



# OPERATION MANUAL

## T1202 HF/VHF DISCRETE FUNCTION INTERFACE UNIT

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**CAUTION:** THIS EQUIPMENT MAY CONTAIN ELECTROSTATIC DISCHARGE (ESD) SENSITIVE COMPONENTS. TO PREVENT ESD SENSITIVE EQUIPMENT FROM POSSIBLE DAMAGE, OBSERVE THE FOLLOWING PRECAUTIONS WHEN HANDLING ANY ESD SENSITIVE COMPONENTS, OR UNITS CONTAINING ESD SENSITIVE COMPONENTS:

- a. Maintenance or service personnel must be grounded through a conductive wrist strap, or a similar grounding device, using a 1 M $\Omega$  series resistor for equipment protection against static discharge, and personal protection against electrical shock.
- b. All tools must be grounded (including soldering tools) that may come into contact with the equipment. Hand contact will provide sufficient grounding for tools that are not otherwise grounded, provided the operator is grounded through an acceptable grounding device such as a wrist strap.
- c. Maintenance or service of the unit must be done at a grounded, ESD workstation.
- d. Before maintenance or service of the equipment, disconnect all power sources, signal sources, and loads connected to the unit.
- e. If maintenance or service must be performed with power applied, take precautions against accidental disconnection of equipment components. Specifically, do not remove integrated circuits or printed circuit boards from equipment while the equipment has power applied.
- f. All ESD sensitive components are shipped in protective tubes or electrically conductive foam. The components should be stored using the original container/package when not being used or tested. If the original storage material is not available, use similar or equivalent protective storage material.
- g. When ESD sensitive components are removed from a unit, the components must be placed on a conductive surface, or in an electrically conductive container.
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- i. Do not unnecessarily pick up, hold, or directly carry ESD sensitive devices.

Failure to comply with these precautions may cause permanent damage to ESD sensitive devices. This damage can cause devices to fail immediately, or at a later time without apparent cause.

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## SECTION I GENERAL INFORMATION

### 1.1 INTRODUCTION

This manual contains information relative to the physical, mechanical and electrical characteristics of the Aeroflex Model T1202 Discrete Function Interface Unit (DFIU), PN: 01-1202-00.

### 1.2 EQUIPMENT DESCRIPTION

The T1202 DFIU is designed to operate and test ARINC 700 Series HF/SSB (ARINC 719) and VHF (ARINC 716) Line Replaceable Units (LRU's).

Detachable interface cables are available which connect either the HF or VHF transceiver to the T1202. ARINC 429 transmission and reception to and from the LRU's is provided by the companion T1200 Control Display Unit (CDU) via a rear panel interface connector. Power control and protection as well as all necessary discretes and monitoring points are provided. A coaxial Transmit/Receive (T/R) relay contained in the T1202 provides protected interface of the RF to and from the LRU, signal generator and load via Type-N connectors. Rear panel connectors are provided for control head and antenna coupler interface for connecting an entire HF or VHF communications system. The T1202 also has an ATE interface port allowing interface with automatic test equipment.

### 1.3 TECHNICAL CHARACTERISTICS

<u>Specifications</u>	<u>Characteristics</u>
Weight	18.5 lbs. (8.39 Kg)
Dimensions	
Height	12.15 in. (30.86 cm)
Width	19.00 in. (48.26 cm)
Depth	9.00 in. (22.86 cm)
Power Requirements	
For VHF LRU Testing	27.5VDC (8.0 Amps)
For HF LRU Testing	115VAC/400Hz, 3-phase (3.5 Amps/phase)
Operating Temperature	+10 to +45 deg. C

#### 1.4 UNITS AND ACCESSORIES SUPPLIED

The Aeroflex Model T1202 DFIU, JPN: 01-1202-00, consists of the main test panel and the following accessories:

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>P/N</u>
1	T1202 CD Operation Manual	E6-1202-01
2	3-Phase 115V/400Hz Power Plug	30-1019-00

#### 1.5 OPTIONAL EQUIPMENT

The following items are available as optional equipment with the T1202 DFIU. They must be ordered separately.

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>P/N</u>
1	T1202-01 VHF Interface Cable	55-1202-01
2	T1202-02 HF Interface Cable	55-1202-02
3	T1202-03 490S-1 Interface Cable	55-1202-03
4	Test Point Overlay – HFS-700	58-1169-03
5	Test Point Overlay – VHF-700	58-1169-06

#### 1.6 RELATED INFORMATION

For information regarding the T1202-01 (VHF), T1202-02 (HF) and T1202-03 (490S-1 Antenna Coupler) Interface Cables, refer to their individual maintenance manuals. For reference purposes, the P/N for these manuals are as follows:

<u>INTERFACE CABLE</u>	<u>MANUAL P/N</u>
T1202-01	C6-1202-01
T1202-02	C6-1202-02
T1202-03	C6-1202-03

## **SECTION II INSTALLATION**

### **2.1 GENERAL INFORMATION**

This section contains information relating to the unpacking, inspection and setup of the T1202 DFIU and accessories.

### **2.2 UNPACKING AND INSPECTING EQUIPMENT**

Carefully remove the T1202 DFIU and accessories from the packing box. Make a visual inspection of the unit for evidence of damage incurred during shipment. If a claim for damage is to be made, save the shipping container to substantiate the claim. When all equipment has been unpacked, return the packing material to the container for future use in storing or shipping the equipment.

### **2.3 EQUIPMENT SETUP**

The T1202 DFIU may be installed free standing on a workbench table top or mounted in a 19-inch equipment rack using the integral rack mounting ears.

Connect 28VDC power to the banana jack/binding posts (TB3) at the rear of the T1202. NOTE: 28VDC power is required only when testing a VHF COM.

Connect 3-phase 115VAC/400Hz power to the 3-phase power receptacle (J6) at the rear of the T1202 using the connector supplied.

#### **NOTE**

3-phase 115VAC/400Hz power is required only when testing an HF COM.

Connect a T1200 CDU to the T1200 Interface connector (J4) at the rear of the T1202 using the T1200 DFIU Cable, JPN: 55-2401-00, supplied with the T1200.

The LRU is connected to the T1202 via either the T1202-01 (VHF) or T1202-02 (HF) Interface Cable, JPN: 55-1202-01 or -02, respectively. Install the appropriate magnetic test point overlay (see section 1.5) to the T1202's test point field on the front panel.

If desired, an antenna coupler or control head can be connected to the T1202 using the connectors (J3 &/or J5) located at the rear of the T1202. A T1202-03 Interface Cable, PN: 55-1202-03, is available from Aeroflex to allow testing of the Collins 490S-1 Antenna Coupler in a system configuration.

#### **IMPORTANT**

Refer to the appropriate Component Maintenance Manual (CMM) or test procedure for additional test equipment setup procedures.

## SECTION III OPERATION

### 3.1 INTRODUCTION

This section contains the basic operating procedure for the Aeroflex T1202 DFIU.

### 3.2 CONTROL FUNCTIONS

The T1202 provides all the necessary signals for testing the ARINC 700 Series HF/SSB and VHF Communications Systems. The following is a description of each of the controls provided on the DFIU.

#### NOTE

Some additional controls may be installed on the LRU Interface Cables.

#### 3.2.1 CONTROLS – FRONT PANEL (see Fig. 3-1)

- |     |                                     |  |
|-----|-------------------------------------|--|
| (1) | AC POWER ON/OFF Switch (CB1)        | The HF LRU power requirements are provided by an external 3-phase 115VAC/400Hz source connected to the T1202 through connector J6 on the rear panel. The power is fused with a multi-pole 7.5A circuit breaker (CB1), which also serves as the LRU ON/OFF switch |
| (2) | DC POWER ON/OFF Switch (CB2)        | The VHF LRU power requirements are provided by an external DC source connected to the R1202 through binding posts (TB3) on the rear panel. The DC current is fused with a 10A circuit breaker (CB2), which also serves as the LRY ON/OFF switch.                 |
| (3) | AC POWER Lamp (DS8)                 | Illuminates when the 3-phase AC power is switched on with CB1.   |
| (4) | DC POWER Lamp (DS9)                 | Illuminates when the 28VDC power is switched on with CB2.  |
| (5) | RCV AUDIO Jacks (J18 & J19)         | A pair of banana jacks are provided to allow audio received from the LRU to be monitored with a DVM or oscilloscope. Loading is dependent upon the placement of the Audio Load Select switch (S18).  |
| (6) | CURRENT MONITOR BYPASS Switch (S19) | The Current Monitor Bypass paralleled to the current monitor jacks directly below it. In the OFF position, the DC source for the VHF LRU is interrupted unless an ammeter is connected to the monitor jacks.   |



		The current measured at this point will reflect only the current drawn by the Receiver/Transmitter UUT.
(7)	CURRENT MONITOR Jacks (J20 & J21)	Allows the 28VDC current drawn by the VHF LRU to be measured with an ammeter. The Current Monitor Bypass switch (S19) must be placed in the OFF position for current measurement.
(8)	115VAC OUT Test Jacks (J22 & J23)	Allows monitoring of the HF system's 115VAC/400Hz output.
(9)	27.5VDC OUT Jacks (J24 & J25)	Allows monitoring of the HF system's 27.5VDC output.
(10)	RF OUTPUT Connector (J28)	Type-N connector used for attachment to the transmitter's RF load/measuring devices. The LRU's RF output is switched to this connector only during the transmit mode.
(11)	LRU Connector (J1)	156-pin DL connector used to connect with the HF and VHF LRU Interface Cables, i.e. T1202-01 & T1202-02.
(12)	DATA INPUT Jacks (J16 & J17)	A pair of banana jacks are provided to allow user access to the Data Input port on the UUT.
(13)	RF INPUT Connector (J27)	Type-N connector used for attachment of the output of the RF signal generator. The LRU's RF input is switched to this connector only during the receive mode.
(14)	DATA OUTPUT Jacks (J14 & J15)	A pair of banana jacks are provided to allow monitoring of the Data Output port on the UUT. A 600 ohm, 1W, resistor is placed across these jacks in the T1202 to provide loading.
(15)	SELCAL OUTPUT Jacks (J12 & J13)	A pair of banana jacks are provided to allow monitoring of the SELCAL Output port on the UUT. There is no load provided in the T1202 for this output.
(16)	R/T Connector (J26)	Type-N connector used for attachment to the LRU antenna transmit/receive port.
(17)	MIC INPUT Jacks (J16 & J17)	A pair of banana jacks are provided to allow user access to the MIC Input port on the UUT. They are paralleled to the Voice phone jack (J31).
(18)	429 BUS INPUTS Jacks (J4 & J5)	Two ¼" stereo phone jacks used for inputting ARINC 429 data to the LRU in lieu of using the rear panel T1200 Interface or

- Control Head Interface connectors. Can also be used for monitoring the ARINC 429 data being transmitted to the LRU by the T1200 or Control Head.
- (19) TUNING SOURCE Switch (S21) The Tuning Source switch allows the user to tune the LRU from an interfaced control head. If this method is in use, the T1200 should NOT be interfaced to the T1202 in order to prevent two 429 transmitters from being placed on the same bus simultaneously. With the switch in the SERIAL A position, tuning data from the control head is routed to LRU input A. Likewise, with the switch in the SERIAL B position, the tuning data is routed to LRU input B.
- (20) LRU PORT SELECT Switch (S20) This switch instructs the LRU which port to listen to for tuning data. Port A = GND, Port B = OPEN.
- (21) VOLUME Adjust (R210) Adjusts receiver audio output level to the Headphone jack (J32) or to the panel speaker (LS201).
- (22) HEADPHONE Jack (J32) Standard headphone jack to allow the user to monitor the receiver audio output from the UUT. When a headphone plug is inserted into the jack, the audio is automatically disconnected from the speaker.
- (23) SPEAKER (LS201) A 45 ohm speaker for reproducing the receiver audio from the LRU.
- (24) AUDIO LOAD Switch (S18) The Audio Load switch provides a range of termination loads for the RCVR audio output. The audio amplifier (SPK position) has an input impedance of 600 ohms. The EXT position of the load switch allows the user to terminate the RCVR audio output at the RCVR audio banana jacks (J18, J19) with any desired load from short circuit to open circuit.
- (25) AIR/GROUND Switch (S14) Provides the Air/Ground discrete input to the LRU. AIR position = Ground, GROUND position = Open.
- (26) TALK BETWEEN Switch (S13) In the ON position, this switch activates coaxial relay K1; however, this switch has no momentary position and the mute line in the VHF unit will not be pulled down by this switch. The Talk Between is used for transmission of signals between two VHF

radios via the unit's XMIT port without keying the XMITTER RF output.

(27) SDI CODE Switch (S11)

Four position rotary switch used to select the discrete SDI code to the UUT. The SDI 1 & SDI 2 pins (J1-A1 & A2) are either jumpered to the SDI COMMON (J1-A3) or left open as per the following table.

<u>S11 POSITION</u>	<u>J1-A1</u>	<u>J1-A2</u>
0	OPEN	OPEN
1	OPEN	JUMPERED
2	JUMPERED	OPEN
3	JUMPERED	JUMPERED

(28) SQUELCH ENABLE/DISABLE (S7)

A test switch to allow the user to manually disable the VHF receiver's squelch circuitry. In the DISABLE position, the SQUELCH DISABLE (J1-C2) is jumpered to the SQUELCH DISABLE RETURN (J1-C3).

(29) VHF MUTE Switch (S8)

The MUTE switch in the ON position, connects a 125 ohm load from +27.5 VDC to the VHF LRU Mute Line, thereby exercising the LRU circuit at 220mA. The mute line is also diode or'ed to K1, the coaxial relay.

(30) MUTE MONITOR Test Point (TP3)

The MUTE MONITOR test point jack is tied to the LRY MUTE line ahead of the VHF MUTING LOAD switch (S8). When the switch is in the OFF position, a mute line load ranging from 14 to 130 ohms may be connected between this jack and the plus jack (J21) of the current monitor jacks. Do not forget to compute power dissipation requirements of such loads, and do not attempt to draw more than two amps to avoid damage to the DFIU. If the MUTE MONITOR jack is grounded, relay K1 in the DFIU will activate.

(31) VHF REMOTE SQUELCH Switch & CONTROL (S6 & R2)

A DPDT switch that places the 5K SQUELCH CONTROL POT in the VHF LRU remote squelch circuit when in the ON position.

(32) INTERLOCK BYPASS Switch (S10)

In the ON position, the INTERLOCK BYPASS switch applies +27.5VDC from the INTERLOCK EXCITATION output from the HF LRU to the KEYLINE INTERLOCK input of the HF LRU.

(33) PRESSURE FAULT Lamp (DS13)

This annunciator will illuminate when the PRESSURE FAULT output from the ANTENNA COUPLER is activated (grounded).

- |      |                                  |  |
|------|----------------------------------|--|
| (34) | RCV TUNER Switch (S23)           | Provides the RCV TUNER discrete input to the Antenna Coupler. ON position = Ground, OFF position = OPEN.   |
| (35) | RF FAULT Lamp (DS11)             | This annunciator will illuminate when the RF FAULT output from the Antenna Coupler is activated (grounded).  |
| (36) | PRIMARY POWER Switch (S3)        | When the PRIMARY POWER switch is in the SWITCHED position, the 3-phase 115VAC power is routed to the switched power inputs of the HF LRU. When in the UNSWITCHED position, the switch activates relay K2 in the T1202 and routes the 3-phase power to the HF LRU unswitched power inputs.                                      |
| (37) | COUPLER RECHANNEL Switch (S24)   | Used to test a diode in the 490S-1 Antenna Coupler. When the switch is activated, a ground is applied to the Rechannel Command input of the coupler. If the diode in the 490S-1 is operational, a ground should return to the T1202 via the Rechannel Warn line and cause the Rechannel Pulse annunciator (DS5) to illuminate. |
| (38) | ON/OFF RELAY Switch (S2)         | Provides the ON/OFF Relay discrete input to the HF LRU. ON position = Ground, OFF position = OPEN.   |
| (39) | COUPLER FAULT Lamp (DS10)        | This annunciator will illuminate when the Coupler Fault output from the Antenna Coupler is activated (grounded).   |
| (40) | DUAL SYS TX DISABLE Switch (S22) | Provides the DUAL SYS TX DISABLE discrete input to the Antenna Coupler. ON position = Ground, OFF position = Open.   |
| (41) | BLOWER Switch (S1)               | Provides the BLOWER discrete input to the HF LRU to select either CONTINUOUS blower or blower only during XMIT. CONTINUOUS position = Open, XMIT position = Ground.  |
| (42) | DUAL SYS TX DISABLE Lamp (DS12)  | This annunciator will illuminate when the Dual System TX Disable output from the Antenna Coupler is activated (grounded).  |
| (43) | TUNE POWER Switch (S9)           | Provides the Tune Power discrete input to the HF LRU. ON position = Ground, OFF position = OPEN.   |

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(44)	RANGE SELECT Switch (S4)	Provides the Range Select discrete input to the HF LRU. WIDE position = Ground, NARROW position = OPEN.
(45)	TUNE POWER GND Lamp (DS15)	This annunciator will illuminate when the Tune Power Ground output from the Antenna Coupler is activated.
(46)	OPERATE Annunciator (DS14)	This annunciator will illuminate when the Operate output from the Antenna Coupler is activated.
(47)	RF SENSE/SQUELCH Switch & CONTROL (S5 & R1)	Provides selection between RF Sensitivity control or RF Squelch control by grounding one or the other control lines to the HF LRU and placing the remaining control line in series with the CONTROL pot to ground.
(48)	COUPLER +28VDC OUT Test Point (TP7)	Provides a test point for monitoring the +28VDC output from the Antenna Coupler.
(49)	RECHANNEL PULSE Lamp	This annunciator will illuminate when the Rechannel Pulse output from the HF LRU is activated. The lamp is driven by a buffer driver on the Lamp Driver Board, Also see COUPLER RECHANNEL Switch.
(50)	RECHANNEL PULSE Test Point (TP2)	Provides a test point for monitoring the Rechannel Pulse Output.
(51)	TUNE IN PROGRESS Lamp (DS4)	This annunciator will illuminate when the Tune In Progress output from the Antenna Coupler is activated.
(52)	TUNE IN PROGRESS Test Point (TP1)	Provides a test point for monitoring the Tune In Progress output.
(53)	R/T FAULT Lamp (DS3)	This annunciator will illuminate when the R/T Fault output from the HF LRU is activated. The lamp is driven by a buffer driver on the Lamp Driver
(54)	CONTROL FAULT Lamp (DS2)	This annunciator will illuminate when the Control Fault output from the HF LRU is activated. The lamp is driven by a buffer driver on the Lamp Driver Board.
(55)	KEY INTERLOCK Lamp (DS1)	This annunciator will illuminate when the Key Interlock output from the HF LRU is activated. The lamp is driven by a buffer driver on the Lamp Driver Board.

- |   |  |
|---|--|
| (56) TEST POINT Field                                 | These test points provide monitoring capability for the sixty pins corresponding to the top plug of the HF or VHF LRU ARINC 600 connector. Magnetic overlays are available which define each test point for user convenience.  |
| (57) KEY EVENT Lamp (DS7)                             | This annunciator will illuminate when the Key Event output from the HF or VHF LRU is activated (grounded).   |
| (58) CHOPPER Lamp (DS6)                               | This annunciator will illuminate when the Chopper output from the HF LRU is activated (grounded).  |
| (59) KEYING SELECT Switch (S12)                       | Provides the Keying Select discrete input to the HF or VHF LRU. DATA position = Ground, VOICE position = OPEN.   |
| (60) VOICE, DATA & CW KEYING Switches (S15, S16, S17) | <p>The VOICE, DATA and CW keys are 3-position toggle switches: ON, OFF, Momentary ON; and serve 2 functions.</p> <p>When a key is in one of the ON positions, it activates coaxial relay K1 in the T1202, switching the R/T CONNECT port of the DFIU from the RF INPUT to the RF OUTPUT of the DFIU. Approximately 30mS later, the LRU key line associated with the switch will be pulled down, thus keying the LRU to the XMIT mode. The 30mS time delay between these two functions protects the externally interfaced RF source from damage by the LRU RF output.</p> |
| (61) VOICE, DATA & CW KEY Test Points (TP4, TP5, TP6) | These test points provide the user with a RCV to XMIT transfer time monitor point of the associated LRU key line. In the event that these points are grounded, the LRU will switch from the RCV mode to the XMIT mode. Since these points follow the time delay circuit in the DFIU, it is advisable to avoid this when an external RF source is interfaced to the DFIU.   |
| (62) VOICE, DATA & CW KEY Mic Jacks (J29, J30, J31)   | Associated with the keying switches are three, 3-conductor mic jacks which are paralleled in conjunction with each of the keying switches and provide the user with actual MIC, DATA and CW keying interface. The same keying delay mentioned above also applies to the jacks.   |

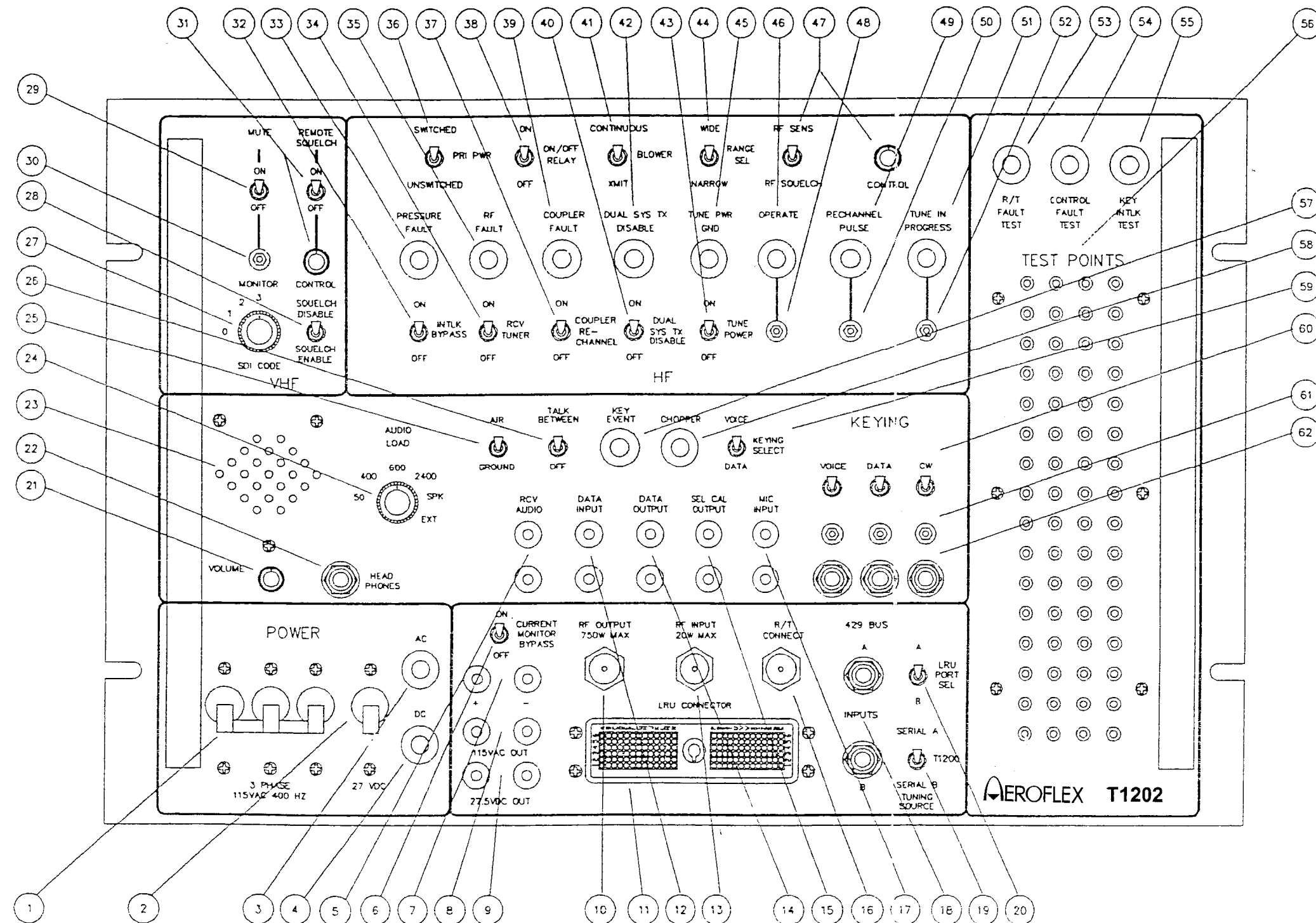


Fig. 3-1: T1202 Controls – Front Panel

### 3.2.2 CONTROLS – REAR PANEL

- |     |  |   |
|-----|--|---|
| (1) | 3-Phase 115VAC/400Hz Power Input Receptacle (J6) | Used to connect the DFIU to a 3-phase 115VAC/400Hz power source via the detachable 5-conductor power cord.  |
| (2) | 27.5VDC Power Input Jacks (TB3)                  | A set of banana jack/binding posts used to connect the DFIU to a 27.5VDC power source.  |
| (3) | REMOTE SELECTOR Switch                           | This switch has no current function and is not operational.   |
| (4) | CONTROL HEAD INTERFACE Connector (J5)            | A 37-pin female D connector used to interface the DFIU to an appropriate HF or VHF control head. The DFIU cabling enables tuning with 429 data or re-entrant tuning.  |
| (5) | T1200 INTERFACE Connector (J4)                   | A 37-pin female D connector used to interface the DFIU to a T1200 CDU.  |
| (6) | ANTENNA COUPLER INTERFACE Connector (J3)         | A 25-pin female D connector used to interface the DFIU to the appropriate antenna coupler. Power requirements for the antenna coupler are provided by the HF Receiver/Transmitter LRU.  |
| (7) | ATE INTERFACE Connector                          | A 96-pin DL connector wired to the DFIU's test point board and to the LRU interface connector. It is also wired to several monitor points on the DFIU which provide additional ATE connections not covered by the test point board. |



## **SECTION IV THEORY OF OPERATION**

### **4.1 GENERAL CIRCUIT THEORY**

Some active circuitry is contained on printed circuit boards within the T1202. The following is a brief description.

#### **4.1.1 AUDIO AMP BOARD**

The Audio Amp Board, PN: 20-5624-00, is mounted to the inside of the front panel on the left side, just above the AC & DC power switches. It is used to provide the selectable loads for the receiver's audio output and to provide a variable amplified output to drive either the panel mounted speaker or the headphone output.

#### **4.1.2 LAMP DRIVER BOARD**

The Lamp Driver Board, PN: 20-5662-00, is mounted to the inside of the front panel on the upper right side, just above the Test Point board. It is used to provide the current gain and isolation necessary to drive the Key Interlock, R/T Fault, Control Fault and Rechannell Pulse lamps on the DFIU. The inputs to the board are provided from outputs derived from the HF LRU connected to the T1202.

#### **4.1.3 JUMPER BOARD**

The Jumper Board, PN: 20-5642-00, is mounted to the connector plate on the bottom panel of the T1202. The jumper board is used to connect the front panel controls to the LRU interface connector (J1).

It also contains the circuitry used to delay the key lines to the UUT to prevent damage to the RF signal generator during testing. This is accomplished by the following: when a DFIU key is activated, the coaxial relay (K1) in the DFIU is immediately energized causing the LRU's RF port, which is attached to the DFIU's R/T Connector (J26) to be switched to the load connected to the DFIU's RF OUTPUT Connector (J28). The circuitry contained on the jumper board, delays the actual key to the RF transmitter by approximately 30mS. Consequently, the RF load is connected to the LRU's RF output port prior to the actual transmission of RF power. This is done to prevent RF from being transmitted into the signal generator or other sensitive equipment connected to the DFIU's RF INPUT connector (J27). A similar delay is also in effect as the DFIU's transmit key is released to ensure the LRU's RF power is shut off prior to deactivating the coaxial relay in the DFIU.

## **SECTION V MAINTENANCE**

### **5.1 MAINTENANCE INFORMATION**

Bills of material, assembly drawings, schematics and a test procedure for the Aeroflex Model T1202 are contained in the T1202 Maintenance Manual (P/N 06-1202-00 for hard copy, E6-1202-00 for CD) available separately from Aeroflex.

For information regarding the T1202-01 (VHF), T1202-02 (HF) & T1202-03 (490S-1 Antenna Coupler) Interface Cables, refer to their individual maintenance manuals. The Aeroflex part numbers for these manuals are as follows:

<u>INTERFACE CABLE</u>	<u>MANUAL P/N</u>
T1202-01	C6-1202-01
T1202-02	C6-1202-02
T1202-03	C6-1202-03