

TM-8108700507

**WATCH
RECEIVER**

R-2701

**OPERATION AND MAINTENANCE
MANUAL**



SUNAIR 3101 SW Third Avenue, Ft. Lauderdale, FL 33315-3389

REVISION	DATE	ECN	DESCRIPTION
A	10/13/00		Release for production
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Conventions Used in this Manual


- Button names, names of screens and key names are printed in **bold**.
- **Notes:** provide information to help you accomplish tasks efficiently or to avoid problems.
- Mouse clicks:
Unless otherwise specified, the *left* mouse button is used for all mouse actions.
Single-click on an item to activate buttons.
Double-click on most other items to activate function.
- Dialog boxes (combo boxes, list box, text box, drop-down menus)
A combo box is a control, similar to a list box and text box combined in which you enter a value or select an item from a list.
A list box is a control that provides a list of items to choose from.
A text box is a control that allows you to enter or view text in a form. Usually, text boxes hold a single line of text
Some options require that you enter additional information. You either type additional information in a text box (field), select from a drop-down list accessed by up or down arrows, or select (click on) a button.
-  Directs you to additional references about a subject.

TABLE of STANDARD ABBREVIATIONS

ADDR	Address	LVL	Level
AGC	Automatic Gain Control	MAN	Manual
ALC	Automatic Level Control	M CH	Manual Channel
AM	Amplitude Modulation	MED	Medium
AME	Amplitude Modulation Equivalent	MHz	Megahertz
AMP/AMPL	Amplifier	MIC	Microphone
ARQ	Automatic Request	MIL-STD	Military Standard
AUD	Audio	MNL	Manual
AUTO	Automatic	ms	Millisecond
AUX	Auxiliary	MTTR	Mean Time To Repair
BAUD	A variable unit of data transmission speed (bits per second)	MTR	Meter
BELL U.S.	Telephone standards	NAR	Narrow
BFO	Beat Frequency Oscillator	O.D.	Olive Drab
BITE	Built In Test Equipment	PA	Power Amplifier
BRD	Board	PC	Printed Circuit
CH /CHAN /CHL/CHN	Channel	PEP	Peak Envelope Power
CLR	Clear	PLL	Phase-Locked Loop
CMOS	Complementary Metal Oxide Semiconductor	P/N	Part Number
CPLR	Coupler	PNL	Panel
CPU	Computer	POSTSL	Post-Selector
CW	Carrier Wave	PRESEL	Pre-Selector
dB	Decibel	PTT	Push-To-Talk
dBm	Decibels referred to 1 milliwatt across 600 ohms	PWR	Power
DSBSC	Double Sideband Suppressed Carrier	RCV/RX	Receive
DSP	Display	REFL	Reflected
DUART	Dual Asynchronous Receive/Transmit	REV	Revision
EEPROM	Electrically Erasable and Programmable Read Only Memory	RF	Radio Frequency
EPROM	Electrically Programmable Read Only Memory	RFI	Radio Frequency Interference
EMI	Electromagnetic Radiation Interference	RFL	Reflected
ENTR	Enter	RMT	Remote
FAX	Facsimile	RS232	Computer control, hardwired up to 50 feet maximum
FEC	Forward Error Correction	RS422	Computer control, hardwired up to 4000 feet maximum
FREQ	Frequency	RS485	Computer control, hardwired for multiple users
FSK	Frequency Shift Keying	RTTY	Radio Teletype
FWD	Forward	SEL	Select
GRP	Group	SLO	Slow
HF	High Frequency	S MTR	Signal Strength Meter
Hz	Hertz	SPKR	Speaker
IC	Integrated Circuit	SPLX	Simplex
IF	Intermediate Frequency	SRAM	Static Random Access Memory
I/O	Input/Output	SSB	Single Sideband
IONCAP	Ionospheric Communications Analysis and Prediction	TCXO	Temperature Controlled Crystal Oscillator
ISB	Independent Sideband	TGC	Transmit Gain Control
kHz	Kilohertz	THD	Total Harmonic Distortion
kW	Kilowatt	TTL	Transistor Transistor Logic
LCD	Liquid Crystal Display	TX/XMT	Transmit
LCL	Local	USB	Upper Sideband
LED	Light Emitting Diode	UTC	Universal Time
LK	Link	VCO	Voltage Controlled Oscillator
LO	Local Oscillator	VHF	Very High Frequency
LP/LPX	Lincompex	VRMS	Volts Root Mean Square
LRU	Lowest Repairable Unit	VSWR	Voltage Standing Wave Ratio
LSB	Lower Sideband	W	Watt
LT	Light	WPM	Words Per Minute

* Asterisk indicates function selected

SAFETY INFORMATION

The following safety information is not necessarily related to a specific procedure in this particular document. However, the information should be reviewed, understood and applied in all phases of operation and maintenance before operating the equipment described here.

Standard practice uses hazard notices that are ranked in order of severity and designed to prevent damage, injury, or death.

- A **caution** prevents mistakes that could result in injury or equipment damage. For example, Electrostatic Discharge Sensitive Devices (ESDS) must be handled with certain precautions to minimize the effect of static build-up.
- A **warning** alerts users to potential hazards to life or limb. For example, to avoid casualties, always remove power and discharge circuits to ground before touching any circuit components.
- A **danger** identifies an immediate hazard to life or limb. For example, dangerous voltages exist in certain equipment. Before removing any cover, disconnect primary power.

Some personnel in the work place should be trained in rendering first aid. In those places where high voltages are present, they should be familiar with methods of resuscitation.

Keep Away from Live Circuits

Operating personnel must observe at all times all safety regulations. Do not replace components inside the equipment with the power supply turned on. Under certain conditions, dangerous potentials may exist when the power control is in the off position due to circuit design or charges retained by capacitors. Remove watches and rings before performing any maintenance procedures.

Do not service or adjust alone

Under no circumstances should any person reach into or enter the enclosure to service or adjust the equipment except in the presence of someone who is capable of rendering aid.

Resuscitation

Personnel working with or near high voltage should be familiar with methods of resuscitation.

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SECTION I

GENERAL

1.1 SCOPE OF OPTION SECTION

This manual contains information necessary to install, operate, and maintain the R-2701 Watch Receiver.

1.2 PURPOSE OF EQUIPMENT

The R-2701 provides an RT-2400A HF/SSB Radio Set or an RT-9000A Digital HF/SSB Transceiver which has been equipped with an MD-2700 DSC Controller with the ability to scan up to six DSC distress and safety frequencies in the MF/HF bands automatically and continuously. This allows the RT-2400A or RT-9000A to be used for purposes other than scanning for distress calls.

1.3 GENERAL DESCRIPTION

The R-2701 Watch Receiver is a six channel MF/HF watchkeeping receiver permitting scanning of up to six DSC distress and safety frequencies.

The R-2701 includes built-in test equipment (BITE) which permits the operator to easily and quickly test all six channels for normal operation.

The R-2701 is used in conjunction with the MD-2700 DSC Controller to provide the monitor function required by GMDSS (Global Maritime Distress and Safety System) and conforms to relevant GMDSS carriage requirements and the specific technical requirements of CFR 47, Part 80.1101.

The R-2701 Watch Receiver scans any desired set of the six GMDSS watch frequencies.

NOTE: FCC 80.1091(b)(2) requires that the watch receiver be capable of maintaining DSC watch on 2187.5 kHz, 8414.5 kHz and on at least one of the remaining four frequencies. For that reason, the 2187.5 kHz and 8414.5 kHz frequencies in the R-2701 cannot be deselected by the operator.

1.4 TECHNICAL SPECIFICATIONS

Operating Frequencies:	2187.5, 8414.5, 4207.5, 6312, 12577 and 16804.5 kHz
Scan Watch:	All frequencies within 2 seconds
Mode of Reception:	F1B, J2B
Sensitivity:	Error Rate 1×10^{-2} or less at 1uV
Stability:	± 10 Hz
Bandwidth:	270 to 300 Hz (-6dB)
Line Output:	600 ohm balanced, -10 dBm to +10 dBm
Ambient Temperature:	-20 C to +55 C
Circuitry:	Fully synthesized, double conversion receiver. 45 MHz 1st IF, 6.3983 MHz 2nd IF
Power Supply:	10 to 14 VDC @ 750 mA (supplied by MD-2700)

1.5 EQUIPMENT SUPPLIED

The following is a list of equipment, with appropriate Sunair part numbers, supplied with the MD-2700 DSC Controller.

Supplied Equipment Sunair Part Numbers Watch Receiver, R-2701 8108701295 Mounting Bracket 8108601401 Mounting Bracket Hardware 8108601509 Cable Assy, R-2701 to MD-2700 8108701694 Connector Kit, R-2701 8108702097

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SECTION II
INSTALLATION

2.1 GENERAL

This section contains all necessary instructions for proper installation of the R-2701 Watch Receiver in conjunction with the MD-2700 DSC Controller.

2.2 INSTALLATION

The R-2701 should be installed using the supplied mounting bracket (PN 8108601401) and hardware kit (PN 8108601509). Install the mounting bracket using the hole pattern shown in Figure 2.2.1. If a fixed mount is not desired, the hardware kit includes 4 self-adhesive bumpers which can be applied to the bottom of the mounting bracket.

See Figure 2.2.3 and 2.2.4 for the system interconnect of a RT-9000A GMDSS system.

See Figure 2.2.5 for a drawing of the cable connecting the R-2701 Watch Receiver to the MD-2700 DSC Controller.

The R-2701 receiver input is protected against high power levels induced into the receive antenna by co-located transmitters. However, to prevent damage to the protection circuitry and the traces on the PC board, it is necessary to reduce the induced power level as much as possible. This is accomplished by using a short (1 to 2 meter) active receive antenna mounted as far from the transmitting antenna as possible.

2.3 CONNECTOR PINOUTS

2.3.1 J1 Connector to MD-2700 DSC Controller

Pin	Function
J1-A	Ext RX Audio (C-2420A)
J1-B	Ext RX Audio Return (C-2420A)
J1-C	R-2701 Audio
J1-D	R-2701 Audio Return
J1-E	R-2701 Detect
J1-F	Aux Data A
J1-G	Aux Data B
J1-H	Aux Data Return
J1-J	12VDC Supply (+)
J1-K	12VDC Supply (+)
J1-L	12VDC Return (-)
J1-M	12VDC Return (-)
J1-N	Spare
J1-P	Spare
J1-R	Spare
J1-S	Spare
J1-T	Spare
J1-U	Spare
J1-V	Spare

SUNAIR R-2701

2.3.2 J2 RF Input

This is a BNC connector which connects to the watch receiver antenna. This is a 50 ohm input.

When the R-2701 is used with an active antenna, placing a jumper between pins 1 and 2 of 4A1J2 (R-2701 Mainboard) will connect the +12V supply to the center conductor of J2.

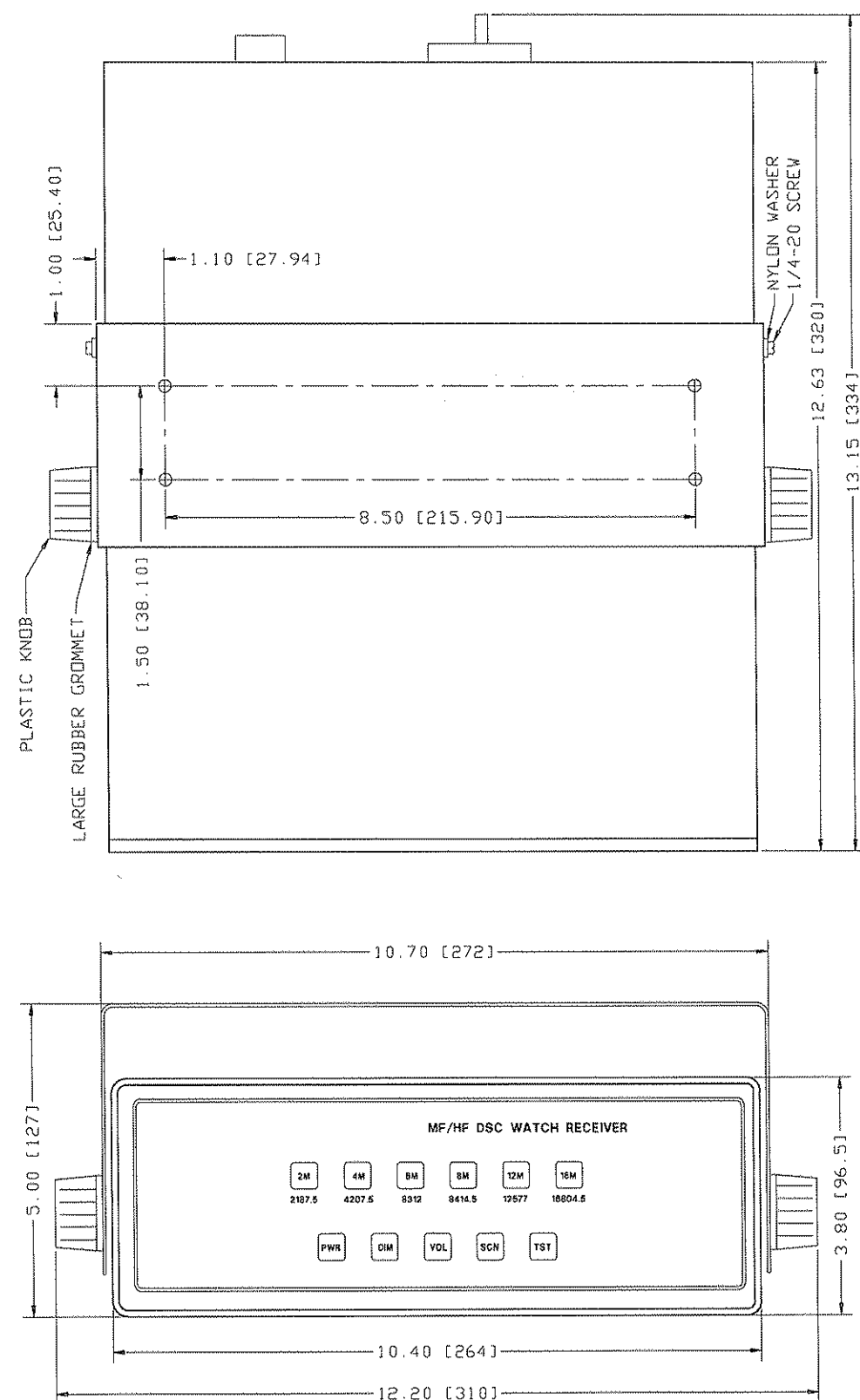


Figure 2.2.1 Outline Dimensions of R-2701.

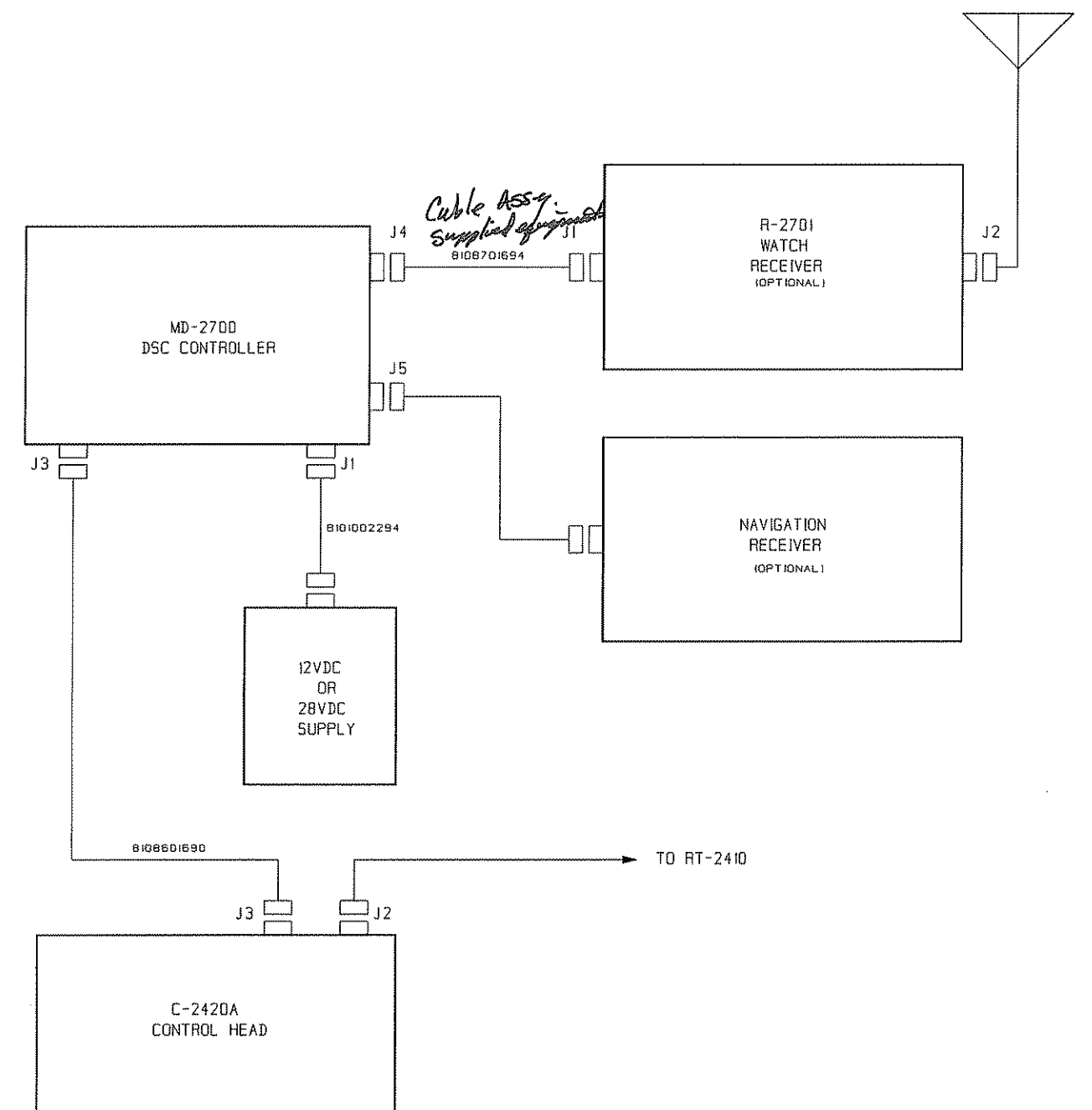


Figure 2.2.2 System Interconnect for RT-2400A GMDSS System.

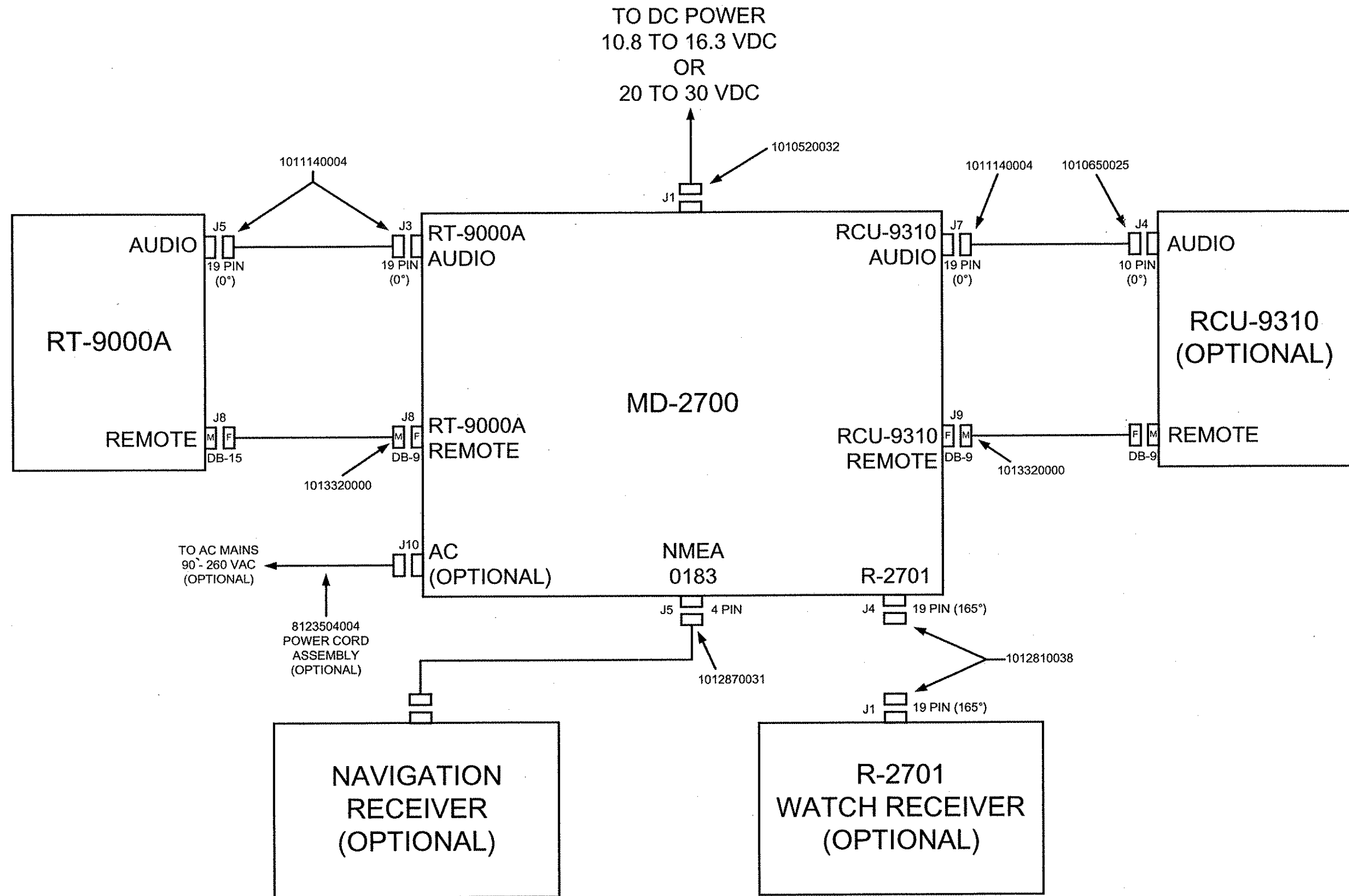


Figure 2.2.3 System Interconnect for RT-9000A GMDSS System.

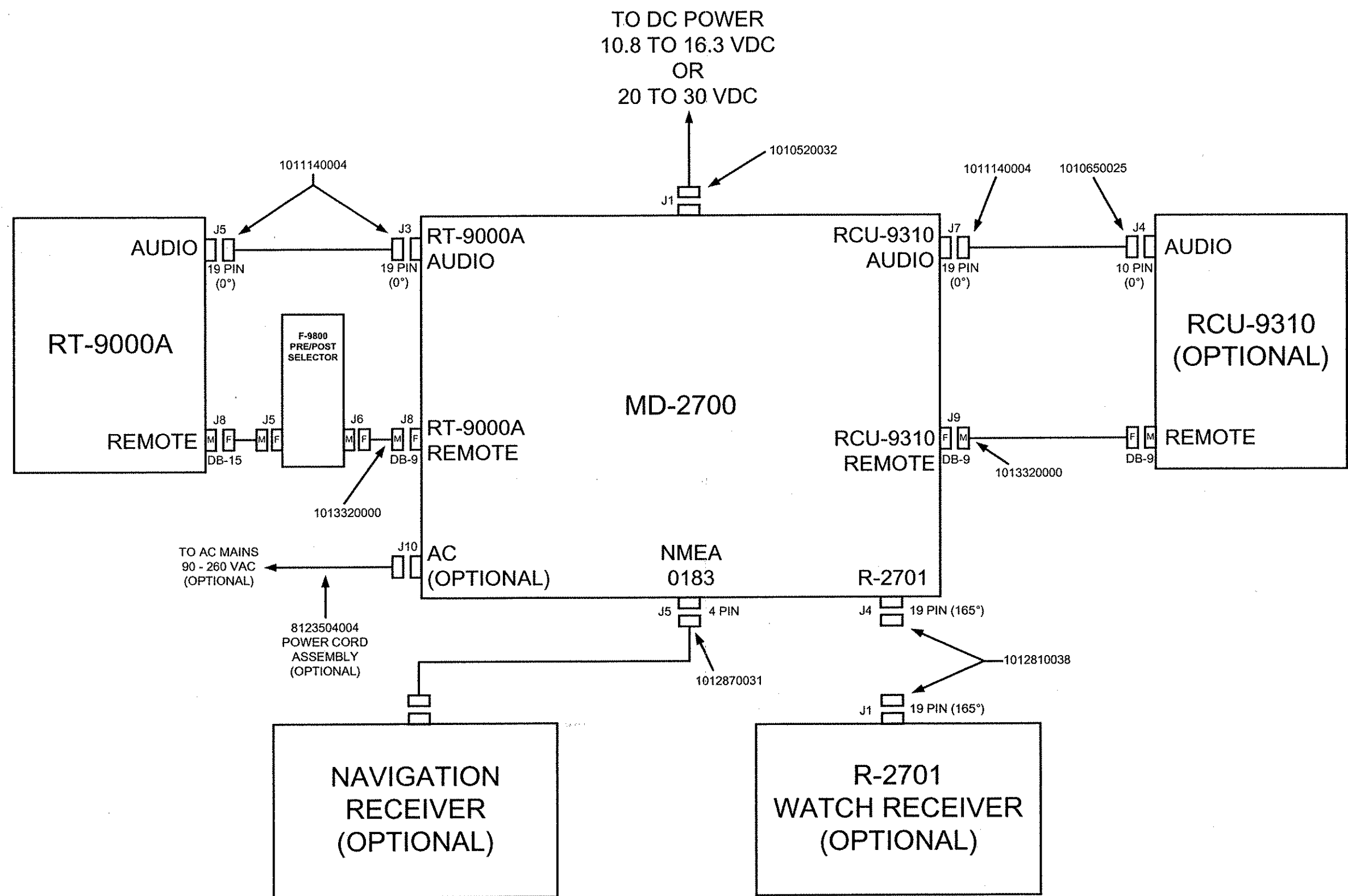


Figure 2.2.4 System Interconnect for RT-9000A GMDSS System with F-9800 Pre/Post Selector.

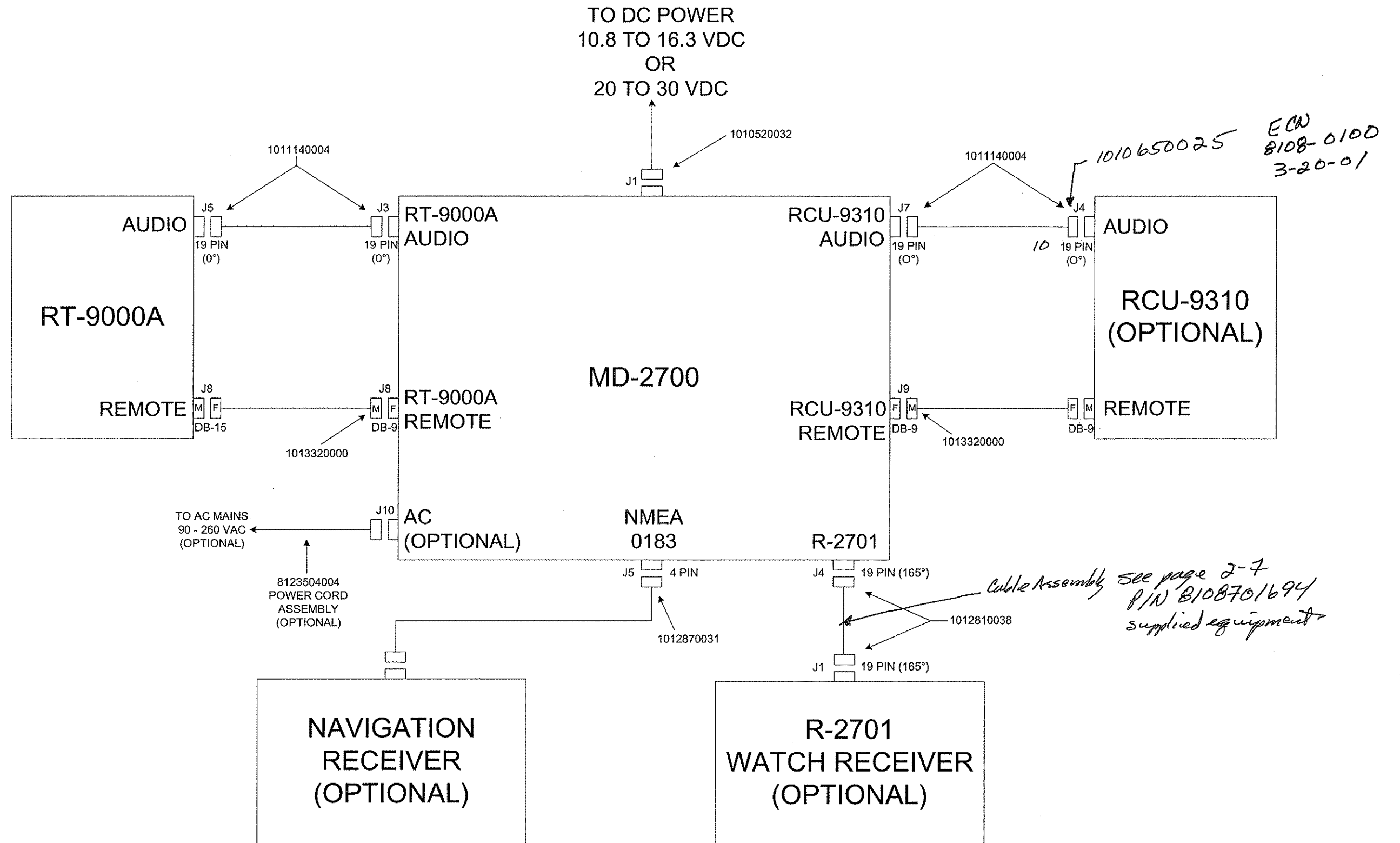


Figure 2.2.3 System Interconnect for RT-9000A GMDSS System.

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SECTION III

OPERATION

3.1 KEYBOARD SWITCH AND ANNUNCIATOR LAMP FUNCTIONS

PWR key: Toggles power on and off.

DIM key: Sequential key strokes cycle all panel illumination through four brightness levels. These are OFF, LOW, MEDIUM, and HIGH.

VOL key: Sequential key strokes cycle the internally mounted loudspeaker volume through four volume levels. These are OFF, LOW, MEDIUM, and HIGH.

SCN key: Toggles the scan function on and off.

TST key: Initiates a BITE test, see Section 5.3, "Maintenance".

2M key: This key is non-functional and is used to provide a cosmetically consistent channel indicator. This key is lighted unless all panel indicators are extinguished by the **DIM** key since the 2187.5 kHz channel is always on.

4M key: Permits selection/deselection of the 4 MHz DSC calling frequency (4207.5 kHz). When selected the key is lighted unless all panel indicators are extinguished by the **DIM** key.

6M key: Permits selection/deselection of the 6 MHz DSC calling frequency (6312 kHz). When selected the key is lighted unless all panel indicators are extinguished by the **DIM** key.

8M key: This key is non-functional and is used to provide a cosmetically consistent channel indicator. This key is lighted unless all panel indicators are extinguished by the **DIM** key since the 8414.5 kHz channel is always on.

12M key: Permits selection/deselection of the 12 MHz DSC calling frequency (12577 kHz). When selected the key is lighted unless all panel indicators are extinguished by the **DIM** key.

16M key: Permits selection/deselection of the 16 MHz DSC calling frequency (16804.5 kHz). When selected the key is lighted unless all panel indicators are extinguished by the **DIM** key.

Channel Frequency Lamps: These annunciators are used to indicate the status of the scan cycle on an instantaneous basis. Only the annunciator for the channel in use is lighted at any given time. The illumination level for the annunciators is selected by the **DIM** key.

CALL annunciator: Lights when the internal decoder decodes the dot pattern message preamble. If the incoming message is handed off to the MF-2700, the **CALL annunciator** will continue to glow until such time as the message is complete and the scan cycle is restored.

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SECTION IV

THEORY OF OPERATION

4.1 GENERAL

The R-2701 is a double-conversion MF/HF scanning receiver, designed specifically to monitor the six frequencies assigned as international MF/HF GMDSS Digital Selective Calling frequencies. These frequencies are: 2187.5, 4207.5, 6312, 8414.5, 12577 and 16804.5 kHz. The receiver is designed to comply with the revised SOLAS convention concluded for introduction of GMDSS (Global Marine Distress and Safety System) and specifically the requirements of CFR 47, Part 80, Subpart W - Global Maritime Distress and Safety System (GMDSS).

The R-2701 is configured as an up-converting receiver with a 45 MHz first IF and a 6.3983 MHz second IF. The receiver input circuitry is provided with a high-pass filter, a P.I.N. diode RF overload protection circuit and a low-pass filter. The first mixer is a high dynamic range diode ring and the first IF "topping" filter at 45 MHz provides a relatively narrow interference window for the following receiver stages.

The second IF filter is centered on 6.3983 MHz and is nominally 300 Hz wide, providing optimum bandwidth for reception of 100 baud FI B or J2B modulation.

The 6.4 MHz BFO also serves as the synthesizer master clock oscillator and is both temperature controlled and temperature compensated to insure compliance with the required (10 Hz frequency stability. Recovered modulation is centered at 1700 Hz. The synthesizer is a two loop system. Coarse tuning is accomplished by the first loop. Reference frequency for the first loop is 6.4 kHz. Fine tuning is accomplished in the second conversion loop. Reference frequency is 100 Hz.

The recovered audio from U6A is bandpass filtered and limited in U23C and U23D and then routed to the internal FSK demodulator and audio power amplifier. A sample of the processed audio signal is also delivered to the audio driver to provide signal interconnection to the companion equipment in a standard GMDSS installation. The demodulated FSK signal is routed to the controller CPU where dot pattern detection takes place.

Front panel controls permit the system operator to configure up to six of the GMDSS DSC frequencies in the scan list. While the R-2701 is scanning, it is invisible to the rest of the system UNTIL A DOT PATTERN IS RECEIVED. Various annunciators, both visual and aural, make it easy to monitor the operation of the R-2701.

Special Built In Test Equipment (BITE) makes it possible for the operator to test all operating frequencies for correct operation at any time with the press of a single key.

4.2 RECEIVER SIGNAL CIRCUITRY

The received RF signal enters the receiver through R-2701, a type BNC coaxial connector. After passing through the normally closed contacts of K2, the signal is passed through a three-pole high pass filter which serves to protect the receiver front end from overload from high powered MF broadcast stations. Following the high pass filter, the P.I.N. diode protection circuitry serves to limit induced RF from the local transmitter. From the P.I.N. protector, the signal passes through a 20 MHz low pass filter to the double balanced diode mixer.

Mixer A1 upconverts the desired signal to the first IF of 45 Mhz, where the signal is first passed through a 15 kHz wide topping filter FL1 and then amplified by an AGC controlled IF amplifier stage U3. The output from U3 is then downconverted in A2 to the second IF frequency of 6.3983 MHz. The second IF signal is passed through narrow band filter FL2 to the balanced detector U5.

The recovered audio signal from U5 is amplified in the first audio stage U6A, then split into two components. One signal is further amplified in the AGC buffer/detector U6B. AGC output is taken from U6B and fed back to the first IF amplifier U3. The second audio signal is fed through a narrow-band filter/clipper U23C and U23D. The filtered/clipped audio signal is fed to FSK demodulator U14 and driver amplifier U23A and U23B. The audio is connected to the normally OPEN contacts of relay K1. An additional sample of the filtered/clipped audio signal is fed through the audio volume controller U27 to the speaker amplifier U28.

The demodulated output and the carrier detect signal from the FSK detector U14 are fed to the controller CPU U16. In addition to normal receiver "housekeeping" functions and communications functions, the CPU constantly monitors the demodulated FSK bit stream for the characteristic "dot pattern" of a GMDSS DSC call.

4.3 THE PHASE LOCKED LOCAL OSCILLATOR SYSTEM

A two loop system is used in the R-2701 consisting of the high frequency loop, operating with a 6.4 kHz reference frequency and the low frequency loop which operates with a 100 Hz reference. The combination of the two loops provides 100 Hz resolution over the high frequency spectrum, along with adequate loop switching and settling times.

The high frequency loop starts with the VHF VCO Voltage Controlled Oscillator Q2 and Q3. This oscillator/buffer covers the tuning range of 47.2 MHz to 61.8 MHz in two ranges. Bandswitching is accomplished with P.I.N. diode CR2 through control transistor Q1. VCO tuning is accomplished by a control voltage from the synthesizer chip U2 to tuning varactors CR3 and CR4.

The signal from the VCO is buffered through MMIC amplifiers U13 and U12 and then applied to the first signal mixer A1. Simultaneously, a sample of the VCO output is applied to the high speed loop dual modulus prescaler U1.

The low speed loop starts with the 38.6 MHz VCXO Q5. The oscillator operates over the range of 38.5984 to 38.6047 MHz and is varactor tuned by an output voltage from the phase detector in synthesizer chip U10.

The second oscillator signal is buffered by transistor Q6 and then applied to one of the inputs of a HCMOS EXclusive OR gate U11C. A buffered 6.4 MHz signal from the master clock oscillator is applied to the second gate of the EXclusive OR gate which acts as a harmonic mixer. The output signal is the difference between the second oscillator signal and the 6th harmonic of the clock signal at 38.4 MHz, or approximately 200 kHz. This 200 kHz signal is filtered, buffered and then applied to the signal input of the low speed loop synthesizer chip U10. The clock signal for the low speed synthesizer U10 is derived from the 6.4 MHz master clock through a buffer U11A and a divide-by-128 counter U9.

As mentioned above, the master clock oscillator operates at a frequency of 6.400 MHz. The required 0.5 PPM frequency stability required for this receiver is obtained by placing a high stability crystal which is matched to a proper temperature compensating capacitor inside a temperature stabilized enclosure. A small heater R152 is bonded to the crystal together with a sensing thermistor R143. Thermal feedback from R143 is amplified by U18 and used to control a small power transistor Q14 in series with the heater R152. Trimmer R145 sets the exact crystal temperature.

The oscillator used is the oscillator portion of synthesizer chip U2. This circuit has been especially designed for use as a stable high frequency crystal oscillator and also provides the high speed loop reference frequency divider in the form of the built in divide-by-R counter.

4.4 THE CONTROLLER CPU CIRCUITRY

All internal housekeeping functions for the receiver such as keypad scanning and interpretation, annunciator control, synthesizer loading and dot pattern recognition are handled by the circuitry associated with and the firmware embedded in U16. U16 also takes care of the necessary inter-unit communications via the RS485 bus.

The CPU chip U16 is a Motorola 68HC05C8 with internal EPROM. Fire up reset and brownout protection is accomplished by U19 and non-volatile storage is handled by serial EEPROM U15, a 24C16. RS485 bus interface is the function of the SN75176 RS485 data transceiver U22 and an auxiliary RS232 interface is provided by U20, a MAX232. Level shifting and buffering for the various input and output ports is provided by UI 71 QI 0 and QI 1.

The various annunciator and keypad backlighting LEDs are driven though a special serially loaded LED driver chip U24. Four illumination levels are provided through QI 2 and QI 3.

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SECTION V
MAINTENANCE

5.1 GENERAL

This section provides maintenance procedures for the R-2701 Watch Receiver.

5.2 MAINTENANCE PROCEDURES

Maintenance within the R-2701 is limited to initiating a BITE test (see Section 5.3). Should the BITE fail, the R-2701 itself is the Lowest Repairable Unit (LRU) and will require replacement.

If the BITE test is successful, but the system is not functioning correctly, an audio routing problem is probably present. See Section 5.4 for troubleshooting procedures.

5.3 BITE

A BITE test is initiated by pressing the **TST** key on the R-2701 front panel. Pressing the **TST** key immediately terminates the existing scan conditions. Receiver scan status (operating channel, scan on or off) is remembered.

At this point, the receiver input is switched from antenna to the internal signal generator. The receiver switches to 2187.5 kHz and holds to evaluate the signal level. If the test is passed, the internal speaker will beep once and the CALL indicator will blink on. The receiver then switches to the next channel and repeats the signal evaluation test. This pattern continues until all six channels have passed.

If the signal evaluation test is passed on all six channels, the internal speaker will beep twice. The call indicator will be extinguished and the receiver scan status will be restored to what it was before the BITE test was initiated.

If any of the channels fail the signal evaluation test, the receiver will hold on the failed channel. The internal speaker will beep for 5 seconds and the annunciator for the failed channel will blink in a 1 second on, 1 second off cycle. The operator may choose to continue the test function by pressing the **TST** key again. This action will cause the receiver to step to the next channel and resume testing.

5.4 TROUBLESHOOTING

The following equipment is required to check the R-2701 input and output pathways.

RF Signal Generator	Hewlett-Packard 8460 or equivalent
Oscilloscope	Tektronix 465 or equivalent
Multimeter	Simpson 260 or equivalent

Connect the RF Signal Generator to the antenna input of the R-2701. Set the generator frequency to 2187.5 kHz. Set the generator output level to -70 dBm.

Turn the system on. If the R-2701 is not scanning, start scanning using the **SCN** key. Press the **SCN** key again to stop the scan when the LED above the **2M** key is lit. This will set the R-2701 to 2187.5 kHz.

The R-2701 should now be receiving a signal from the generator and producing a 1700 Hz tone in the speaker. If a tone is not heard, adjust the volume using the **VOL** key and verify that a tone is present.

Using the multimeter, verify that the voltage on the anode of CR10 of the 1A3 Rear Interface Board of the MD-2700 is 0V +/- .5V. This is the R-2701 DETECT line.

Verify that the voltage between E2 and E1 on the 1A2 Rear Interface Board of the R-2701 is 12V.

Using the oscilloscope, verify that a 1700 Hz audio signal is present at J1-C and J1-D on the 1A2 Rear Interface Board of the R-2701.

Using the oscilloscope, verify that a 1700 Hz audio signal is present at J1-C and J1-D on the 1A3 Rear Interface Board of the MD-2700.

Using an oscilloscope, check for a 0V to 5V square wave data signal at E3 and E4 on the Rear Interface Board of the R-2701. This signal is a burst type and may only be present during the first few seconds after power up, so watch the scope carefully while powering the system up.

5.5 SCHEMATICS AND PARTS LISTS

The following pages contain schematics and parts lists for the R-2701, see Table 5.5.1 below.

DESIGNATOR		DESCRIPTION	SUNAIR PART NUMBER
ASSEMBLY	SUBASSEMBLY		
1A1		MAIN BOARD	8108712009
1A2		FRONT PANEL	8108712106
1A3		REAR INTERFACE	8108720095

Table 5.5.1 R-2701 Table of Assemblies

PC ASSY, R2701 MAIN BOARD 1A1

SEQN	COMPONENT	DESCRIPTION	M B	C T	Q T	QUANTITY	UM
000	CAP-0805-051	CAPACITOR, 'T0' 5.1PF C162,C164	B	N	I	2	EA
000	CAP-1013-475B	CAP, TANT, 4.7UFD 10V,CASE B C126,C127	B	N	I	2	EA
000	CAP-1014-105	CAP, TANT, IUF/16V,CASE A C73,C79,C80,C91,C98,C100,C101,C103,C104, C128,C141	B	N	I	11	EA
000	CAP-1014-106	CAP, TANT, 10UF/16V,CASE C C63,C84,C89,C135,C153,C169,C170	B	N	I	7	EA
000	CAP-1014-476	CAP, TANT, 47UF/16V,CASE D C37,C65,C87	B	N	I	3	EA
000	CAP-1015-226	CAP, TANT, 22UF/20V,CASE D C102,C112,C113,C189	B	N	I	4	EA
000	CAP-1016-225	CAP, TANT, 2.2UF/25V,CASE B C54	B	N	I	1	EA
000	CAP-1206-033	CAP, 3.3PF COG 100V C26,C34,C47,C192	B	N	I	4	EA
000	CAP-1206-100	CAPACITOR, 'A1' SM 10PF C3,C44,C45,C69,C131,C163,C171,C172	B	N	I	8	EA
000	CAP-1206-101	CAPACITOR, 100PF SM 'A2' C150,C167	B	N	I	2	EA
000	CAP-1206-102	CAP, .001UF@100V BLU A/ C7,C12,C29,C32,C33,C56,C93,C97,C114,C115, C116,C117,C145,C146,C151	B	N	I	15	EA
000	CAP-1206-103	CAP, .01UF @ 100V VIO A C6,C11,C39,C40,C60,C66,C70,C86,C124,C125, C129,C139,C140,C143,C156,C158,C159	B	N	I	17	EA
000	CAP-1206-104	CAP, .1UF@50V RED A/A5 C1,C13,C18,C30,C31,C41,C42,C48,C53,C59,C61, C62,C64,C68,C72,C81,C82,C83,C95,C96,C99, C105,C108,C109,C110,C111,C122,C123,C133, C142,C144,C152,C157,C160,C165,C166,C174	B	N	I	37	EA
000	CAP-1206-121	CAP, 120PF 50V 'C2' C191	B	N	I	1	EA
000	CAP-1206-151	CAPACITOR, 'E2' 150PF C23,C27,C28,C55,C119,C132,C168	B	N	I	7	EA
000	CAP-1206-220	CAPACITOR, 'J1' SM 22PF C4,C5,C22,C43,C106,C107,C147	B	N	I	7	EA
000	CAP-1206-221	CAPACITOR, 220PF C2,C76,C78	B	N	I	3	EA
000	CAP-1206-222	CAP, .002UF COG 50V C20,C21	B	N	I	2	EA
000	CAP-1206-223	CAP, .022 MF C74,C88	B	N	I	2	EA
000	CAP-1206-271	CAPACITOR,'L2' 270PF C25	B	N	I	1	EA
000	CAP-1206-330	CAPACITOR,'N1' 33PF C24,C51	B	N	I	2	EA
000	CAP-1206-331	CAP, 330PF 50V 'N2' C120,C187	B	N	I	2	EA
000	CAP-1206-333	CAP, .033UF 50V 'N4' C90,C92,C130	B	N	I	3	EA
000	CAP-1206-391	CAPACITOR,'Q2' 390PF C71	B	N	I	1	EA
000	CAP-1206-470	CAP, 47PF COG 100V S1 C52,C161	B	N	I	2	EA
000	CAP-1206-473	CAP, .047UF 50V C8,C19,C49,C134,C138	B	N	I	5	EA
000	CAP-1206-560	CAP,CERAMIC CHIP, 56PF COG C17,C38,C148	B	N	I	3	EA
000	CAP-1206-561	CAPACITOR,'U2' 560PF C85	B	N	I	1	EA

SEQN	COMPONENT	DESCRIPTION	M B	C T	Q T	QUANTITY	UM
000	CAP-1206-680	CAPACITOR, 'W' SM 68PF C173	B	N	I	1	EA
000	CAP-1206-821	CAP 820PF 50V 'Y2' C149	B	N	I	1	EA
000	CAP-1210-103	CAP .01UF/500V C175,C176,C177,C178,C179,C180	B	N	I	6	EA
000	LAB [R] ASSY	LABOR, ASSEMBLY	M	R	I	0.56567797	HR
000	PCB-7001-01	MAINBOARD	B	N	I	1	EA
000	RES-1206-047	RES SMD 4.7 OHM 1/4W 5% R68,R75	B	N	I	2	EA
000	RES-1206-100	RES SMD 10 OHM 1/4W 5% R128,R146,R147,R148,R166	B	N	I	5	EA
000	RES-1206-101	RES SMD 100 OHM 1/4W 5% R8,R58,R90,R91,R92,R93,R105,R106,R119, R121,R165	B	N	I	11	EA
000	RES-1206-102	RES SMD 1K OHM 1/4W 5% R6,R46,R160	B	N	I	3	EA
000	RES-1206-103	RES SMD 10K OHM 1/4W 5% R1,R2,R4,R9,R17,R18,R33,R45,R48,R65,169, R78,R83,R84,R88,R95,R97,R98,R99,R100,R107, R109,R110,R111,R112,R113,R114,R115,R116, R118,R120,R124,R127,R129,R130,R131,R132, R135,R136,R140,R141,R142,R154,R155,R157, R159,R163,R175	B	N	I	48	EA
000	RES-1206-104	RES SMD 100K OHM 1/4W 5% R13,R35,R36,R41,R42,R71,R161,R164,R167	B	N	I	9	EA
000	RES-1206-105	RES SMD 1 MEG OHM 1/4W 5% R39,R70	B	N	I	2	EA
000	RES-1206-106	RES SMD 10 MEG OHM 1/4W 5% R87	B	N	I	1	EA
000	RES-1206-122	RES SMD 1.2K OHM 1/4W 5% R63,R66	B	N	I	2	EA
000	RES-1206-151	RES SMD 150 OHM 1/4W 5% R170	B	N	I	1	EA
000	RES-1206-152	RES SMD 1.5K OHM 1/4W 5% R50,R89,R94	B	N	I	3	EA
000	RES-1206-153	RES SMD 15K OHM 1/4W 5% R73,R80,R123	B	N	I	3	EA
000	RES-1206-154	RES SMD 150K OHM 1/4W 5% R72	B	N	I	1	EA
000	RES-1206-180	RES SMD 18 OHM 1/4W 5% R20,R179,R182	B	N	I	3	EA
000	RES-1206-182	RES SMD 1.8K OHM 1/4W 5% R16	B	N	I	1	EA
000	RES-1206-203	RES SMD 20K OHM 1/4W 5% R139	B	N	I	1	EA
000	RES-1206-221	RES SMD 220 OHM 1/4W 5% R103,R104	B	N	I	2	EA
000	RES-1206-222	RES SMD 2.2K OHM 1/4W 5% R12,R44,R54,R55,R60,R149,R150	B	N	I	7	EA
000	RES-1206-223	RES SMD 22K OHM 1/4W 5% R15,R61,R153	B	N	I	3	EA
000	RES-1206-224	RES SMD 220K OHM 1/4W 5% R57,R59,R126	B	N	I	3	EA
000	RES-1206-271	RES SMD 270 OHM 1/4W 5% R172	B	N	I	1	EA
000	RES-1206-274	RES SMD 270K OHM 1/4W %t R64	B	N	I	1	EA
000	RES-1206-301	RES SMD 300 OHM 1/4W 5% R19,R21,R26,R171,R178,R180,R181,R183	B	N	I	8	EA
000	RES-1206-302	RES SMD 3.0K OHM 1/4W 5% R85,R86	B	N	I	2	EA
000	RES-1206-331	RES SMD 330 OHM 1/4W 5% R11	B	N	I	1	EA

Figure 5.5.1 PC Assembly, R-2701 Main Board, page 1 of 6.

SEQN	COMPONENT	DESCRIPTION	M B	C T	Q T	QUANTITY	UM
000	RES-1206-332	RES SMD 3.3K OHM 1/4W 5% R27	B	N	I	1	EA
000	RES-1206-333	RES SMD 33K OHM 1/4W 5% R14,R49,R156	B	N	I	3	EA
000	RES-1206-391	RES SMD 390 OHM 1/4W 5% R32,R40	B	N	I	2	EA
000	RES-1206-470	RES SMD 47 OHM 1/4W 5% R31,R53,R56,R117,R168	B	N	I	5	EA
000	RES-1206-472	RES SMD 4.7K OHM 1/4W 5% R5,R7,R34,R79,R82,R101,R102,R133,R176	B	N	I	9	EA
000	RES-1206-473	RES SMD 47K OHM 1/4W 5% R76,R81,R122,R137,R138	B	N	I	5	EA
000	RES-1206-474	RES SMD 470K OHM 1/4W 5% R74,R77,R134	B	N	I	3	EA
000	RES-1206-560	RES SMD 56 OHM 1/4W 5% R29	B	N	I	1	EA
000	RES-1206-561	RES SMD 560 OHM 1/4W 5% R3,R38,R169,	B	N	I	3	EA
000	RES-1206-562	RES SMD 5.6K OHM 1/4W 5% R10,R30,R37,R125,R158	B	N	I	5	EA
000	RES-1206-623	RES SMD 62K OHM 1/4W 5% R151	B	N	I	1	EA
000	RES-1206-680	RES SMD 68 OHM 1/4W 5% R28	B	N	I	1	EA
000	RES-1206-750	RES SMD 75 OHM 1/4W 5% R144	B	N	I	1	EA
000	RES-1206-820	RES SMD 82 OHM 1/4W 5% R22,R23,R24,R143,R177	B	N	I	5	EA
000	RES-1206-821	RES SMD 820 OHM 1/4W 5% R51,R52	B	N	I	2	EA
000	RES-1206-822	RES SMD 8.2K OHM 1/4W 5% R67	B	N	I	1	EA
000	SEM-1002-001	MMBV3401L PIN DIODE, SOT23 CR2	B	N	I	1	EA
000	SEM-1003-004	MMBD7000L DL SW, A1, SOT- CR10,CR11,CR25,CR26,CR6,CR12,CR28	B	N	I	7	EA
000	SEM-1005-004	CMPD6263S DL HC,A1,SOT23 CR1, CR9	B	N	I	2	EA
000	SEM-1005-005	CMPD6263A DL HC,CA3,SOT23 CR5	B	N	I	1	EA
000	SEM-1006-001	MMBV109L VVD, HA, A1, SOT CR3,CR4,CR7,CR27	B	N	I	4	EA
000	SEM-1014-051	MC14051BD,8 CHNL ANALOG M U27	B	N	I	1	EA
000	SEM-1014-489	MC14489DW,LED DISPLAY DRI U24	B	N	I	1	EA
000	SEM-1015-024	74HC4024, 7-BIT RIPPLE CN U9	B	N	I	1	EA
000	SEM-1015-086	74HC86, QUAD XOR, SO-14 U11	B	N	I	1	EA
000	SEM-1017-001	ULN2003 NPN DARL DRVR ARR U17	B	N	I	1	EA
000	SEM-1017-002	75176, RS-485 DIFF BUS XC U22	B	N	I	1	EA
000	SEM-1020-002	MC145156, SERIAL PLL SYNT U2	B	N	I	1	EA
000	SEM-1020-003	MC145157, SERIAL PLL SYNT U10	B	N	I	1	EA
000	SEM-1020-004	MC145170D1 SERIAL PLL SYNTH U29	B	N	I	1	EA
000	SEM-1022-004	LM358, DUAL OPAMP, SO-8 U18	B	N	I	1	EA
000	SEM-1022-007	VAM-3, MMIC RF AMP, A03 SOT-143 U13	B	N	I	1	EA
000	SEM-1022-009	MC34074, QUAD OPAMP, SO-1	B	N	I	1	EA

SEQN	COMPONENT	DESCRIPTION	M B	C T	Q T	QUANTITY	UM
		U23					
000	SEM-1022-011	TL072, DUAL LOW NOISE OP A U6	B	N	I	1	EA
000	SEM-1023-001	MC1350, IF AMP WITH AGC, U3	B	N	I	1	EA
000	SEM-1024-020	MC34064 5V UNDERVOLTAGE S U19	B	N	I	1	EA
000	SEM-1027-001	NE602, BALANCED ACTIVE MIXER U5,U30,U31	B	N	I	3	EA
000	SEM-1027-005	XR2211 FSK DEMOD/TONE DEC U14	B	N	I	1	EA
000	SEM-1030-001	LM555CM,TIMER SO-8 U26	B	N	I	1	EA
000	SEM-1031-001	LM386M-1,AUDIO PWR AMP SO U28	B	N	I	1	EA
000	SEM-1041-001	2222, NPN GP TRANS, 1B/1 SOT-23	B	N	I	2	EA
000	SEM-1042-001	2907, PNP GP TRANS, 2B/2 SOT-23 Q1,Q16	B	N	I	2	EA
000	SEM-1045-001	5179, NPN RF TRANS, 7H SOT-23 Q2,Q3,Q5,Q17,Q18	B	N	I	5	EA
000	SEM-1047-001	2214T1,NPN BRT 10K/47K 8 SC-59 Q7	B	N	I	1	EA
000	SEM-1051-001	2N7002, N-CH MOSFET, 702 SOT-23 Q10,Q11,Q12,Q13,Q15	B	N	I	5	EA
000	SEM-7001-001	MB504PK PRESCALER 32/33 OR 64/65 U1	B	N	I	1	EA

Figure 5.5.1 PC Assembly, R-2701 Main Board, page 2 of 6.

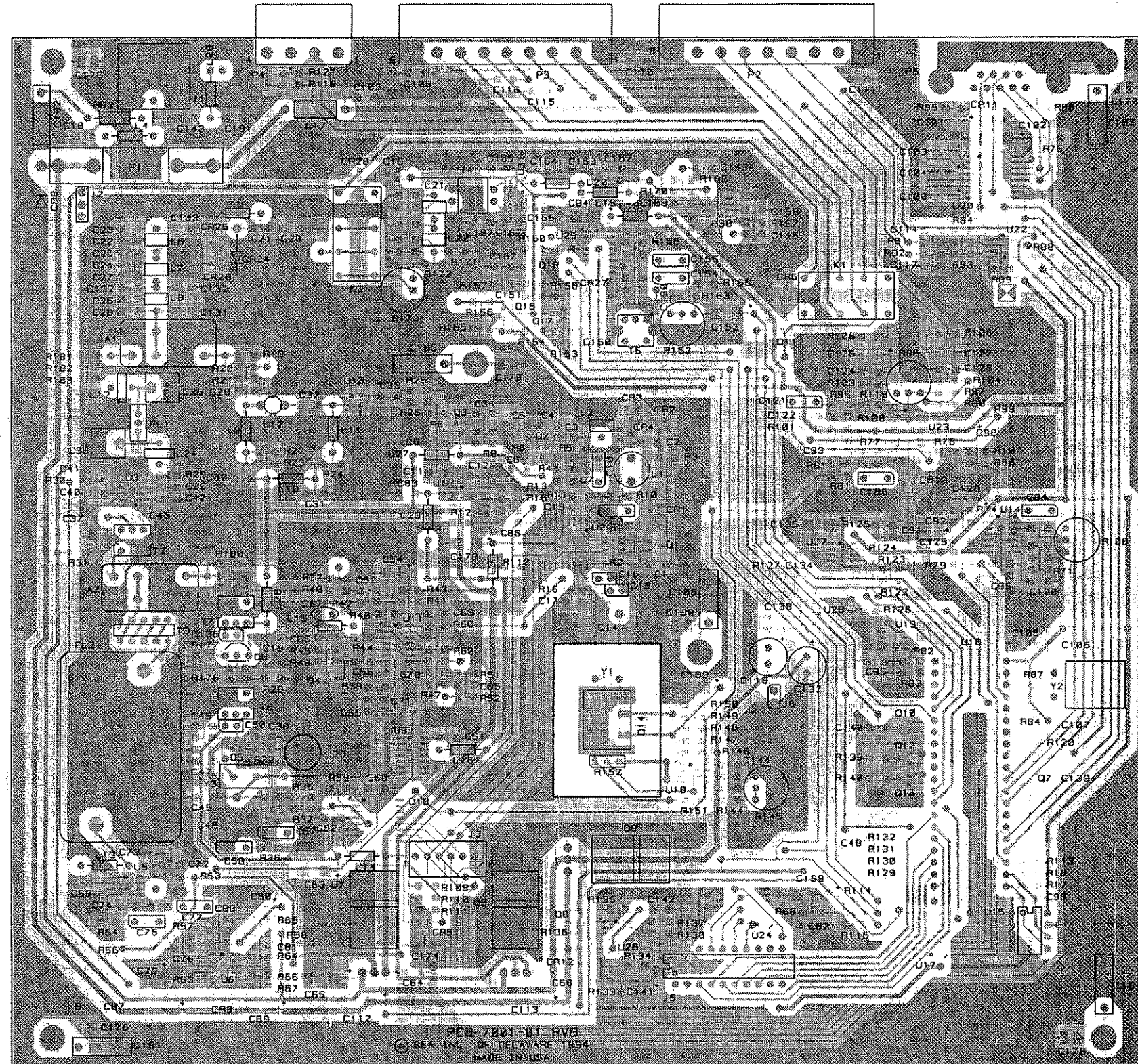


Figure 5.5.1 PC Assembly, R-2701 Main Board, page 3 of 6.

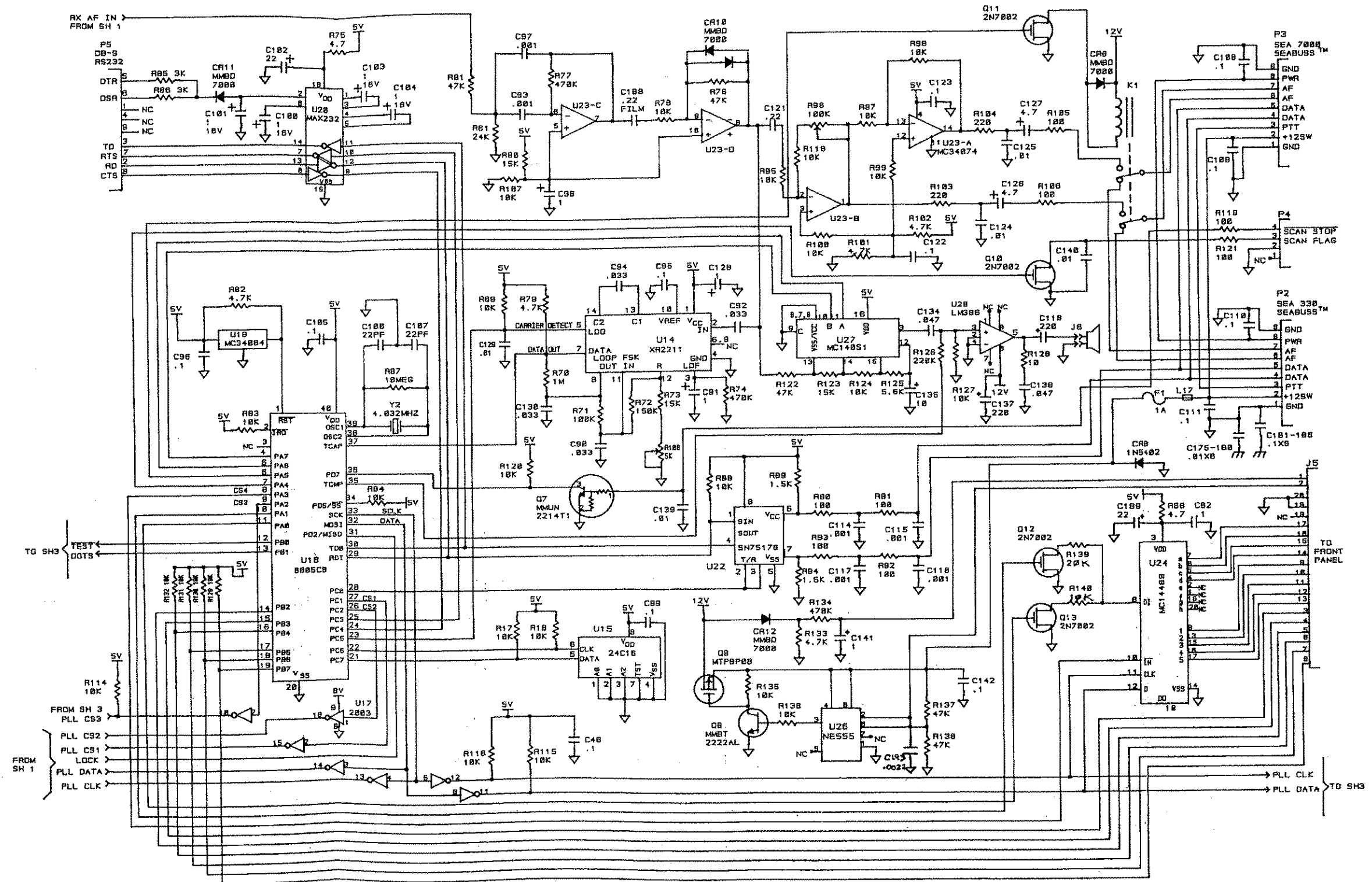


NOTES: UNLESS OTHERWISE SPECIFIED
1. RESISTORS ARE IN OHMS, 1/4 W, 5%.
2. CAPACITORS ARE IN MICROFARADS.
3. DIODES ARE 1N4148.

<u>LAST DESIGNATOR USED:</u> A2. C195 CR28, FL2, J6, K2, L28, P5, Q18, R183, T7, U81, Y3
<u>DESIGNATORS NOT USED:</u> CR13-23, J4, P1, R174, T1, T4, U4, U21, U26

700101-1.CSD REV A 1/31/85 PH/1p
5700101.SHI REV B ECN 5955 3/28/95
5700101.SHI ECN 8808 10/18/95
5700101.SHI ECN 8111 1/18/96
5700101.SHI ECN 8291 6/24/96 Imp
ECN 6856 7-18-97

Figure 5.5.1 PC Assembly, R-2701 Main Board, page 4 of 6.



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\\CADSTAR\MARINE\GND055-2.CSD 5/2/94 JCN
 \\CADSTAR\MARINE\700101-2.CSD 1/11/95 Imp
 700101-2.CSD REV A 1/30/96 PH/imp
 3700101.S1H2 ECH 5005 REV B 3/20/96
 ECN 6082 11/22/95
 ECN 6672 6/20/97

Figure 5.5.1 PC Assembly, R-2701 Main Board, page 5 of 6.

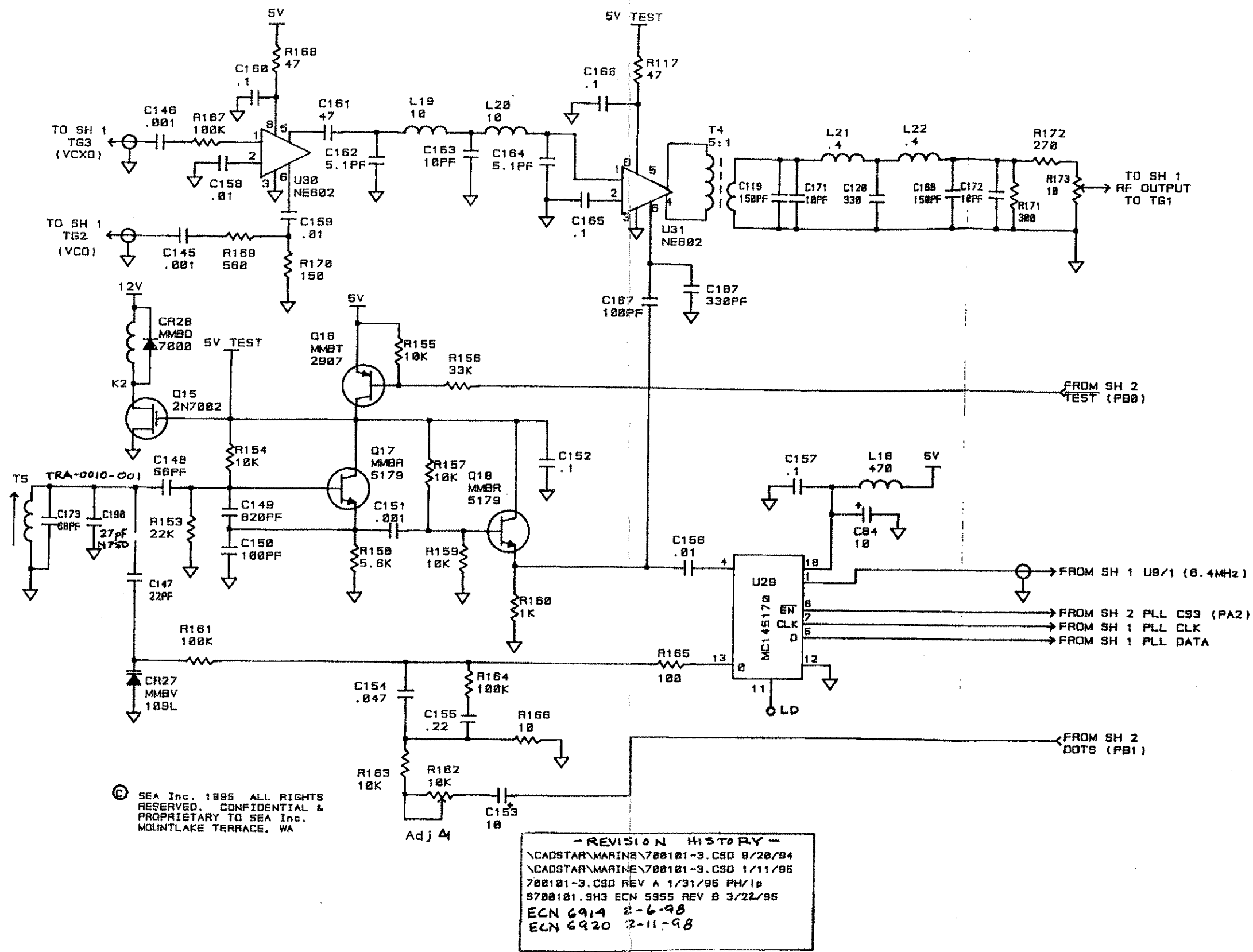


Figure 5.5.1 PC Assembly, R-2701 Main Board, page 6 of 6.

COMPONENT SIDE SILK SCREEN (sheet 5 of 6)

PC Assy, Rear Interface, R-2701, 1A3

	PCB, REAR INT. W/NDWE R-2701	8108720290
C1	CAP. 0.1μF, 50V, X7R	1011180014
C2	CAP. 6.8μF, 20V	0296780006
C3	CAP. 0.1μF, 50V, X7R	1011180014
C4	CAP. 0.001, 100V, X7R, 20%	0281630003
J1	CONNECTOR, POWER, 19 PIN FEM	1012800032
LI	INDUCTOR, MOLDED, 0.47μH, 5%	0648500004

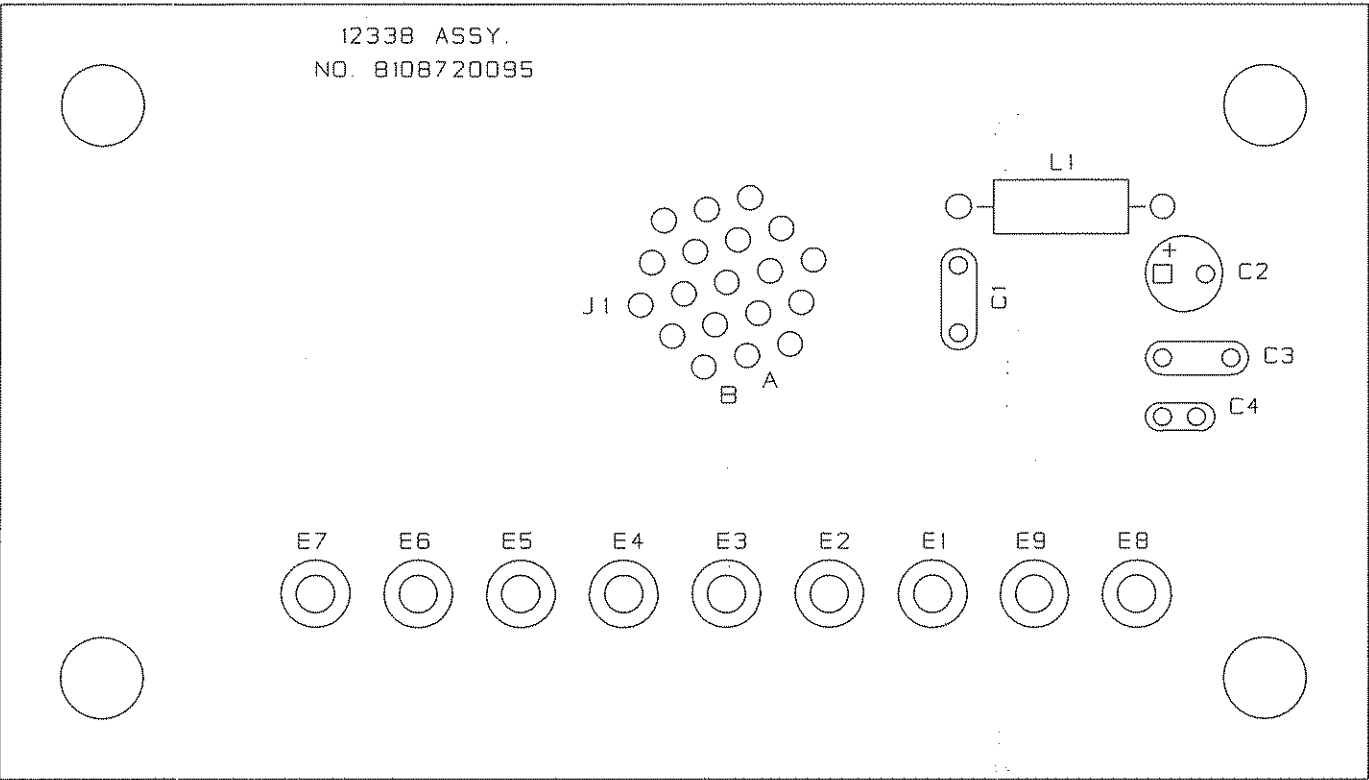


Figure 5.5.2 PC Assembly, Rear Interface, R-2701, page 1 of 2.

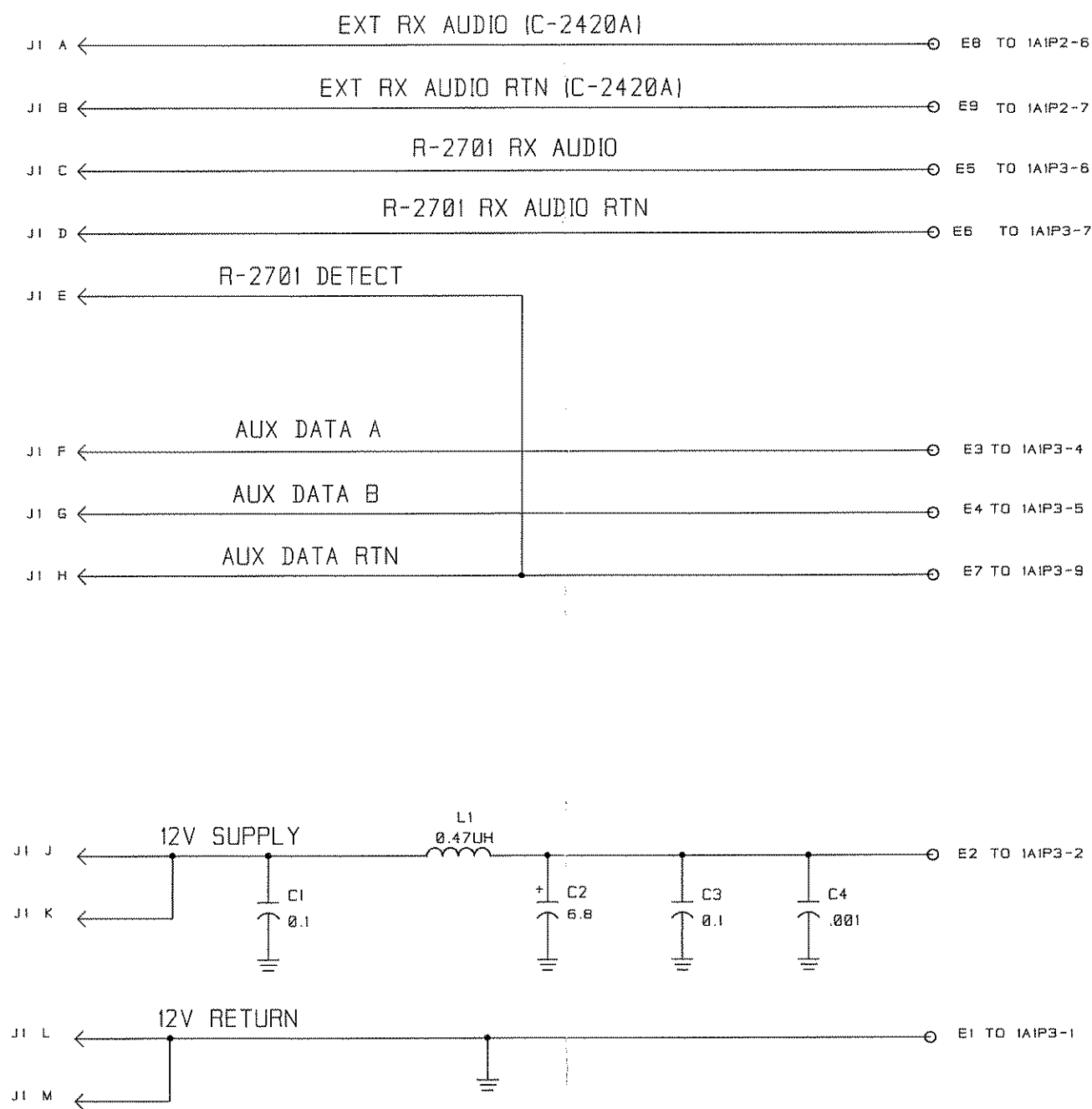


Figure 5.5.2 PC Assembly, Rear Interface, R-2701, page 1 of 2.

ENGINEERING CHANGE NOTICE

Title R-2701 ASSEMBLY Model R-2701	Drawing	Old Rev	New Rev	Number	8108-0094
	SEE BELOW			Date	2/21/01
	Assemblies Affected	Old Rev	New Rev	Revision	
	8108720095	01	A	Revision Date	
	8108711304	01	A	Originator	SHARON
				Sheet	1 of 2

PURPOSE OF ECN:

THE FOLLOWING DRAWINGS HAVE BEEN RELEASE FOR PRODUCTION:

P/N 8108700507 - MANUAL, MAINTENANCE
 P/N 8108701091 - BUTTON UP
 P/N 8108701295 - FINAL ASSY. TESTED
 P/N 8108701392 - FINAL ASSEMBLY
 P/N 8108701694 - CABLE ASSY, R2701
 P/N 8108702097 - CONNECTOR KIT
 P/N 8108711002 - CHASSIS
 P/N 8108711193 - CABLE ASSY. BNC BULKHEAD
 P/N 8108711207 - WATCH RECEIVER
 P/N 8108712009 - MAIN BOARD
 P/N 8108711304 - WIRE KIT R-2701
 P/N 8108712106 - FRONT PANEL
 P/N 8108720079 - SCHEMATIC
 P/N 8108720095 - PC ASSEMBLY INTERFACE

RELEASED
MAR 05 2001

PARTS DISPOSITION		DOCUMENTATION AFFECTED BY THIS CHANGE ACTION		APPROVALS	Date
		Status	Responsibility		
Parts - On Order	NOTED ABOVE	ENG. DWG/SPECS	FOLLOW UP REQUIRED	SB	PROJECT MGR.
Parts - In Stock	NOTED ABOVE	Bill Of Material	FOLLOW UP REQUIRED	SDB	ENG. MGR.
In Process Assy's	NOTED ABOVE	Technical Manuals	FOLLOW UP REQUIRED	SB	PROD. MGR.
Completed Assy's	N.A.	Service Bulletin			PRODUCT SERVICES
Completed Product	N.A.	Master Parts List			MGR.
Returned Equipment	N.A.	Production Drawing	FOLLOW UP REQUIRED	SDB	Q.A. MGR.
		Buy Card	FOLLOW UP REQUIRED	FR	CORPORATE OFFICER
		Production Control	FOLLOW UP REQUIRED	KK	
		Configuration Control			
		FAA Notification			

ENGINEERING CHANGE NOTICE

Title R-2701 ASSEMBLY Model R-2701	Drawing SEE BELOW Assemblies Affected 8108720095 8108711304	Old Rev 01 01	New Rev A A	Number 8108-0094 Date 2/21/01 Revision Revision Date Originator SHARON Sheet 2 of 2
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Drawings Affected	Old Rev	New Rev
8108701295	01	A
8108701392	01	A
8108711002	01	A
8108712106	01	A
8108720095	01	A

PARTS DISPOSITION		DOCUMENTATION AFFECTED BY THIS CHANGE ACTION			APPROVALS	Date
		Status		Responsibility		
Parts - On Order	NOTED ABOVE	ENG. DWG/SPECS	FOLLOW UP REQUIRED	SB	PROJECT MGR.	
Parts - In Stock	NOTED ABOVE	Bill Of Material	FOLLOW UP REQUIRED	SDB	ENG. MGR.	
In Process Assy's	NOTED ABOVE	Technical Manuals	FOLLOW UP REQUIRED	SB	PROD. MGR.	
Completed Assy's	N.A.	Service Bulletin			PRODUCT SERVICES MGR.	
Completed Product	N.A.	Master Parts List			Q.A. MGR.	
Returned Equipment	N.A.	Production Drawing	FOLLOW UP REQUIRED	SDB	CORPORATE OFFICER	
		Buy Card	FOLLOW UP REQUIRED	FR		
		Production Control	FOLLOW UP REQUIRED	KK		
		Configuration Control				
		FAA Notification				

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ENGINEERING CHANGE NOTICE

Title REAR INTERFACE PC ASSY.	Drawing 8108720095	Old Rev A	New Rev B	Number 8108-0096
	Assemblies Affected 8108720095	Old Rev A	New Rev B	Date 2/22/01
				Revision
				Revision Date
Model R- 2707 2701				Originator SHARON
				Sheet 1 of 1

PURPOSE OF ECN:

CHANGE BILL OF MATERIAL:

1. DELETE P/N 1012800032 - POWER CONNECTOR 19 PIN. QTY. 1
2. ADD P/N 0500020001 - WASHER, SPILT #4 - QTY. 12
3. ADD P/N 0500040001 - WASHER, SPLIT #6 - QTY. 10
4. ADD P/N 0500180008 - WASHER , FLAT #4 - QTY. 8
5. ADD P/N 0500850054 - SCREW,PH 4-40 X 5/16" - QTY. 8
6. ADD P/N 0500890064 - SCREW PH 6-32 X 3/8" - QTY. 10
7. CHANGE REVISION FROM A TO B

REASON FOR CHANGE:

CONNECTOR HAS TO PUT ON AT FINAL ASSEMBLY LEVEL.

RELEASED
MAR 05 2001

PARTS DISPOSITION		DOCUMENTATION AFFECTED BY THIS CHANGE ACTION		APPROVALS	Date
		Status	Responsibility		
Parts - On Order	NOTED ABOVE	ENG. DWG/SPECS	FOLLOW UP REQUIRED	SB	PROJECT MGR. <i>[Signature]</i> 5/31/01
Parts - In Stock	NOTED ABOVE	Bill Of Material	REVISION COMPLETED	SDB	ENG. MGR. <i>[Signature]</i> 13/1/01
In Process Assy's	NOTED ABOVE	Technical Manuals	FOLLOW UP REQUIRED	SB	PROD. MGR. <i>[Signature]</i> 3/1/01
Completed Assy's	N.A.	Service Bulletin			PROD. SERVICES MGR. <i>[Signature]</i> 5/3/01
Completed Product	N.A.	Master Parts List			Q.A. MGR. <i>[Signature]</i> 3/2/01
Returned Equipment	N.A.	Production Drawing	FOLLOW UP REQUIRED	SDB	CORPORATE OFFICER <i>[Signature]</i> 3/2/01
		Buy Card	FOLLOW UP REQUIRED	FR	
		Production Control	FOLLOW UP REQUIRED	KK	
		Configuration Control			
		FAA Notification			

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ENGINEERING CHANGE NOTICE

Title FINAL ASSEMBLY Model R-2701	Drawing	Old Rev	New Rev	Number	8108-0098
				Date	2/28/01
	8108701392	B	C	Revision	
	Assemblies Affected	Old Rev	New Rev	Revision Date	
	8108701392	B	C	Originator	SHARON
				Sheet	1 of 1

PURPOSE OF ECN:

1. ADD P/N 0522350054 - SCREW FT. 6X32 X 5/16" - QTY. 2
2. CHANGE BILL OF MATERIAL REVISION FROM B TO C

REASON FOR CHANGE:

PART LEFT OFF B.O.M

MAR 05 2001

RELEASED

PARTS DISPOSITION		DOCUMENTATION AFFECTED BY THIS CHANGE ACTION			APPROVALS	Date
			Status	Responsibility		
Parts - On Order	NOTED ABOVE	ENG. DWG/SPECS	FOLLOW UP REQUIRED	SB	PROJECT MGR.	3/3/01
Parts - In Stock	NOTED ABOVE	Bill Of Material	REVISION COMPLETED	SDB	ENG. MGR.	3/3/01
In Process Assy's	NOTED ABOVE	Technical Manuals	FOLLOW UP REQUIRED	SB	PROD. MGR.	3/1/01
Completed Assy's	N.A.	Service Bulletin			PRODUCT SERVICES MGR.	3/2/01
Completed Product	N.A.	Master Parts List			Q.A. MGR.	3/2/01
Returned Equipment	N.A.	Production Drawing	REVISION COMPLETED	SDB	CORPORATE OFFICER	3/2/01
		Buy Card	FOLLOW UP REQUIRED	FR		
		Production Control	FOLLOW UP REQUIRED	KK		
		Configuration Control				
		FAA Notification				

ENGINEERING CHANGE NOTICE

Title FINAL ASSY. & FINAL TESTED ASSY. Model R-2701	Drawing SEE BELOW Assemblies Affected 8108701295 8108701392	Old Rev A C	New Rev B D	Number 8108-0099 Date 3/2/01 Revision Revision Date Originator SHARON Sheet 2 of 2
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Drawings Affected	Old Rev	New Rev
8108701295	A	B
8108701392	C	D

PARTS DISPOSITION		DOCUMENTATION AFFECTED BY THIS CHANGE ACTION			APPROVALS	Date
		Status		Responsibility		
Parts - On Order	N.A.	ENG. DWG/SPECS	FOLLOW UP REQUIRED	SB	PROJECT MGR.	
Parts - In Stock	NOTED ABOVE	Bill Of Material	REVISION COMPLETED	SDB	ENG. MGR.	
In Process Assy's	NOTED ABOVE	Technical Manuals	FOLLOW UP REQUIRED	SB	PROD. MGR.	
Completed Assy's	N.A.	Service Bulletin			PRODUCT SERVICES MGR.	
Completed Product	N.A.	Master Parts List			Q.A. MGR.	
Returned Equipment	N.A.	Production Drawing	REVISION COMPLETED	SDB	CORPORATE OFFICER	
		Buy Card				
		Production Control	FOLLOW UP REQUIRED	KK		
		Configuration Control				
		FAA Notification				

ENGINEERING CHANGE NOTICE

Title R-2701 OPERATION AND MAINTENANCE MANUAL Model R-2701	Drawing	Old Rev	New Rev	Number 8108-0100
				Date 3/20/01
	Assemblies Affected 8108700507	Old Rev A	New Rev B	Revision
				Revision Date
				Originator GB
				Sheet 1 of 1

ENGINEERING CHANGES:

ON FIGURES 2.2.3 AND 2.2.4, CHANGE THE MATING CONNECTOR FOR J4 ON THE RCU-9310 FROM 1011140004 TO 1010650025.

REASON FOR CHANGE:

ERROR IN ORIGINAL DRAWING

SEP 24 2001

PARTS DISPOSITION	DOCUMENTATION AFFECTED BY THIS CHANGE ACTION	APPROVALS	Date
	Status Responsibility		
Parts - On Order	ENG. DWG/SPECS	PROJECT MGR. <i>[Signature]</i>	3/21/01
Parts - In Stock	Bill Of Material	ENG. MGR. <i>[Signature]</i>	05/10/01
In Process Assy's REWORK	Technical Manuals REVISION COMPLETED GB	PROD. MGR. <i>[Signature]</i>	5/10/01
Completed Assy's REWORK	Service Bulletin	PRODUCT SERVICES MGR. <i>[Signature]</i>	05/10/01
Completed Product REWORK	Master Parts List	Q.A. MGR. <i>[Signature]</i>	5/10/01
Returned Equipment	Production Drawing	CORPORATE OFFICER <i>[Signature]</i>	6/14/01
	Buy Card		
	Production Control		
	Configuration Control		
	FAA Notification		

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