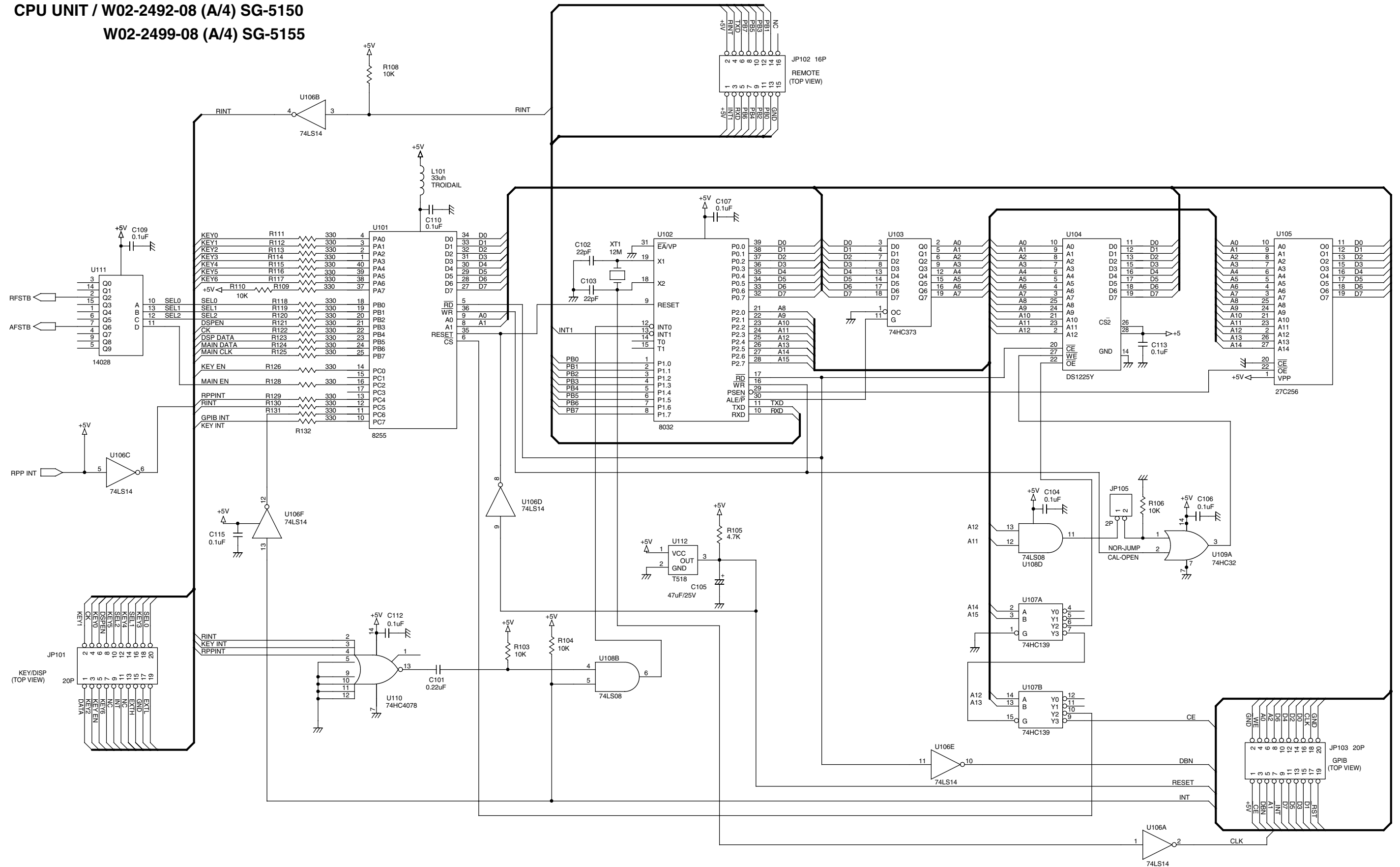


SG-5150/SG-5155

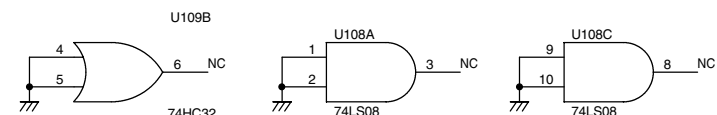
KENWOOD

SCHEMATIC DIAGRAM

CPU UNIT / W02-2492-08 (A/4) SG-5150
W02-2499-08 (A/4) SG-5155



* NOT USED



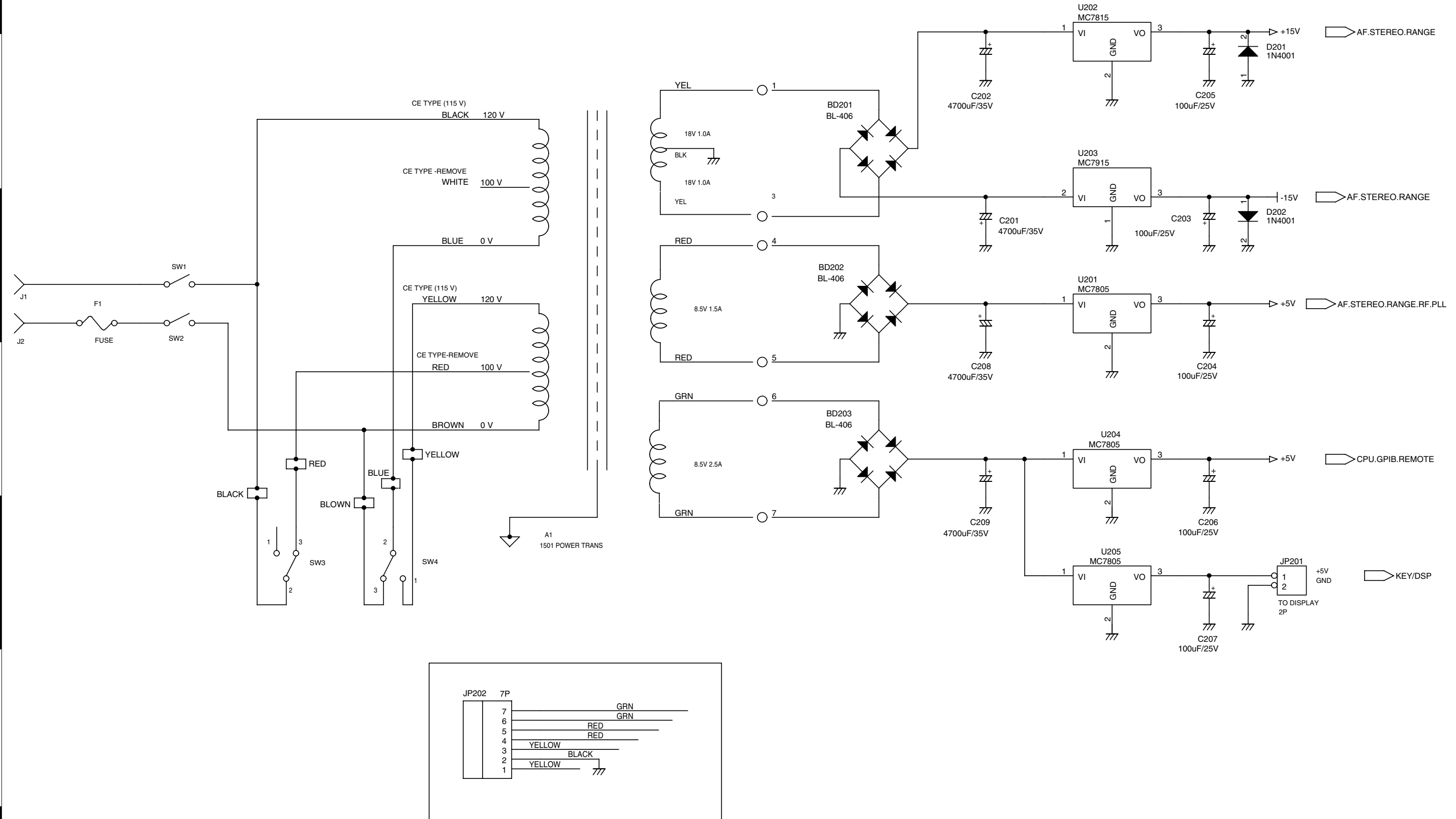
SG-5150/SG-5155

KENWOOD

SCHEMATIC DIAGRAM

CPU UNIT / W02-2492-08 (B/4)SG-5150

W02-2499-08 (B/4)SG-5155



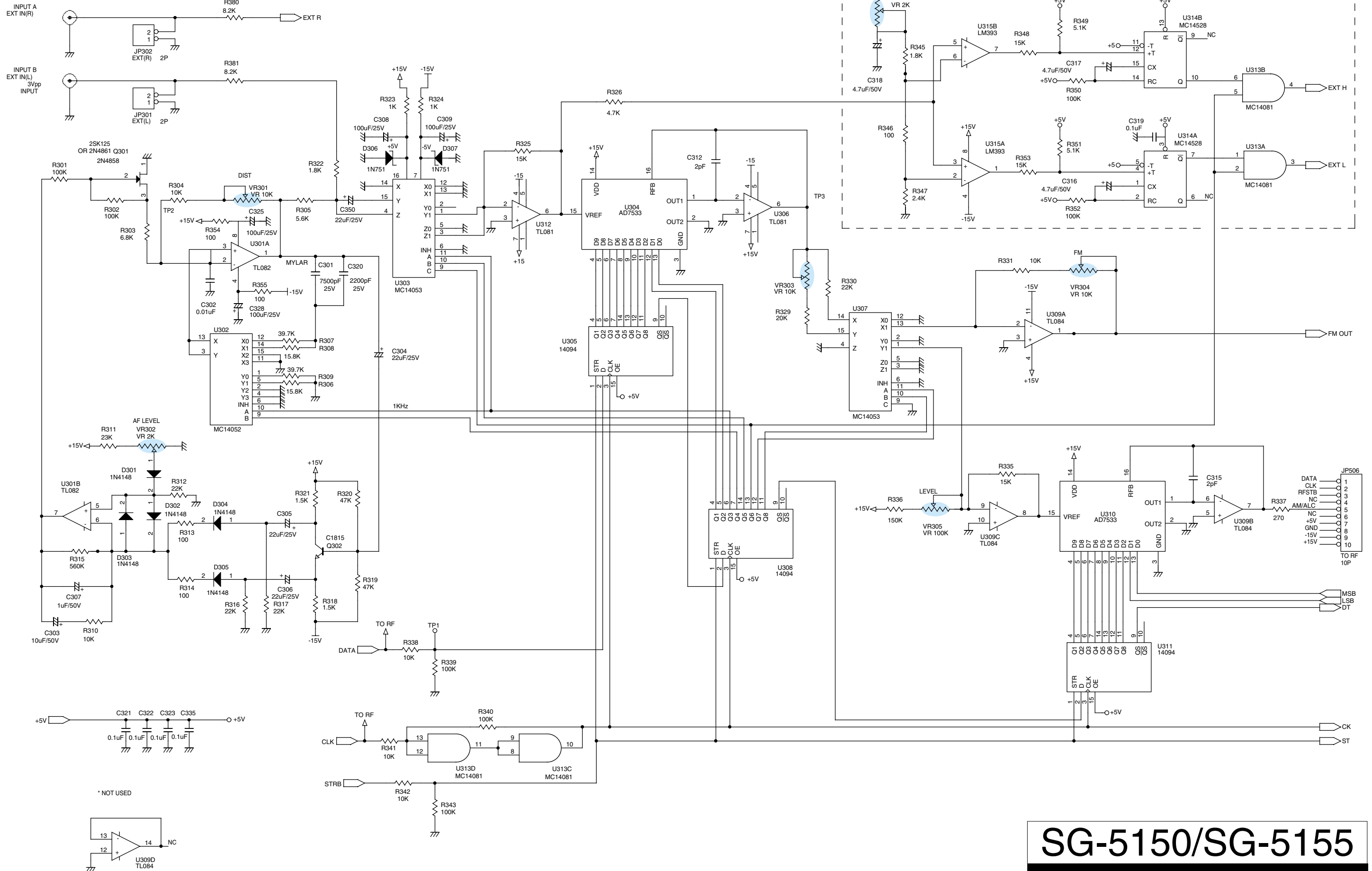
SG-5150/SG-5155

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SCHEMATIC DIAGRAM

CPU UNIT / W02-2492-08 (C/4)SG-5150

W02-2499-08 (C/4)SG-5155



SG-5150/SG-5155

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SCHEMATIC DIAGRAM

CONTROL UNIT / W02-2494-08

1

2

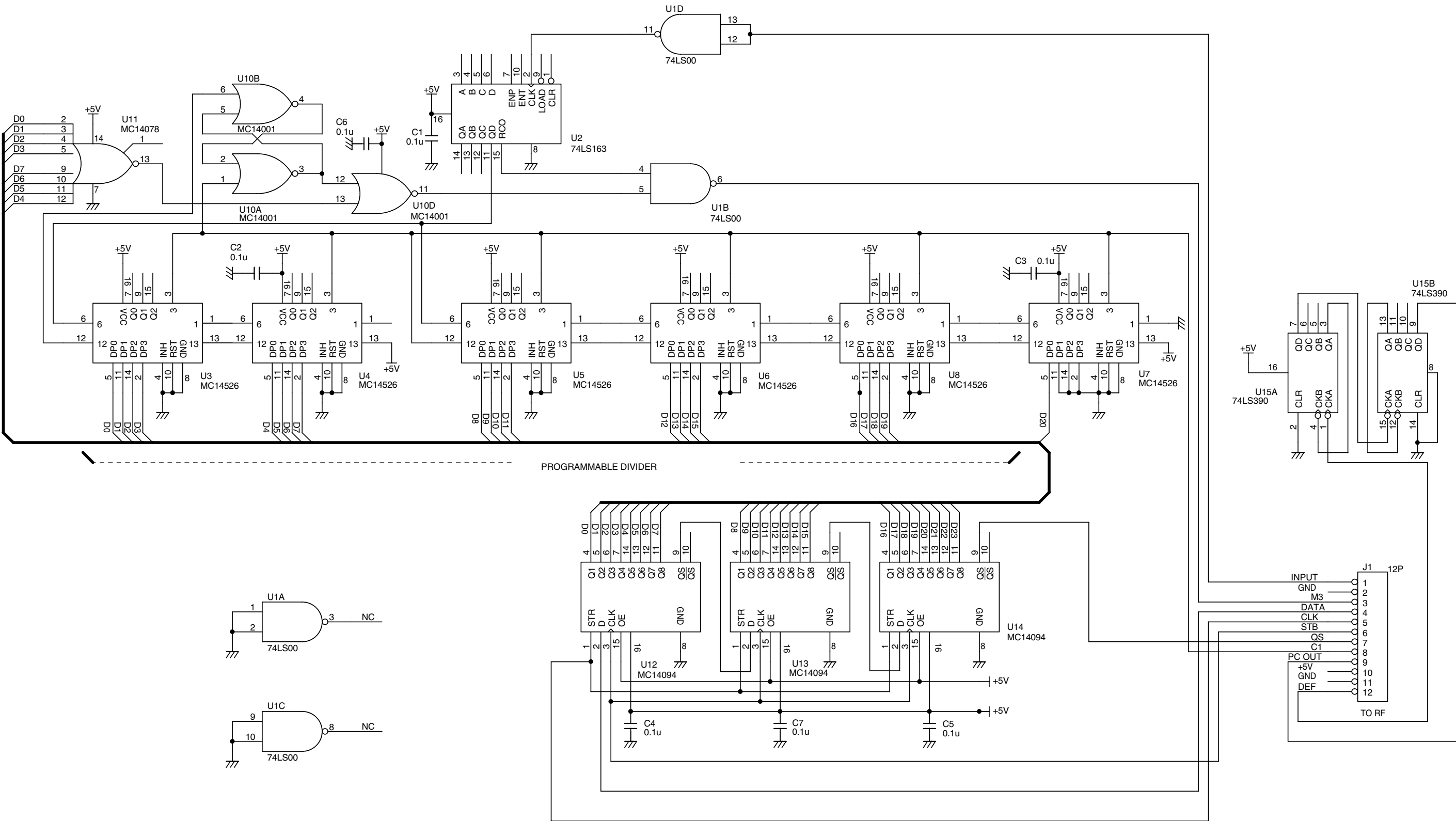
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4

5

6

7

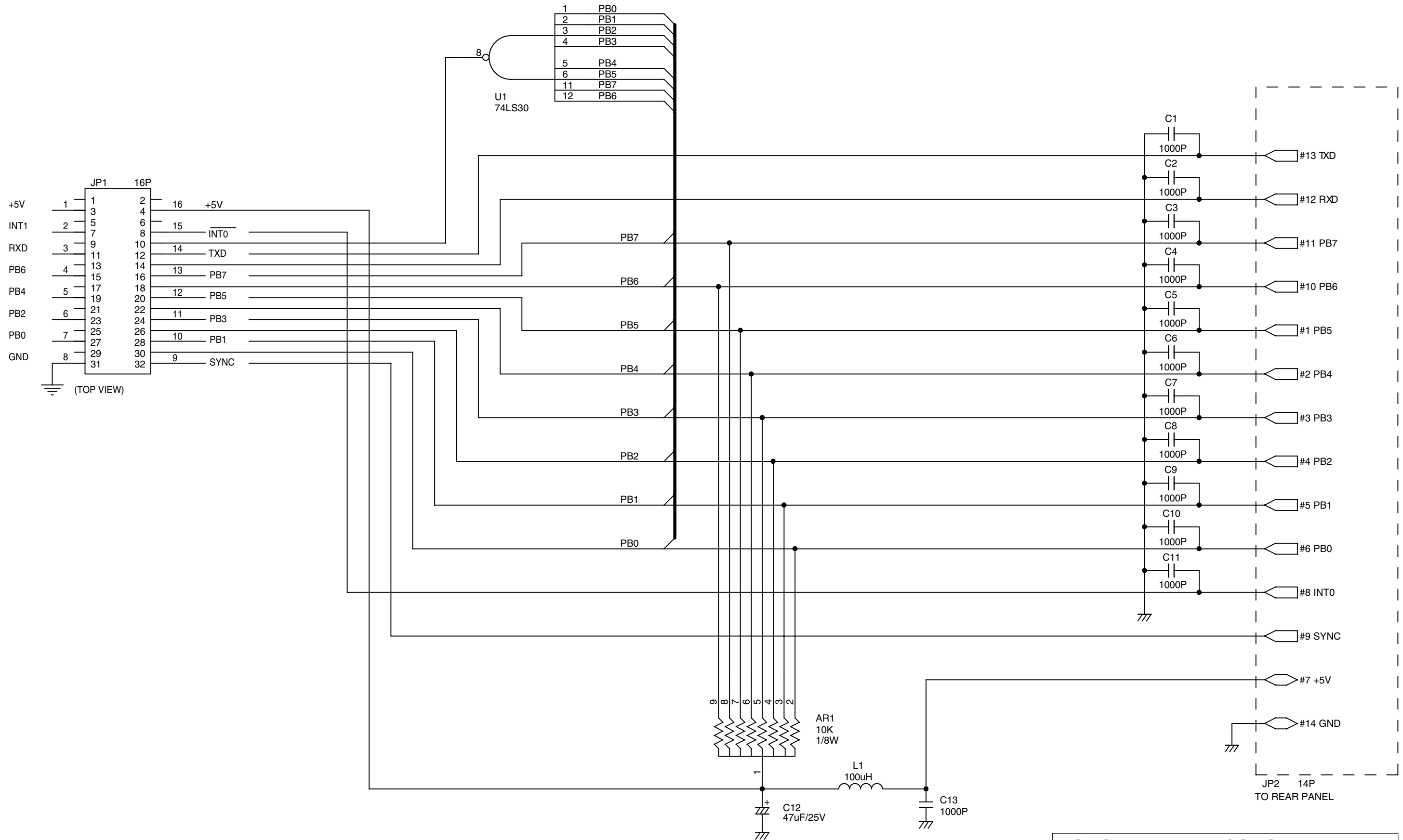


SG-5150/SG-5155

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SCHEMATIC DIAGRAM

INTERFACE UNIT (REMOTE SUB) (W02-2495-08)

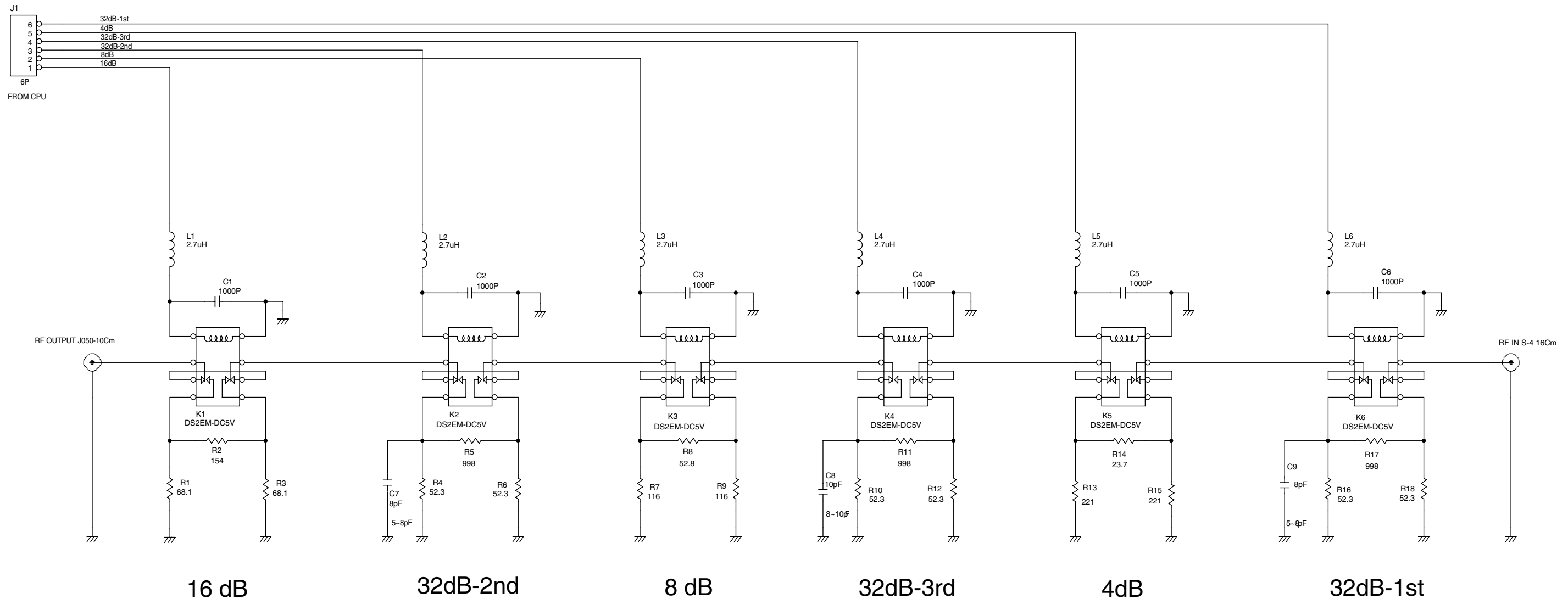


SG-5150/SG-5155

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SCHEMATIC DIAGRAM

ATTENUATOR UNIT (W02-2496-08)



* NOTES

1. C7,C8,C9 : VARIABLE

C7,C9 : 5 ~ 8 pF

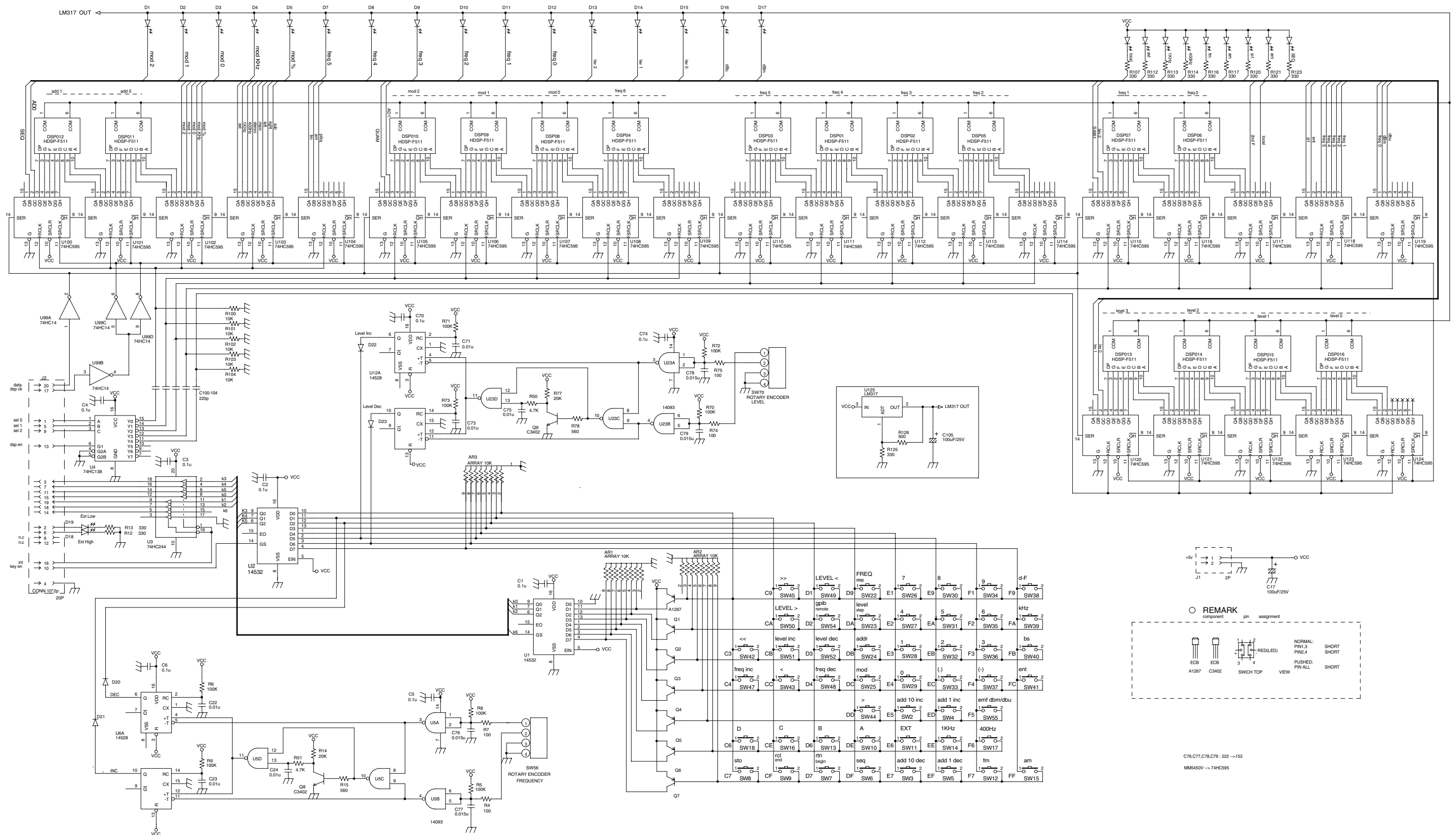
C8 : 8 ~ 10 pF

SG-5150/SG-5155

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SCHEMATIC DIAGRAM

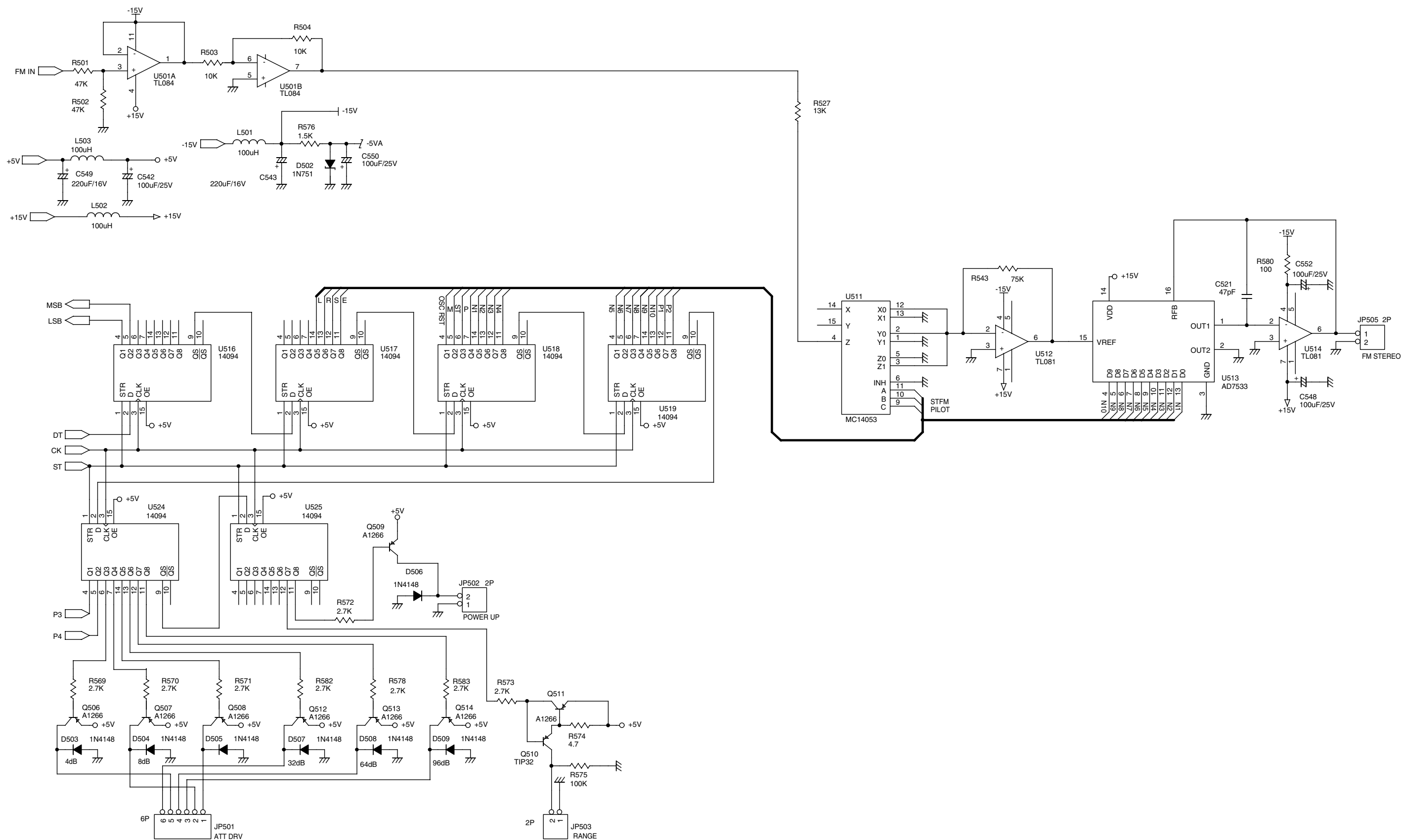
PANEL UNIT / W02-2498-18 (SG-5155)



SG-5150/SG-5155

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SCHEMATIC DIAGRAM

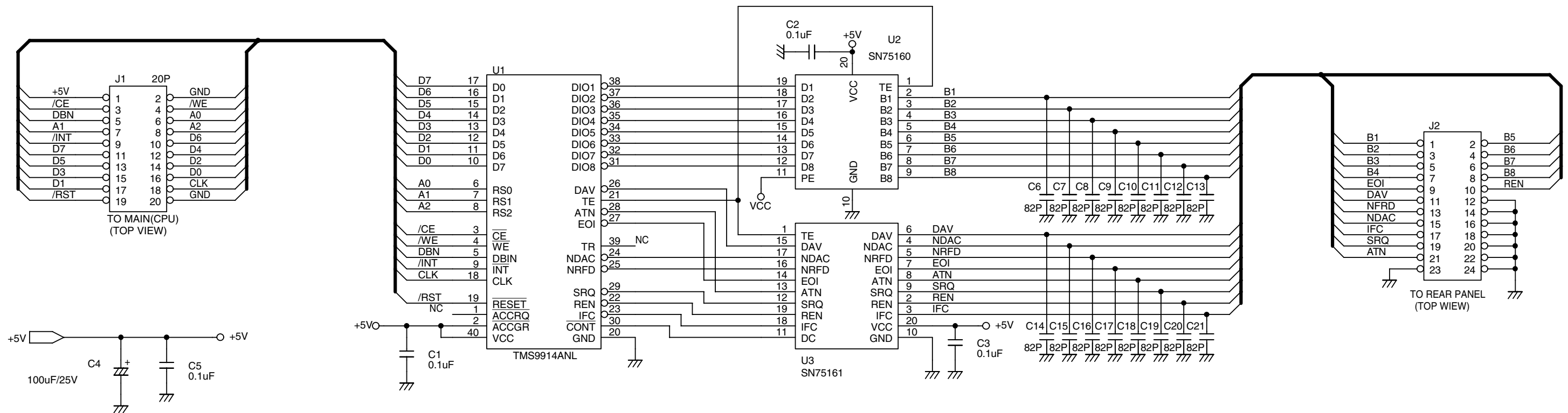
CPU UNIT / W02-2499-08 (D/4) SG-5155

SG-5150/SG-5155

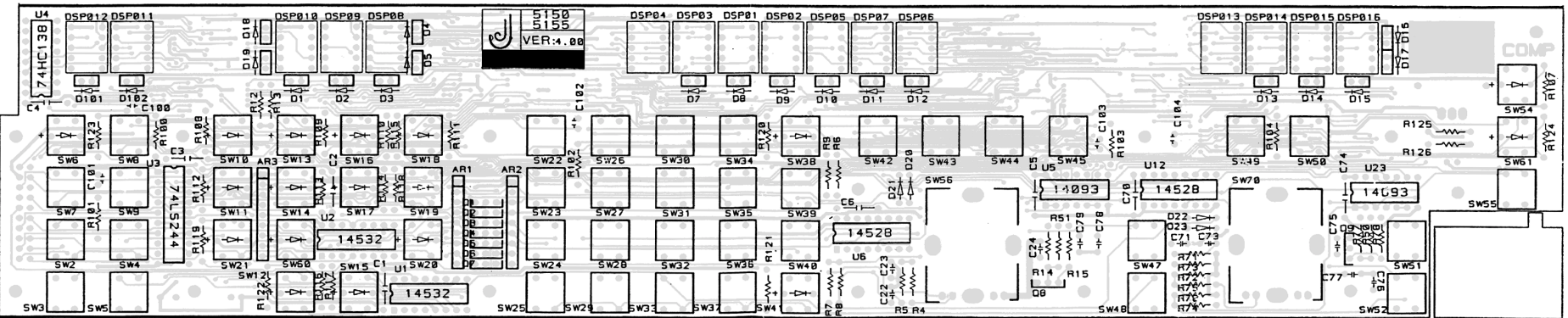
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SCHEMATIC DIAGRAM

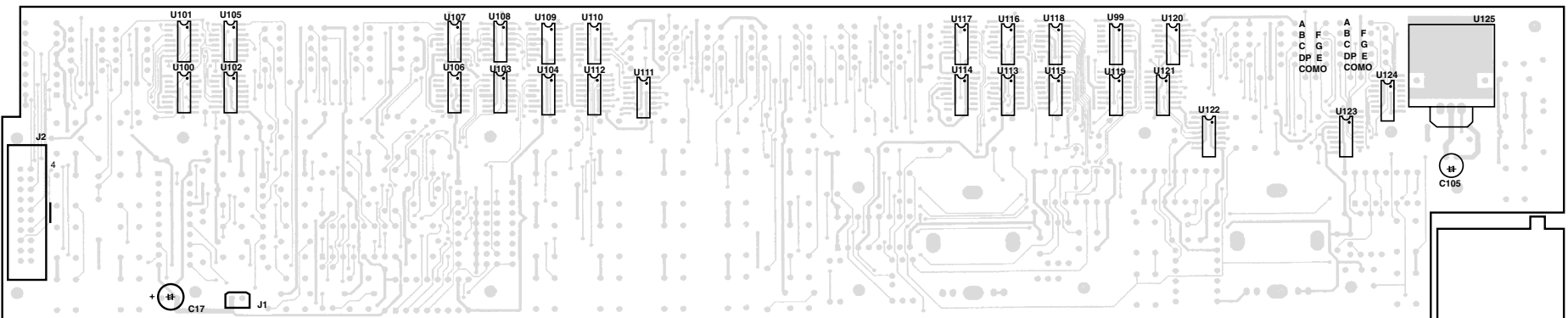
INTERFACE UNIT (GPIB) (W02-4074-08)



PANEL UNIT (W02-2491-18/SG-5150 W02-2498-18/SG-5155) Parts side

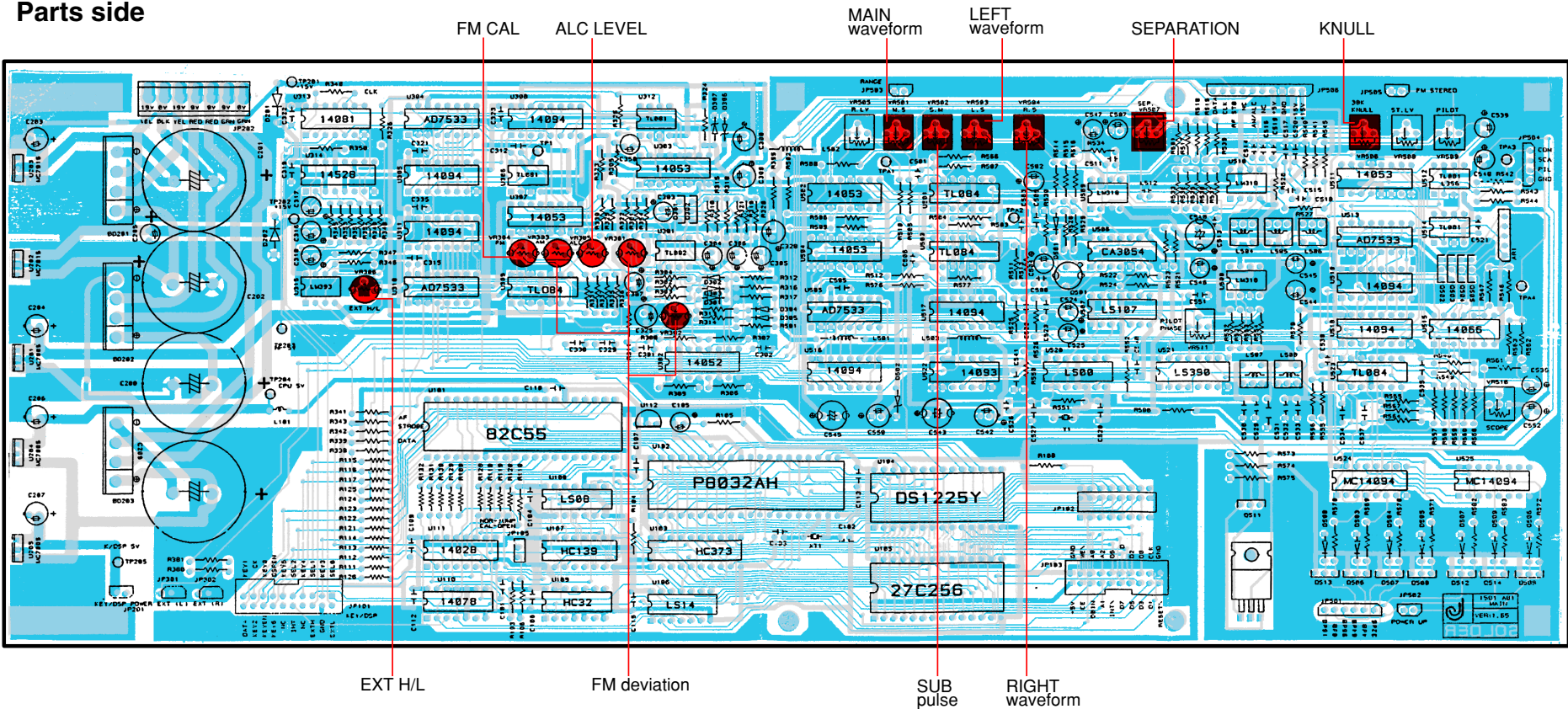


Pattern side (Parts side view)



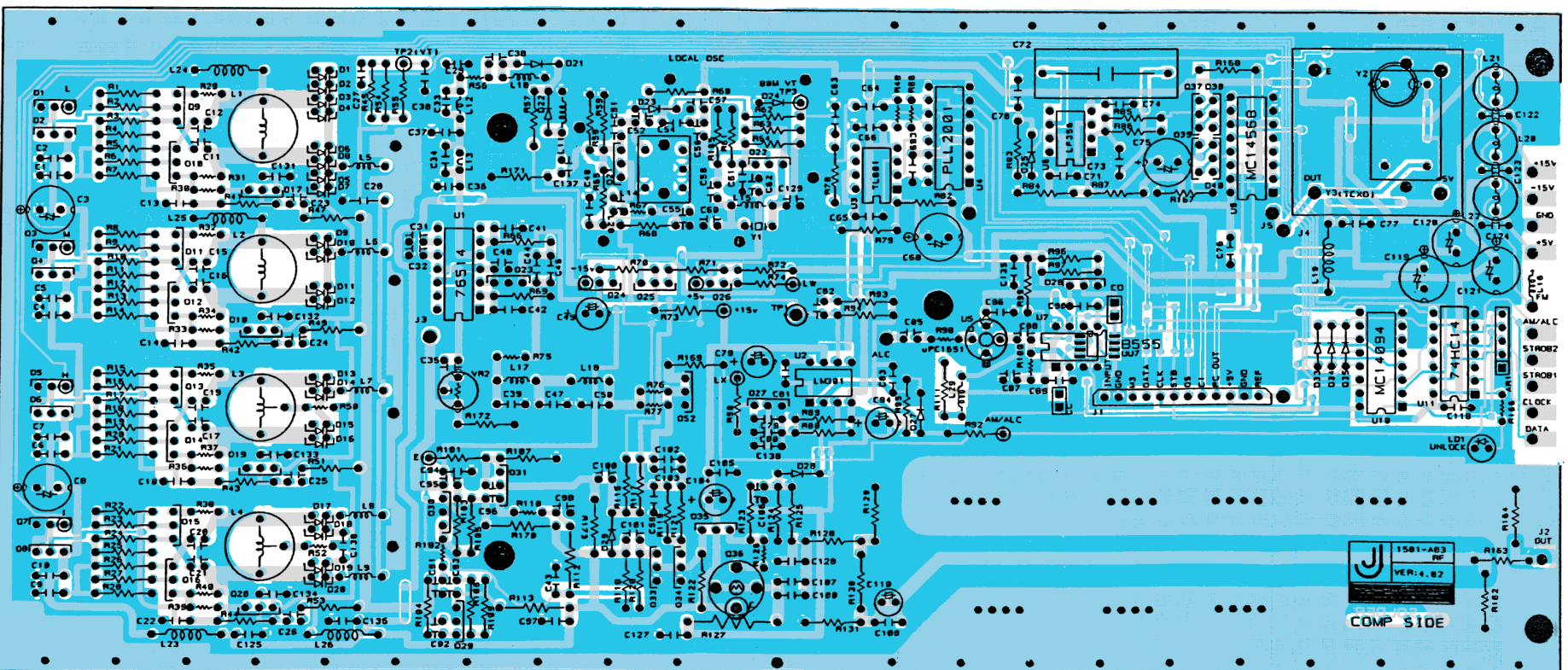
CPU UNIT (W02-2492-08/SG-5150
W02-2499-08/SG-5155)

Parts side



PC BOARD (Component side view)

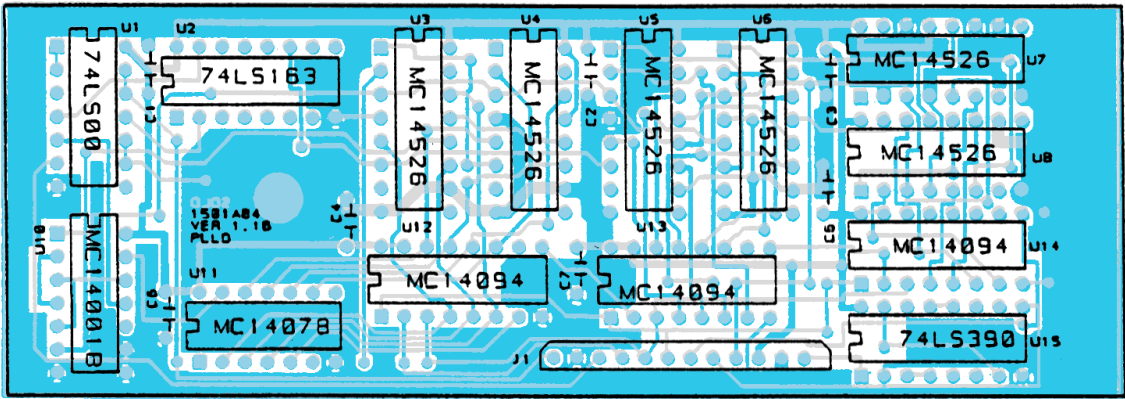
OSCILLATE UNIT (W02-2493-18) Parts side



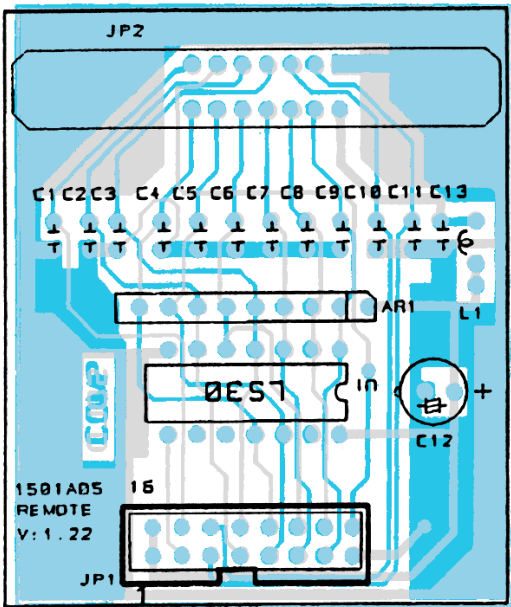
Refer to the schematic diagram for the value of resistors and capacitors.

PC BOARD (Component side view)

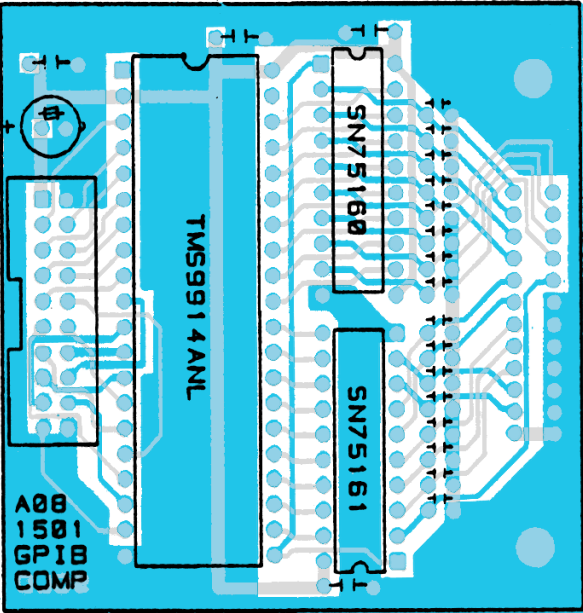
CONTROL UNIT (W02-2494-08)
Parts side



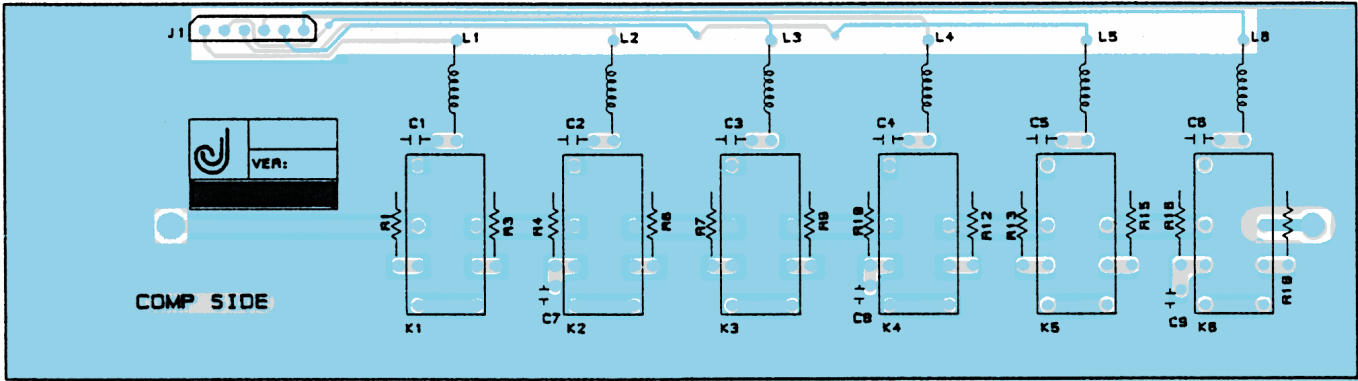
INTERFACE UNIT
(REMOTE SUB)
(W02-2495-08)



INTERFACE UNIT
(GPIB)
(W02-4074-08)



ATTENUATOR UNIT (W02-2496-08)



SG-5150/SG-5155

A product of

KENWOOD TMI CORPORATION

1-16-2, HAKUSAN, MIDORI-KU, YOKOHAMA CITY 226-8525, JAPAN