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HF Communications Receiver System

RA1792/MA1075

Operators Manual

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RA 1792/MA 1075 OPERATORS MANUAL

CONTENTS

A detailed contents list is given at the front of each Chapter.

TECHNICAL SPECIFICATION

RA 1792 RECEIVER

Frequency Range	150 kHz to 30 MHz
Modes of Reception	USB/LSB (A3A, A3H, A3J, A2A, A2H, A2J) AM (A3) MCW (A2) CW (A1) ISB (A3B) optional FM (F3) Auxiliary - provides demodulated signal centred on option fixed BFO offset frequency.
Tuning	Continuously tunable synthesizer in 10 Hz steps over the entire frequency range. Frequency setting either by numerical keypad or by single tuning knob with continuously variable tuning rate from 1 kHz per turn to approximately 20 kHz per turn, depending on the speed of rotation.
Pre-programmed Channels	EAROM memory unit may be programmed with up to 100 channel frequencies and mode which may be recalled by keypad or tuning control.
Channel Scanning	Automatic scanning of up to ten channels in any decade of the 100 stored channels. Dwell time on each channel variable in ten steps from 0.1 to 10 seconds; pre-selected by numeric keypad.
Frequency Stability	Dependent upon frequency standard used: 1. The following optional internal standard may be supplied: (a) Temperature Compensated Crystal Oscillator (TCXO): $\pm$ 2 in 10^6 from $-10^{\circ}C$ to $+55^{\circ}C$. (b) Type 9442: (i) Temperature: $\pm$ 3 in $10^9/^{\circ}C$ (ii) Long term: $\pm$ 3 in 10^9 per day after 3 months continuous operation. 2. External standard input: 1 MHz, 5 MHz, or 10 MHz level 0 dBm into 50 ohms.
Antenna Input	(a) Wideband, 50 ohms to 75 ohms nominal. (b) The receiver will withstand without damage input signals of 50 V EMF continuously. (c) Re-radiation: (i) 0 to 30 MHz; not greater than 10 µV PD (ii) 30 to 100 MHz: not greater than

	(b) Out of band: With two 30 mV EMF signals, separated and removed from the wanted signal by not less than 25 kHz, the third order intermodulation products are not less than 90 dB below either of the interfering signals.
Spurious Responses	(a) External (including image and IF rejection): External signals, removed more than 20 kHz from the wanted frequency, must be greater than +80 dB relative to 1 μV EMF to produce an output equal to that produced by a 1 μV EMF signal at the wanted frequency. (b) Internal: The presence of an internally generated spurious response generally will not degrade the specified receiver sensitivity by more than 3 dB.
AGC	(a) Range: An increase in input of 110 dB above 2 μV EMF will produce an output change of less than 2 dB. (b) Time constants: Short, medium and long - preset to be automatically selected by mode switching, but can be set independently by push-buttons. AGC lines are available at rear of receiver to permit remote control.
IF Gain Control	Control range 110 dB: Gain control may be switched either to manually set receiver gain or AGC threshold.
BFO	(a) Variable by main tuning control, ±8 kHz, synthesized in 10 Hz steps. (b) Pre-selected fixed offsets may be selected for use with external demodulator.
Pre-set Operating Conditions	Bandwidth, AGC time constant, and BFO offset may be pre-set for each mode so that they are automatically recalled when the mode is selected. 'Auxiliary' mode may be set up for any mode, bandwidth, AGC time constant and BFO offset. In the ISB mode, different AGC time constants may be stored for the two sidebands.

Sensitivity

(a) CW and SSB (A1, A2H, A3A, A3H, A3J): In a 3 kHz bandwidth, signal-plus-noise ratio is better than: 150 kHz to 1 MHz: 10 dB with 3 μV (EMF) input, 1 MHz to 30 MHz: 10 dB with 1 μV (EMF) input.

(b) AM (A3): in a 6 kHz bandwidth, signal plus noise to noise ratio is better than: 150 kHz to 1 MHz: 10 dB with 10 μV (EMF) input, 70% modulated at 1 kHz, 1 MHz to 30 MHz: 10 dB with 3 μV (EMF) input, 70% modulated at 1 kHz.

IF Selectivity

USB:	+250 Hz to +3.2 kHz at	-6 dB
	-400 Hz to +4.3 kHz at	-60 dB
LSB:	-250 Hz to -3.2 kHz at	-6 dB
	+400 Hz to -4.3 kHz at	-60 dB
CW1:	300 Hz at	-6 dB
	3 kHz at	-60 dB
CW2:	1 kHz at	-6 dB
	6 kHz at	-60 dB
AM1:	3.2 kHz at	-6 dB
	12 kHz at	-60 dB
AM2:	6.0 kHz at	-6 dB
	20 kHz at	-60 dB
AM3:	16 kHz at	-6 dB
	50 kHz at	-60 dB

Note: A maximum of six filters may be fitted, in addition to a 16 kHz bypass.

Cross Modulation

With a wanted signal of 1 mV EMF in a 3 kHz bandwidth, an unwanted signal 30% modulated removed not less than 20 kHz, must be greater than 500 mV EMF to produce an output 20 dB below the output produced by the wanted signal.

Reciprocal Mixing

With a wanted signal of less than 10 μV EMF in a 3 kHz bandwidth, and unwanted signal more than 20 kHz removed is generally greater than 70 dB above the wanted signal level to give a noise level 20 dB below the output produced by the wanted signal.

Blocking:

With a wanted signal of 1 mV EMF, an unwanted signal more than 20 kHz removed must be greater than 1 V EMF to reduce the output by 3 dB.

Intermodulation Products

(a) In band:
Two 100 mV EMF signals within the IF passband will produce third order intermodulation products not greater than -50 dB at the IF output.

IF Output	455 kHz, nominal 100 mV into 50 ohms.
Muting	60 dB minimum by grounding rear panel connection.
AF Output	(a) Line output, 10 mW maximum into 600 ohms balanced, adjustable by internal preset level control. (b) Phone output, 1 mW maximum into 600 ohms unbalanced. (c) 200 mW maximum to internal loudspeaker which may be switched in or out of operation. (d) Connection for external loudspeaker, 200 mW into 16 ohms; 400 mW into 8 ohms.
Metering	Front panel display switched to indicate RF level or AF level output to line.
Power Supply	AC: Selections for 110, 120, 220 or 240 V operation, +10% -15%, 45 to 65 Hz. DC: Receiver may also be operated from an 18 to 32 V dc source when receiver is equipped with optional dc power supply.
Power Consumption	Approximately 60 VA for ac operation; approximately 40 Watts for dc operation.
Environmental Conditions	(a) The equipment is designed to operate under the following climatic conditions: Operating temperature -10°C to +55°C Storage temperature -40°C to +70°C Relative humidity 95% at +40°C (b) The equipment is suitable for mobile operation. (c) The equipment is suitable for air transportation in unpressurized conditions and for operation up to altitudes of 3500 meters above sea level.
Dimensions	Height - 133 mm (5.25 in.) Width - 483 mm (19 in.) Depth - 458 mm (18 in.)
Weight	14 kg (31 lbs.)

MA 1075 RECEIVER CONTROL UNIT

The front panel controls and indicators on the MA 1075 are the same as those fitted to the RA 1792. Apart from the action of the REMOTE pushbutton, the operating procedures are generally the same for both units (see Chapter 3).

SCORE Data Format	The standard SCORE format is employed, using the following SCORE words Word 0: Monitor (contains revertive data only) Word 1: Frequency Word 2: Analogue Word 5: HF Mode When REMOTE is selected, the front panel displays are illuminated according to the parameters received via the revertive SCORE data.
Serial Data	Complies with CCITT V11 and EIA RS-422/423.
AF Input	600 ohm balanced audio input, level -30 dBm to 0 dBm. Suitable for connection of British Post Office Lines.
AF Output	(a) Internal Loudspeaker: 200 mW max. (b) External Loudspeaker: 200 mW into 16 ohms. (c) PHONES: 1 mW max. into 600 ohms unbalanced. (d) Line output: adjustable in the range -20 dBm to +10 dBm, 600 ohms, balanced.
Power Supply	Selections for 110 V, 120 V, 220 V or 240 V operation, +10%-15%, 45 to 65 Hz.
Power Consumption	Approximately 20 VA.
Dimensions	Height : 133 mm (5.25 in.) Width : 483 mm (19 in.) Depth : 250 mm (9.8 in.)
Weight	Approximately 6 kg (13 lb).

CHAPTER 1

GENERAL DESCRIPTION

CONTENTS

CHAPTER 1

GENERAL DESCRIPTION

INTRODUCTION

1. This chapter briefly describes the RA1792 receiver and the MA1075 receiver control unit. For detailed information, reference should be made to the separate technical manuals available for each unit.

RA1792 RECEIVER

2. The RA1792 is a fully synthesized programmable communications receiver, covering the frequency range 150KHz to 30MHz in 10Hz steps. Frequency selection is achieved either through the use of a keypad or through the use of a single rotary tuning control. The receiver is also equipped with a 100 channel memory. Each channel may be preset to a particular operating frequency and mode using the front panel controls. When a particular channel is selected, the receiver will instantly tune to the preset frequency and mode parameters. The receiver may also be set to the SCAN mode; in this mode, the receiver will automatically scan ten (or less) selected channels, stopping for a preset dwell time (0.1 to 10 seconds) at each channel.

3. Reception of CW(A1), MCW(A2), AM(A3), USB/LSB (A3A, A3H, A3J, A2A, A2H, A2J) and FM(F3) modes is provided as standard, with ISB(A3B) available as an option. An explanation of the reception mode codes is given in table 1.

Table 1: Reception Mode Codes

Complete Designation Example:

2	A	2	H

Bandwidth in kHz

Type of Transmission
A = AM
F = FM
P = PCM

Purpose
0 = No modulation
1 = Telegraphy (on-off)
2 = Telegraphy (Modulation)
3 = Telephony
4 = Facsimile
5 = Television
6 = Duplex Telegraphy
7 = Multichannel Telegraphy
9 = None of the above

Supplementary Characteristics
A = Single Sideband reduced carrier
B = Two independent sidebands
C = Single Sideband vestigial
D = AM pulse
E = Pulse width modulation
H = Single Sideband, full carrier
J = Single Sideband, suppressed carrier
(None)=Double Sideband, full carrier

Abbreviations:

AM = Amplitude Modulation
CW = Continuous Wave
FM = Frequency Modulation (or Phase)
FSK= Frequency Shift Keying
ISB= Independent Sideband
LSB= Lower Sideband
MCW= Modulated Continous Wave
PCM= Pulse Coded Modulation
SSB= Single Sideband
USB= Upper Sideband
DSB= Double Sideband

4. The unit includes a battery-operated memory retention circuit to retain the frequency and all other receiver settings during a temporary supply failure.

Brief Technical Description

5. A block diagram of the RA1792 receiver is given in fig. 1.1. A received signal induced into the antenna is applied via a protection and muting circuit to a wide band RF amplifier stage, followed by a 30MHz low-pass filter. The protection circuit contains a relay which automatically open-circuits the RF path for signals at the antenna greater than approximately 5V e.m.f., or when a OV mute signal is applied to the receiver via a rear panel connection or via the SCORE data. The low-pass filter protects the receiver from image frequency signals and also attenuates first local oscillator re-radiation from the antenna connection. The wide-band RF amplifier stage may be bypassed if not required. The normal operating frequency range of the receiver is from 150KHz to 30MHz. The receiver may however, be tuned to any frequency between zero and 30MHz, although the receiver may not meet specification when tuned to frequencies below 150KHz.

First Mixer

6. In the first mixer the received signal is combined with the 40.455MHz to 70.455MHz output signal from the first local oscillator synthesizer, and the difference frequency signal, at 40.455MHz, is applied via a 16HKz roofing filter to the automatic gain controlled first IF amplifier. The first local oscillator synthesizer receives a 1MHz reference frequency input from the second local oscillator/BFO synthesizer, and is set to the required frequency, in 10Hz increments, by data from the control and display section. The first local oscillator output signal is also taken to a rear panel connector.

Second Mixer

7. The 40.455MHz first IF output signal from the first mixer is applied to the second mixer where it is amplified and then combined with a 40MHz signal from the second local oscillator/BFO synthesizer. The difference frequency output signal, at 455KHz, is filtered and amplified before application to the main IF/AF board.

Second local Oscillator/BFO Synthesizer

8. The second local oscillator/BFO synthesizer is phase-locked to a reference frequency input signal. This may be derived either from an optional 5MHz temperature compensated crystal oscillator (TCXO) located on the synthesizer board, an optional 5MHz frequency standard module (A11), or from an external unit connected to the REF IN/OUT socket on the receiver rear panal. Wire links fitted to the second local oscillator/BFO synthesizer board allow the use of a 1MHz, 5MHz or 10MHz external reference input signal. Note that when operation from an external reference signal is required, the INT/EXT slide switch on the receiver

rear panel must be set to the EXT position. When this switch is set to the INT position, a 5MHz reference signal derived from the internal reference source (TCXO or A11) is available at the rear panel REF IN/OUT socket.

Main IF/AF Board

9. The main IF/AF board accomodates up to six 455KHz filters which provide the main receiver selectivity. In standard production receivers, four of these filters are symmetrical, with nominal bandwidths of 6KHz, 3KHz 1KHz and 300Hz, whilst the remaining two are sideband filters (nominal 3KHz). When the receiver is fitted with the optional ISB IF/AF board (A5), the ISB/SSB link connected to the output of the LSB filter is set to the ISB position. Note that a link is fitted to the IF/AF board to allow the selection of a nominal 16KHz bandwidth, as determined by the characteristics of the roofing filter fitted to the first mixer board.

10. The output signal from the selected filter (main IF/AF board) is applied to an automatic gain controlled IF amplifier and is then routed to:

(a) The AGC detector, which produces the AGC voltage applied to the AGC amplifier on the second mixer board, and the AGC or manual gain control voltage applied to the 455KHz second IF amplifier. The local or remote manual IF gain control setting data and/or the SHORT, MED or LONG AGC selection data, is routed, in parallel form, to the AGC detector under software control. In ISB operation, the AGC voltage applied to the AGC amplifier on the second mixer board is proportional to the higher of the two sideband signals (hence the two-way interchange between the main and ISB AGC detectors). The diversity AGC output (together with the ISB diversity AGC output, where applicable) is applied to the metering circuit (para.12).

(b) An IF output drive amplifier which feeds the 455KHz main IF output socket on the rear panel.

(c) The ISB/SSB/CM/AM detector, and a switch which routes either the 455KHz $\pm$ 8KHz BFO signal (ISB, SSB or CW modes) or the 455KHz main IF signal (AM or FM modes) to the FM detector. Thus for ISB, SSB and CW modes, the IF signal is mixed with the BFO signal from the FM detector, for the FM mode, the IF signal is applied to a limiting amplifier and FM detector, and for the AM mode, a limited carrier, i.e. the IF signal with the modulation removed, is produced by the FM detector and is applied to the ISB/SSB/CW/AM detector in place of the BFO signal.

11. The detected audio signals are routed to the appropriate audio output amplifiers by the software-controlled audio switching circuitry and preset line level controls. For SSB receivers (ISB IF/AF board not fitted) the audio line output is taken from the audio monitor amplifier. For ISB versions of the receiver, when the ISB mode is selected, the USB audio line output is taken from the line 1 amplifier, the LSB audio line output is taken from the line 2 amplifier, and the monitor line amplifier together with the loudspeaker audio amplifier are fed from either the USB

or the LSB channel, as displayed on the front panel. When an ISB receiver is set for SSB operation, all four audio amplifiers are fed from the selected sideband.

12. The manual gain and metering circuits essentially consist of a digital to analogue converter to control the receiver IF gain (para 10 (a)), and an analogue to digital converter which is used to derive the front panel meter display. The RF level indication is derived from the diversity AGC and/or the ISB diversity AGC input signals, whilst the AF level indication is derived from the output of the audio monitor line amplifier.

MA1075 RECEIVER CONTROL UNIT

13. The MA1075 is designed to control HF receivers, such as the RA1792, on a one-for-one basis. It uses the SCORE (Serial Control of Racal Equipment) control system, where serial control data, in the form of a number of 48 - bit words, is sent to the receiver, and revertive SCORE data is returned to the control unit. This technique allows extended or full remote control using two cables, with revertive check data returned via a third cable. For extended control, the MA1075 is linked to the RA1792 by hard-wired cables (fig. 1(a)). For remote control, standard telephone circuits and data modems are used (fig. 1 (b)).

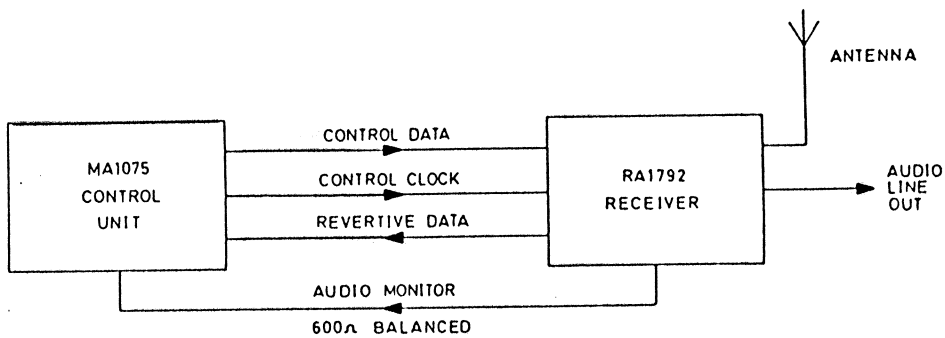


Fig. 1(a) Extended Control System

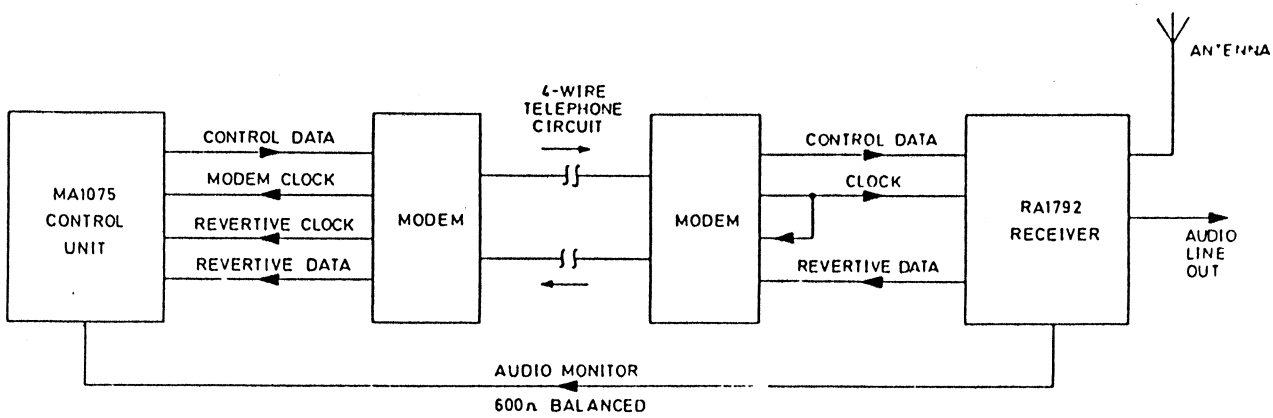


Fig. 1(b) Remote Control System

14. The front panel layout of the MA1075 is similar to that of the RA1792 receiver, and apart from the REMOTE pushbutton, the control functions are the same for both units (chap. 3).

15. Similar to the receiver, the MA1075 includes a battery-operated memory retention circuit to retain the frequency and all other control settings during a temporary supply failure.

Brief Technical Description (fig. 1.2)

16. The MA1075 is a microprocessor - based equipment and uses three devices of the F8 microprocessor system. These are the 3850 central processing unit (CPU) together with the 3853 static memory interface (SMI), which are both located on the microcomputer board, and the 3861 peripheral input/output (PIO) device, which is located on the SCORE interface board.

Microcomputer

17. The microcomputer board is similar to that fitted to the RA1792 receiver. The 3850 CPU has a bi-directional 8 bit data bus, a read/write output control line, two 8 bit input/output ports (designated 0 and 1), and a control bus consisting of five output control lines, a reset input line, an interrupt request input line, an interrupt control output line and a clock output line. The memory interface device generates the address and control signals for the read only memory (ROM) devices, which contain the operating program, and also for a static random access memory (RAM) which is used as a temporary storage area (an internal rechargeable battery retains the RAM content during supply interruptions).

18. The CPU control and data buses are also routed to an octal transceiver and to an octal latch. The octal transceiver is used for the two-way

interchange of data between the CPU and the front panel memory board, whilst the output from the octal latch is used for addressing purposes only.

Front Panel Memory Board

19. This board is similar (but not identical) to that fitted to the RA1792 receiver. It contains a number of latches and tri-state buffers which are controlled by the appropriate output from the address decoder. It also contains an electrically alterable read only memory (EAROM) which is used to store channel information and preset mode parameters. The EAROM devices are non-volatile and thus retain the stored information during supply interruptions.

Audio Board

20. The audio monitor signal from the associated receiver is applied via an isolation transformer to a crosstalk suppressor. This is designed to prevent crosstalk signals induced into the audio monitor lines from the receiver, at levels of -60dBm and below, from reaching the audio amplifier stages, an essential requirement when British Post Office lines are in use.

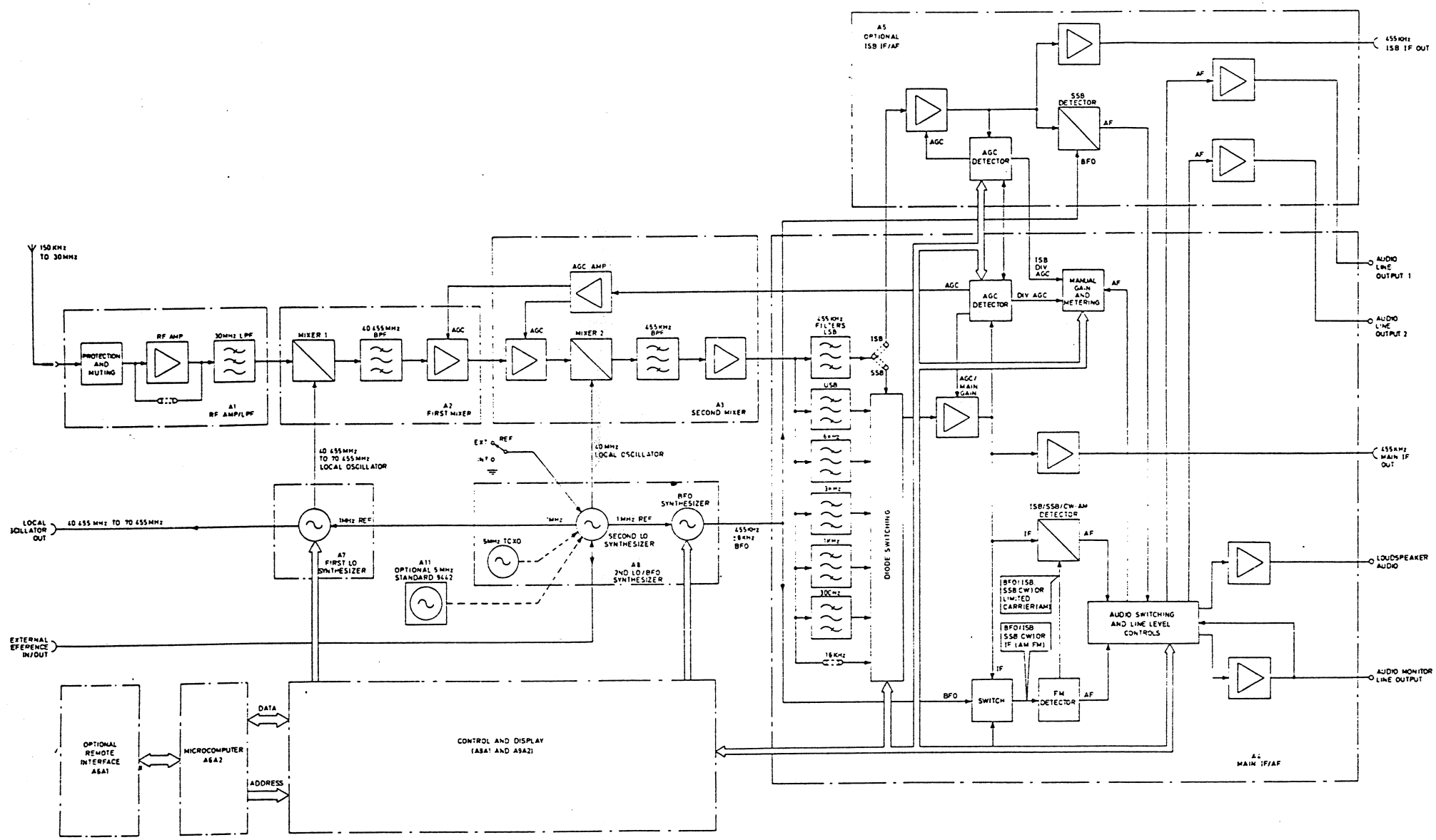
21. The audio output signal from the crosstalk suppressor is applied to two audio amplifier stages. One of these provides the audio line output signals (routed by a further isolation transformer), and the other feeds the internal loudspeaker, the PHONES socket on the front panel, and an external loudspeaker connected to a rear panel connector.

22. The digital to analogue converter and comparator stages on the audio board are used for manual IF gain control and audio level metering purposes. When MAN is selected at the front panel, the output voltage from the manual IF GAIN control is compared with the output from the digital to analogue converter. A successive approximation software routine then increments or decrements the binary input applied to the digital to analogue (D to A) converter until the two inputs applied to the comparator are equal i.e. until the comparator output signal changes state. The binary level at the D to A converter input is then routed via the microcomputer and SCORE interface to the receiver where it is used to set the receiver IF gain. The audio metering level is obtained in a similar fashion using the other comparator, which is fed from the audio line output; the binary level at the D to A converter input is then routed to the front panel audio metering circuit via the microcomputer. RF level metering data is conveyed from the receiver to the control unit via the revertive SCORE data.

SCORE Interface

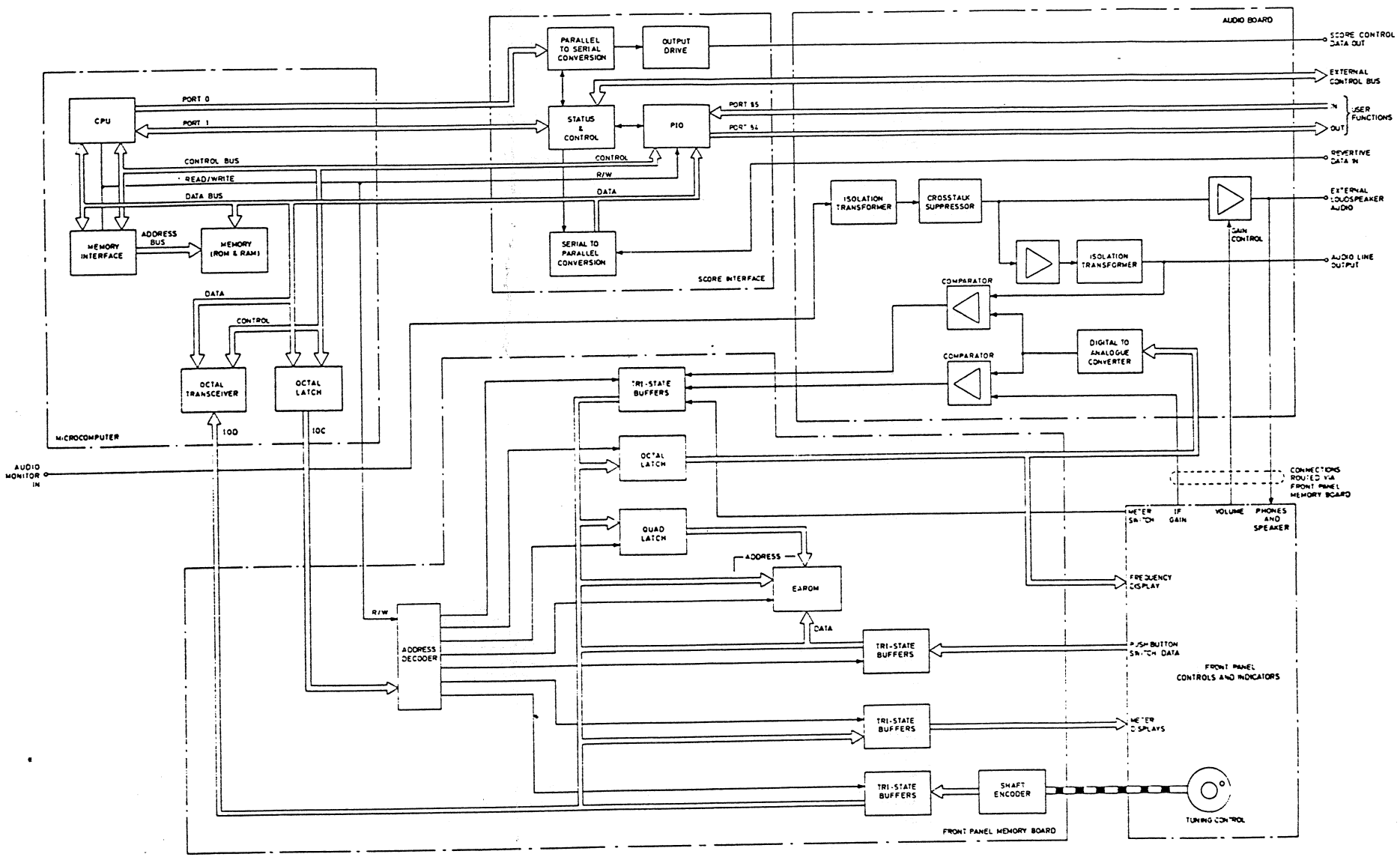
23. The SCORE interface converts parallel control data from the CPU (port 0) to serial SCORE - format control data (which is routed to the receiver) and converts serial SCORE revertive data (from the receiver) into parallel data for processing by the CPU (routed to the CPU via the processor data bus). The external SCORE data input and external revertive data output ports, together with the external control bus (not shown in fig. 1.2) are

provided for connection to an external SCORE - compatible unit where additional control functions are required. The peripheral input/output (PIO) device on the SCORE interface board provides for the user functions, where up to four switched earth connections at the receiver are reproduced at the control unit via the serial data (user functions IN), and similarly, up to four switched earth connections at the control unit are reproduced at the receiver (user functions OUT). The user function input and output connections are made via rear panel connectors on each unit and provide for user derived control functions, such as antenna switching, tape recorder control, etc. using external circuitry.



Block Diagram: RA1792 Receiver

Fig.1.1



Block Diagram:
MA1075 Receiver Control Unit

Fig.1.2

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CHAPTER 2

INSTALLATION

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CHAPTER 2

INSTALLATION

INTRODUCTION

1. This chapter provides general installation information for both the RA 1792 receiver and the MA 1075 receiver control unit. For detailed installation information, reference should be made to the appropriate system manuals. All external connections except head phones are made at the rear of each unit.

REAR PANEL CONNECTIONS

2. A brief description of each rear panel connection is given. Refer to fig. 2.1. for rear panel view of each unit.

RA 1792 Receiver

Power Input Socket

3. The power supply input connection mates with A10J1 using a 3-way socket. A 350 cm power lead complete with moulded 3-way socket (Racal Part Number 931957) is normally supplied with each receiver. The free end of the lead is for termination by the user; ensure that the earth wire is connected to a reliable earth point. The lead colour code is as follows:

BROWN	LIVE
BLUE	NEUTRAL
GREEN/YELLOW	EARTH (GROUND)

4. A rewireable 3-way socket (Racal Part Number 930766) is also normally supplied with each receiver for incorporating into a rack or cabinet cableform. The connections are as follows:

L	LIVE
N	NEUTRAL
⏚	EARTH

CAUTION Ensure that the voltage selector is correctly set before connecting the receiver to the source of supply (para. 7).

Power Fuse

5. The power fuse fitted to the receiver should be 0.5 A slow-blow (Racal Part Number 938494) for operating voltages in the range 220 V to 240 V, or 1 A slow-blow (Racal Part Number 938493) for operating voltages in the range 100 V to 120 V. The receiver is normally supplied set to the 240 V range and consequently a 0.5 A fuse is fitted. A 1 A fuse is however, also supplied, and is mounted in a spare fuse holder located inside the power supply module.

6. The power fuse is located in a compartment adjacent to the supply connector. To gain access, remove the mating power input socket and slide the transparent cover to the left to reveal the fuse. To remove the fuse, pull (to the left) the small lever marked FUSE PULL.

Voltage Selector

7. The voltage selector is located beneath the power fuse (para. 6) and consists of a small printed circuit card which may be inserted in one of four different ways (to select 100 V, 120 V, 220 V or 240 V). A small hole is provided in the card to facilitate removal. Ensure that when the card is inserted, the desired voltage setting is visible on the card.

Antenna Connection

8. The ANTENNA INPUT socket A1J1 will accept a 50 Ω or 75 Ω unbalanced coaxial line, using a BNC type connector (Racal Part Number 900038).

IF Outputs

9. (1) MAIN IF OUTPUT J2: 455 kHz IF output signal from main IF/AF board, nominal 100 mV into 50 Ω.

(2) ISB IF OUTPUT J9: 455 kHz IF output signal from optional ISB IF board, nominal 100 mV into 50 Ω.

These outputs are used for connection to external equipment which operate at 455 kHz such as the Racal RA 1766 RF Signal Display Unit, IF Converters, etc.

Local Oscillator (LO) Output

10. The 40.455 MHz to 70.455 MHz first local oscillator output signal from the synthesizer is available at BNC socket J7.

Reference Input/Output

11. The reference signal required by the synthesizer section of the receiver is provided either by an internal 5 MHz frequency standard or by an external unit connected to the REF IN/OUT BNC socket J1. For the receiver to operate with an internally derived reference signal, the slide switch S2 on the receiver rear panel must be set to the INT position; the internally derived 5 MHz reference signal is then available at the REF IN/OUT socket J1.

12. If operation with an internally derived reference signal is required, switch S2 must be set to the EXT position, and the external reference signal is applied to the REF IN/OUT socket J1. Note that links fitted to the second local oscillator/BFO synthesizer board allow the use of a 1 MHz, 5 MHz, or 10 MHz external reference input signal (para. 22).

AF Output Connector

13. The AF OUTPUT connector J3 is a 25-way socket. The Racal Part Numbers for the mating 25-way plug are as follows:

Plug, 25-way	916489
Shell, junction, straight	918108
Retainer	914245

14. The connections are listed in Table 1, those actually required being dependent on the particular installation or application.

Table 1: AF OUTPUT Connector J3

PIN	SIGNAL DESCRIPTION	
1, 14	Audio Line Output 1	ISB Versions only
2	Screen (ground)	ISB Versions only
3, 15	Audio Line Output 2	ISB Versions only
16	Screen (ground)	ISB Versions only
4, 17	Audio Monitor Line Output	
5	Screen (ground)	
18	Loudspeaker Output	
6	Ground	
19	+12 V Output (200 mA maximum)	
7	Ground	
20	Mute control input	
8	Ground	
21	Diversity AGC output	
9	Ground	
22	ISB Diversity AGC Output	
23	Scan Inhibit	
10	Spare	
11-13, 24, 25	Not used	

Remote Control Connector

15. The RA 1792 may be fitted with one of a number of optional remote control interface boards. The associated multi-way input/output connector is usually located on the rear panel above the LO OUTPUT connector J7. The pin connections for the optional SCORE interface board are given in Table 2. For connection details of other types of optional remote control interface board, refer to the appropriate system manual.

Table 2: RA 1792 SCORE Interface Board Connector

A6A1J1 PIN NO.	SIGNAL DESCRIPTION
1	Output Enabled (not used)
2	Data Out External
3	New Data Output Request (not Used)
4	- RS 422 (RS 232 Clock Out)
23	+ Clock Out
5	- RS 422 (RS 232 Data Out)
24	+ Data Out
6	- (RS 232 IN) Clock in for
26	+ (RS 232 GND) Data Out
8	- (RS 232 IN) Clock in for
7	+ (RS 232 GND) Data in
9	- (RS 232 IN) Data
10	+ (RS 232 GND) in.
11	+12 V out
12	Spare
13	Frame Comparison Inhibit Input
14	External Revertive Data In
15	Output Disable (not used)
16	D
17	C User Functions
18	B In
19	A
20	Ground
21	Strobe Out External
22	Clock Out External
25	Internal Clock Out
27-33	Ground
34	Z
35	Y User Functions
36	X Out
37	W

Ground Terminal

16. A terminal is provided on the rear panel for connection to the earthing (ground) system of a rack or cabinet, or to an earth stake.

MA 1075 Receiver Control Unit

Power Input Socket

17. The power input socket (mates with PL3 on the rear panel) is identical to that supplied with the RA 1792, and is described in para. 3 and 4.

Caution Ensure that the voltage selector is correctly set before connecting the unit to the source of supply (para. 7).

Power Fuse

18. The power fuse fitted to the MA 1075 shuld be a 1 A slow-blow type (Racal Part Number 938493). It is located in a comparment adjacent to the power input connector PL3, as descibed in para. 6 for the RA 1792. The remaining two fuses on the rear panel, FS2 and FS3, are both 1 A (Racal Part Number 922446) and protect the unregulated +15 V and +5 V outputs respectively from the power supply unit.

Voltage Selector

19. The voltage selector is identical to that fitted to the RA 1792, and is described in para. 7.

Audio Monitor Input

20. The balanced 600 Ohms audio monitor signal from the associated receiver is connected to TB1 as follows:

TB 1 PIN	
12 11	Balanced line
10	Screen

Multi-way plugs PL1 and PL2

21. The connections to these plugs are listed in tables 3 and 4. The actual connections required are dependant on the particular installation and reference should be made to the appropriate system manual.

Ground Terminal

22. A terminal is provided on the rear panel for connection to the earthing (ground) system of a rack or cabinet, or to an earth spike.

Table 3: MA 1075 PL1 Connections

PL1 PIN NO.	SIGNAL DESCRIPTION
1	Control Data Return
2	Control Clock Return
3	Revertive Clock Return
4	Revertive Data Return
5	Master Clock Return
6-9	No Connection
10	Chassis 0 V
11, 12	0 V
13	No Connection
14	Control Data Out

Table 3: MA 1075 PL1 Connections (Cont'd)

PL1 PIN NO.	SIGNAL DESCRIPTION	
15	Control Clock Out	
16	Revertive Clock Input	
17	Revertive Data Input	
18	Master Clock Input	
19	Internal Clock Output	
20	Request to Send	
21	Ready for Sending	Not used
22	Revertive Data Present	
23	Set Check	
24	Frame Comparison Inhibit	
25	No Connection	

Table 4: MA 1075 PL2 Connections

PL2 PIN NO.	SIGNAL DESCRIPTION	
1	$\overline{1}$	
2	$\overline{2}$	
3	$\overline{4}$ Word Enable Lines	
4	$\overline{8}$	Used for
5	External Revertive Strobe Out	Extra
6	External Revertive Data Out	Word
7	External Revertive Clock Out	Facility
8	External Control Strobe	
9	External Control Data In	
10	External Revertive Clock Out	
11	No Connection	
12	+12 V Out (fused at 100 mA).	
13	0 V	
14	A	
15	B User	
16	C Functions Out	
17	D	
18	Loudspeaker Return	
19	Loudspeaker Output	
20	New Data (Used for extra word facility)	
21	Spare	
22	Word Present (Used for extra word facility)	
23-25	No Connection	
26	Mute	
27	Scan Inhibit	