SECTION II
INSTALLATION

2.1   INTRODUCTION

This section provides installation information for the model R-1250 wide range receiver, and includes interconnection data for integrating the receiver with interface subsystems.

2.2   INSPECTION

The instrument is packaged within a specially constructed shipping container, as shown in figure 2-1, that protects the instrument during transit. Each instrument is carefully tested and inspected prior to shipment. When unpacking the unit, inspect the container and the instrument for evidence of shipping damage. If damage is indicated, notify the freight carrier immediately. Check each item, against the packing list or the purchase order, to ensure that all items have been received. Determine that all instrument serial numbers are identical to the numbers shown on the packing list. If portions of the shipment are missing, and are not listed as back ordered items, contact the freight carrier or Dynamic Sciences.

2.3   UNPACKING

Retain the shipping container and all packing material for subsequent shipments of the instrument, or when storage is required. When an instrument is returned to the factory, for repair or modification, attach a tag to the instrument indicating service required, serial number, model number, and the complete return address.

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*** CAUTION ***
Banding material used in packaging is under ten-
sion, and may cause injury when released. Use of
hand and eye protection devices is recommended.
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Unpacking Procedure:

1. Cut and remove banding material from the shipping container.
2. Remove fasteners from the container top cover.
3. Remove the top layer of shock absorbent material.
4. Remove the instrument from the shipping container by lifting straight up. Consult specifications for instrument weight.
5. Ensure that accessory packages have been removed.
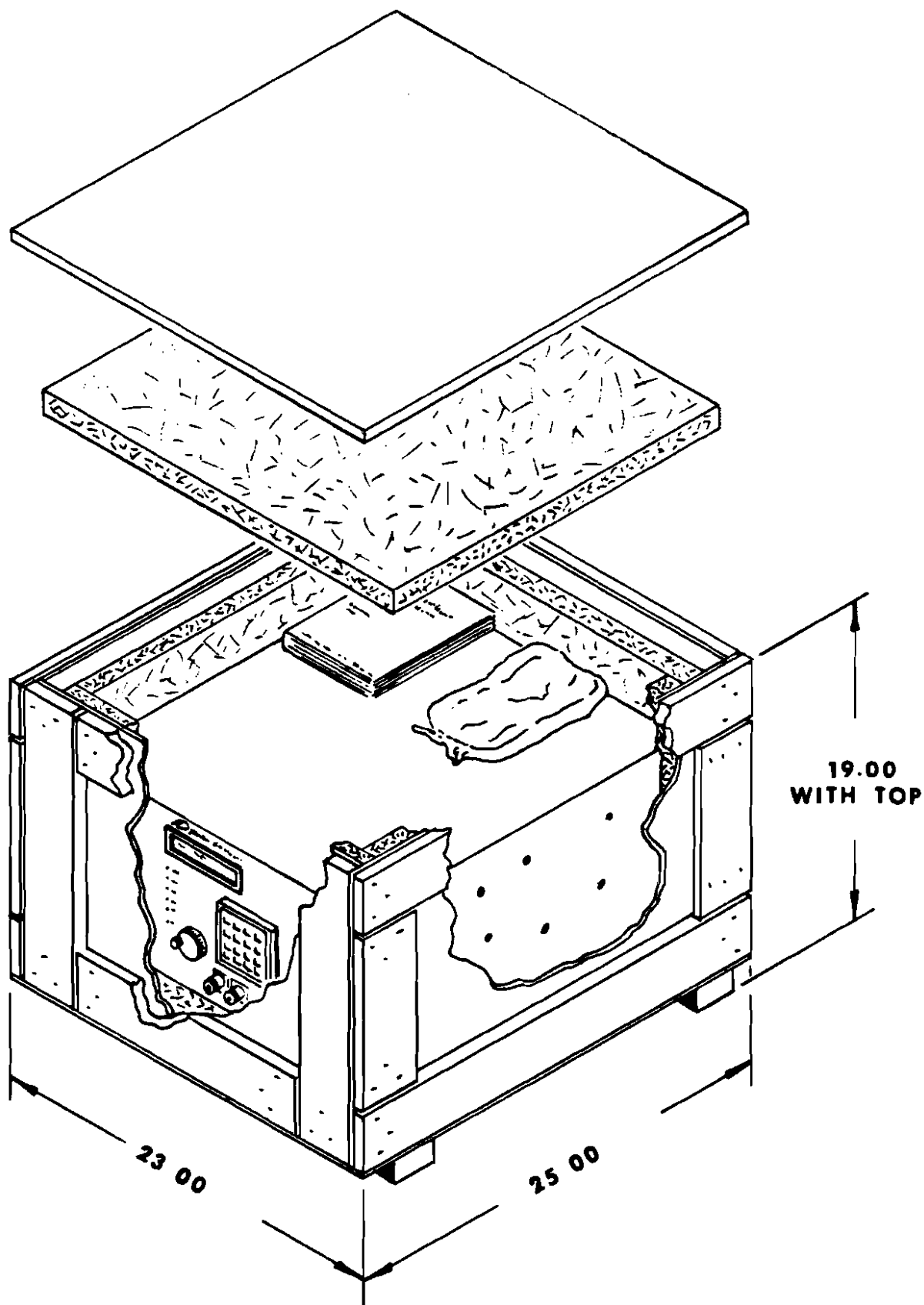
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FIGURE 2-1 EQUIPMENT PACKAGING

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2.4 MOUNTING

The unit is designed for either bench operation or rack mounting. When used for bench operation, the instrument has a folding tilt stand attached to the front set of chassis supports. The tilt stand raises the front of the instrument for easier viewing of the control panel. When the instrument is rack mounted, a minimum clearance of 1.5 inches above the and below the instrument is required to ensure adequate free air movement. When used in a system configuration, the location of the receiver and any associated subsystems are not specified, and should be determined by the user.

2.5 CONNECTION

All signals interface with the receiver through connectors that are located on the front and back panels of the instrument. Table 2-1 identifies the receiver connectors. The instrument is shipped from the factory preset to operate from a power source of 115 volts 50 or 60 hertz, single phase. For operation from other voltage ranges, select the proper fuse rating from table 2-2, and proceed as follows:

a. Move the voltage slide select switch located on the rear panel of the instrument to the proper position.

b. Select and install the proper line fuses for the input voltage to be used.

c. Set the line voltage range switch to the required position.

Select Switch	Range Switch	Input Voltage Range
115 V	Low	95-105 VAC
115 V	Norm	105-115 VAC
115 V	High	115-126 VAC
230 V	Low	190-210 VAC
230 V	Norm	210-231 VAC
230 V	High	231-253 VAC

TABLE 2-1

CONNECTOR IDENTIFICATION

IDENTIFIER	NOMENCLATURE
<u>Front Panel</u>	
Signal In	Type N, female conn.
Calibrate In	Type N, female conn.
Signal In (Low Freq)	Type N, female conn.
Calibrate In (Low Freq)	Type N, female conn.
AM Video	BNC, female conn.
FM Video	BNC, female conn.
IF Out	BNC, female conn.
Audio	BNC, female conn.
Audio	Phone plug, female 2 conn.
<u>Rear Panel</u>	
IF Out	SMA, female conn.
Audio	SMA, female conn.
1470MHz	Type N, female conn.
J121	Female conn. 24 contact, 2rows, IEEE STD 488
J122	Female conn. 36 contact, 2rows, Amphenol 57-20360-2

TABLE 2-2

FUSE SELECTION

VOLTAGE	FUSE RATING
AC Input	
115 V Range	4 AMP, 3AG slo-blo,Little-Fuse 311004
230 V Range	1.5 AMP, 3AG slo-blo, Little-Fuse 31301.5
DC Output	
+20vdc	3 AMP, 3AG Little-Fuse 312003
−20vdc	3 AMP, 3AG Little-Fuse 312003
+10vdc	10 AMP, 3AG Little-Fuse 311010
+50vdc	1/8 AMP, 3AG slo-blo, Little-Fuse 313.125

2.5   CONNECTION (cont.)

For operation from an AC Source, the instrument has a 3 conductor power cable which, when connected to an appropriate receptacle, grounds the instrument chassis for safety.

*** WARNING ***

The AC power cable should only be connected to receptacles that have active protected earth ground contacts. Bypassing or defeating the earth ground protection can result in injury to operating personnel.

2.6   DATA INTERFACE

Pin numbers and signal identification for the IEEE-488 bus interface connector, J121, are listed in Table 2-3. The status and control signal identification, used to interface optional equipment, is listed in Table 2-4.

The following paragraphs identify the addresses which control the programmable functions of the R-1250 receiver. A summary of the function codes is shown in table 2-5 that lists the individual driver codes and the associated control function.

2.6.1   PREDETECTION GAIN

INPUT	RESPONSE
P0	0dB
P1	10dB
P2	20dB
P3	30dB
P4 through ?	Not Used

2.6.2   ATTENUATION

INPUT	RESPONSE
A0	0dB
A1	10dB
A2	20dB
A3	30dB
A4	40dB
A5	50dB
A6	60dB
A7	70dB
A8	80dB
A9	90dB
A:	100dB
A; through A?	Not Used

2.6.3   BANDWIDTH CONTROL

Bandwidth control is accomplished by a 5 bit control word consisting of four characters. The "C" driver code followed by a single character controls the most significant bit and the "B" driver code followed by a single character controls the four least significant bits.

INPUT	RESPONSE
C1B1	20 MHz
C1B0	10 MHz
C0B?	5 MHz
C0B>	2 MHz
C0B=	1 MHz
C0B<	500 KHz
C0B;	200 KHz
C0B:	100 KHz
C0B9	50 KHz
C0B8	20 KHz
C0B7	10 KHz
C0B6	5 Khz
C0B5	2 KHz
C0B4	1 KHz
C0B3	500 Hz
C0B2	200 Hz
C0B1	100 Hz
C0B0	50 Hz

2.6.4   FREQUENCY CONTROL

Frequency selection is controlled by a variable length character string with a maximum of 11 characters, eight numeric digits and a decimal point preceded by the driver code "F" and terminated by the character "/". The following are examples of frequency control inputs.

INPUT	RCVR DISPLAY (MHz)	FREQUENCY
F.000100/	00.0001000	100 Hz
F.0001001/	00.0001001	100.1 Hz
F.2499999/	00.2499999	249.9999 KHz
F.250000/	00.2500000	250.000 KHz
F.10.01/	10.0100000	10.01 MHz
F.20.0001/	20.0001000	20.0001 MHz

2.6.5   RF GAIN

Gain is controlled by a four character word that is converted to an analog voltage by a D-to-A converter. The driver code "H" followed by a single character controls the 4 most significant bits to the D/A and the driver code "G" followed by a single character controls the 4 least significant bits.

INPUT	RESPONSE
H0G0	MAXIMUM RF GAIN (50dB)
H0G1	50dB- (50/256) ~49.8 dB
H0G?	50dB- (128/256) ~25.0 dB
H?G›	0dB- (50/256)C ~0.2 dB
H?G?	MINIMUM RF GAIN (0dB)

2.6.6   AGC/LOG/LIN

The AGC modes (FAST,SLOW,OFF) and the selection of either logarithmic or linear response are controlled by variations of the driver code "M" followed by a single character. Specific input codes are shown as not used, and are reserved to control functions related to microwave downconversion when the receiver is used in a system configuration.

INPUT	LOG/LIN RESPONSE	AGC MODE
M7	LINEAR	OFF
M6	LOG	OFF
M5	LINEAR	SLOW
M4	LOG	SLOW
M3	LINEAR	FAST
M2	LOG	FAST
M1	NOT USED	
M0	NOT USED	

TABLE 2-3
IEEE-488 INTERFACE BUS

Pin No.	Signal	Pin No.	Signal
1	DIO1	13	DIO5
2	DIO2	14	DIO6
3	DIO3	15	DIO7
4	DIO4	16	DIO8
5	EOI	17	REN
6	DAV	18	GND (6)
7	NRFP	19	GND (7)
8	NDAC	20	GND (8)
9	IFC	21	GND (9)
10	SRQ	22	GND (10)
11	ATN	23	GND (11)
12	SHIELD	24	GND (LOGIC)

NOTE: Numbers in parenthesis identify the signal line associated
with the indicated ground.

TABLE 2-4

STATUS/CONTROL SIGNALS

J122 Pin No.	Signal Name	Signal Identification
1	DETOL	Detector overload
2	RFOL	RF Overload
3	LSTAT	Phase Lock Status
4	PRE 01	PRESELECTOR BIT 1
5	PRE 02	PRESELECTOR BIT 2
6	PRE 03	PRESELECTOR BIT 3
7	PRE 04	PRESELECTOR BIT 4
17	WBACL	Wide BW IF Transfer Control
18	CSA	Audio Select
19	GND	Signal Ground

TABLE 2-5

IEEE FUNCTION CODES

HEX	ASCII*	ASCII FUNCTION CODE*	FUNCTION
0	0	P	PREDETECTION GAIN
1	1	A	ATTENUATION
2	2	B	BANDWIDTH LSB
3	3	C	BANDWIDTH MSB
4	4	-	(SPARE)
5	5	-	(SPARE)
6	6	F	FREQUENCY
7	7	G	RF GAIN LSB
8	8	H	RF GAIN MSB
9	9	-	(SPARE)
A	:	-	(SPARE)
B	;	-	(SPARE)
C	<	-	(SPARE)
D	=	M	AGC/LOG/LIN
E	>	-	(SPARE)
F	?	-	(SPARE)

* Hex equivalent is the lower 4 bits of the ASCII character