

INSTALLATION AND OPERATION MANUAL
FOR THE
TYPE WJ-9605 FRONT PANEL UNIT
P/N 181330-001, Revision B

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BAE SYSTEMS
ADVANCED SYSTEMS
700 QUINCE ORCHARD ROAD
GAITHERSBURG, MARYLAND 20878-1794

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LIST OF EFFECTIVE PAGES

<u>Page Number</u>	<u>Description</u>	<u>Revision</u>
i	Cover	B
ii	Proprietary Statement	B
iii	List of Effective Pages	B
iv	Intentionally Blank	B
v	Revision Record	B
vi	Intentionally Blank	B
vii thru x	Table of Contents	B
1-i	Section Cover	B
1-ii	Intentionally Blank	B
1-1 thru 1-4	Section One	B
2-i	Section Cover	B
2-ii	Intentionally Blank	B
2-1 thru 2-28	Section Two	B
3-i	Section Cover	B
3-ii	Intentionally Blank	B
3-1 thru 3-2	Section Three	B
4-ii	Intentionally Blank	B
4-ii	Intentionally Blank	B
4-1 thru 4-2	Section Four	B
5-i	Section Cover	B
5-ii	Intentionally Blank	B
5-1 thru 5-16	Section Five	B
FP-i	Section Cover	B
FP-ii	Intentionally Blank	B
FP-1/(FP-2 blank)	Schematic	B
FP-3/(FP-4 blank)	Schematic	B
FP-5/(FP-6 blank)	Schematic	B
FP-7/(FP-8 blank)	Schematic	B
FP-9/(FP-10 blank)	Schematic	B

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WJ-9605 FRONT PANEL UNIT

REVISION RECORD

WJ-9605 FRONT PANEL UNIT INSTRUCTION MANUAL

REVISION RECORD

Revision	Description	Date
A	Initial printing.	3/91
B	Update manual. Covers MRFP Software Versions.	7/91

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TABLE OF CONTENTS

SECTION I

GENERAL DESCRIPTION

<u>Paragraph</u>		<u>Page</u>
1.1	Electrical Characteristics	1-1
1.2	Mechanical Characteristics	1-2
1.3	Equipment Supplied	1-2
1.4	Equipment Required But Not Supplied	1-3
1.5	Available Options	1-3
1.6	Software Version History	1-3

SECTION II

INSTALLATION AND OPERATION

<u>Paragraph</u>		<u>Page</u>
2.1	Unpacking and Inspection	2-1
2.2	Installation	2-1
2.2.1	Installation With the Optional Mounting Adaptor	2-1
2.2.2	Connector Signals	2-2
2.2.2.1	POWER, Power Input Connector (J1)	2-4
2.2.2.2	NET, Net Control Bus Interface Connector (J2)	2-4
2.2.2.3	RCV A, Receiver A Interface Connector (J3)	2-4
2.2.2.4	RCV B, Receiver B Interface Connector (J4)	2-4
2.2.3	WJ-9605 I/O Operation	2-5
2.2.3.1	Types of WJ-9605 I/O Operations	2-6
2.2.3.2	Token Exchange Protocol	2-8
2.2.3.2.1	Front Panel Token Operation	2-8
2.2.3.2.2	Remote Controller Token Operation	2-9
2.2.3.2.3	Token Assignment	2-9
2.2.4	FPU Hardware Configuration	2-10
2.2.4.1	I/O Protocol	2-10
2.2.4.2	Monophonic Direct Audio	2-10
2.2.4.3	Baud Rate, SIO1 and SIO2	2-11
2.2.4.4	Local Audio	2-11
2.2.4.5	NET SAO	2-12
2.2.5	Power Requirements	2-12
2.2.6	Equipment Connections	2-12
2.2.6.1	Equipment Setup with Two Stand-Alone WJ-8607 Receivers	2-12
2.2.6.2	Equipment Setup with Two WJ-8607 Receivers Installed in a WJ-9902/NFP Equipment Frame Without a Host Interface Option	2-14
2.2.6.3	Equipment Setup with Two WJ-8607 Receivers Installed in a WJ-9902/NFP Equipment Frame Equipped with a Host Interface Option	2-15
2.2.6.4	Equipment Setup with the WJ-9908 Equipment Frame	2-16

TABLE OF CONTENTS

SECTION II (Continued)

INSTALLATION AND OPERATION (Continued)

<u>Paragraph</u>		<u>Page</u>
2.2.6.5	Equipment Setup with the WJ-8700 VLF/HF Receiver	2-17
2.3	Equipment Malfunctions	2-18
2.4	Preparation for Reshipment or Storage	2-18
2.5	Operation	2-19
2.5.1	Controls and Indicators	2-19
2.5.1.1	PWR Switch, S1	2-20
2.5.1.2	LIGHT Switch, S3	2-20
2.5.1.3	Parameter ADJ. Control, A1A1S2	2-20
2.5.1.4	LEVEL Control, A1R1 and A1R2	2-20
2.5.1.5	Tuning Wheel, A1U3	2-20
2.5.1.6	Keypad, A1U2	2-21
2.5.1.6.1	0 through 9, +/-, . Keys	2-21
2.5.1.6.2	Up (↑) and Down (↓) Keys	2-21
2.5.1.6.3	DELETE (←) Key	2-21
2.5.1.6.4	ENTER (↵) Key	2-21
2.5.1.6.5	MENU Keys	2-21
2.5.1.6.6	FUNCTION Keys	2-21
2.5.1.7	LCD Display	2-22
2.5.2	Menu Displays	2-22
2.5.2.1	Menu Flow Diagrams	2-22
2.5.2.2	Operating Menu	2-23
2.5.2.2.1	Display Cursors	2-23
2.5.2.2.1.1	Active Parameter Cursor	2-25
2.5.2.2.1.2	Tuning Resolution Cursor	2-25
2.5.2.2.1.3	Numeric Entry Cursor	2-25
2.5.2.2.2	Signal Strength Indicator	2-25
2.5.2.2.3	Tuning Indicator	2-26
2.5.3	Getting Started — The DEVICE SELECT Menu	2-26
2.5.3.1	Accessing the Front Panel Configuration Menu (fp cfg KEY)	2-26
2.5.3.2	The frame Function	2-26
2.5.3.3	The device Function	2-27
2.5.3.4	Gaining Access to All Other Device Functions (control KEY)	2-27
2.5.4	Configuring the Front Panel	2-27
2.5.4.1	The Display Contrast Control (cntrs)	2-27
2.5.4.2	Front Panel Feedback Tone Control (beep)	2-27
2.5.4.3	Selecting the Remote Address (r adr)	2-28
2.5.4.4	Selecting the Frame Address (f adr)	2-28

TABLE OF CONTENTS

SECTION III

CIRCUIT DESCRIPTION

<u>Paragraph</u>		<u>Page</u>
3.1	Introduction	3-1

SECTION IV

MAINTENANCE

<u>Paragraph</u>		<u>Page</u>
4.1	Introduction	4-1
4.2	Preventive Maintenance	4-1
4.2.1	Handling	4-1
4.2.2	Cleaning	4-1

SECTION V

REPLACEMENT PARTS LIST

<u>Paragraph</u>		<u>Page</u>
5.1	Unit Numbering Method	5-1
5.2	Reference Designation Prefix	5-1
5.3	List of Manufacturers	5-1
5.4	Parts List	5-3
5.5	Type WJ-9605 Front Panel Unit, Main Chassis	5-5
5.5.1	Type 796890-3 Front Panel Assembly, (A1)	5-6
5.5.1.1	Type 796856-3 Front Panel Controller Assembly, (A1A1)	5-7
5.5.2	Type 766025-1 Power Supply Assembly, (A2)	5-14
5.5.3	Type 796929-1 Signal Distribution Assembly, (A3)	5-15

TABLE OF CONTENTS

LIST OF TABLES

<u>Table</u>		<u>Page</u>
1-1	WJ-9605 Front Panel Unit Specifications	1-2
2-1	List of Connectors	2-2
2-2	FPU DIP Switch A1S1 Settings	2-10

LIST OF ILLUSTRATIONS

<u>Figure</u>		<u>Page</u>
2-1	Installing the WJ-9605 with the Optional Mounting Adaptor	2-3
2-2	WJ-9605 Rear Panel Connectors	2-5
2-3	WJ-9605 Operational Configurations and WJ NET Operation	2-6
2-4	Example of IOC Routed Operations	2-8
2-5	Top View of FPU Showing Location of DIP Switch A1S1 (Cover Removed)	2-10
2-6	Equipment Setup with Two Stand-Alone WJ-8607 Receivers	2-13
2-7	Equipment Setup with Two WJ-8607 Receivers Installed in a WJ-9902/NFP Equipment Frame Without a Host Interface Option	2-14
2-8	Equipment Setup with Two WJ-8607 Receivers Installed in a WJ-9902/NFP Equipment Frame Equipped with a Host Interface Option	2-15
2-9	Equipment Setup with the WJ-9908 Equipment Frame	2-16
2-10	Equipment Setup with the WJ-8700 VLF/HF Receiver	2-17
2-11	WJ-9605 Controls and Indicators	2-20
2-12	Overall Flow Chart of Menus	2-24
2-13	FPU Typical Operating Menu	2-25

FOLDOUTS

<u>Foldout</u>		<u>Page</u>
FO-1	Type 796890-3, Front Panel Assembly (A1), Schematic Diagram 581002.....	FP-1
FO-2	Type 796856-3, Front Panel Controller Assembly (A1A1), Schematic Diagram 581000 (2 Sheets).....	FP-3
FO-3	Type 766025-1, Power Supply Assembly (A2), Schematic Diagram 382528.....	FP-7
FO-4	Type WJ-9605 Front Panel Control Unit, Main Chassis, Schematic Diagram 382527	FP-9

SECTION I
GENERAL DESCRIPTION

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SECTION I**GENERAL DESCRIPTION****1.1 ELECTRICAL CHARACTERISTICS**

The WJ-9605 Front Panel Unit is a general-purpose, menu-driven controller intended to provide local control of various types of compatible BAE SYSTEMS equipment. This equipment includes the WJ-8700 Dual VLF/HF Receiver, the WJ-8607 Minicaptor VHF/UHF Surveillance Receiver (including those installed in WJ-9902 or WJ-9908 Equipment Frames) and the WJ-9401 Demodulator.

The WJ-9605 can be used to provide operator control for up to two WJ-8607 Receivers equipped with RS-232C interfaces. This configuration allows the operator to select either receiver for control. The WJ-9605 contains audio switching for selection of either receiver's audio to be routed to the WJ-9605's front panel PHONE jack. In this configuration, Host I/O control or WJ Receiver Net access of the receivers connected to the WJ-9605 is not available.

The WJ-9605 can be used as a remote front panel for the WJ-8700/NFP (no front panel) or WJ-9902 with or without host interfaces. It may also be used with the WJ-9908 equipped with a host interface. When used with a host interface equipped device, the WJ-9605 communicates via an RS-232 link connected to the host interface card. When a host interface is not installed, the WJ-9605 communicates with the receivers via individual RS-232 links to each receiver. A host interface card must be installed in the WJ-9908 to be compatible with the WJ-9605. A host interface card must also be used if WJ Receiver Net access of the receivers connected to the WJ-9605 is required. (WJ Receiver Net interface capability is included with a Host interface.)

The WJ-9605 can serve as an additional controller on the WJ Receiver Net. The WJ-9605 may be connected to a net of WJ-8700 Receivers or a net of WJ-8607 Receivers installed in host interface-equipped frames (WJ-9902 or WJ-9908). In this configuration, the WJ-9605 becomes an additional "controller" on the WJ Net. This also includes control of the receiver installed Selected Audio Output (SAO) signal to provide operator audio at the WJ-9605's front panel PHONE jack.

The WJ-9605 incorporates a backlit liquid-crystal display which provides a visual representation of all menus and equipment functions. A controller assembly contained in the WJ-9605 features a built-in 16-bit microprocessor, receiver control programs contained in read-only-memory (ROM), a WJ Net control interface, and two RS-232C interface I/O ports. Control operations are based on software-controlled key ("softkey") access to different menu levels. Refer to the Front Panel Unit (FPU) Operator's Manual for details of control operations. The unit is powered by an external +12 Vdc user supplied source.

The display system, (which is employed in the WJ-9605, the WJ-8700, the WJ-9401, and the WJ-9902) has been designed to enable an operator to quickly become familiar with front panel operations of the equipment. Front panel controls are nearly identical regardless of the compatible equipment being controlled. Identical functions such as frequency tuning, bandwidth selection, COR, etc., are generally controlled in the same fashion. Thus, as additional FPU-controlled equipment is developed, an operator need only learn those functions which are particular to the new equipment.

See Table 1-1 for a list of WJ-9605 Front Panel Unit specifications.

Table 1-1. WJ-9605 Front Panel Unit Specifications

Interfaces:	
SIO1	RS-232 for control of receiver #1 or communications with Host Interface card of devices with no front panel.
SIO2	RS-232 for control of receiver #2.
Net	RS-485 for Net control
Headphone Audio	Amplified audio from selected receiver
Power Requirements	10 to 14 Vdc
Power Consumption	5 Watts
Size	8.3 inches wide (21.1 cm) x 3.5 inches high (8.9 cm) x 3.0 inches deep (7.6 cm) (excluding knobs)
Weight	3.0 Pounds (1.36 kg)
Operating Temperature	0 to 50°C

1.2 MECHANICAL CHARACTERISTICS

All operator controls and indicators are located on the front panel of the WJ-9605. All input and output connectors are located on a ledge on the rear panel except for the PHONE jack which is located on the front panel. Connectors used are a LEMO multipin connector, a 1/4-inch stereo phone jack, and three nine-pin D-type connectors.

The cover and main chassis are both constructed of aluminum. Removal of the cover provides access to the unit's internal circuitry. The major assemblies consist of the Type 796890-3 Front Panel Assembly (A1), the Type 766025-1 Power Supply Assembly (A2), and the Type 796929-1 Signal Distribution Assembly (A3).

1.3 EQUIPMENT SUPPLIED

Equipment supplied consists of the following:

- One WJ-9605 Front Panel Unit
- One accessory kit containing:
 - a. One three-pin LEMO connector
 - b. One male nine-pin D-type connector
 - c. One female nine-pin D-type connector
 - d. One 5 ft. cable assembly with male nine-pin D-type connectors, both ends
 - e. One WJ-9605 Front Panel Unit Installation and Operation Manual and one Front Panel Unit (FPU) Operator's Manual

1.4 **EQUIPMENT REQUIRED BUT NOT SUPPLIED**

The WJ-9605 is designed to operate with the following equipment:

- One WJ-8700 Dual VLF/HF Receiver (which may or may not be equipped with the WJ-8700/NFP No Front Panel option),
or
- Two WJ-8607 Miniceptor VHF/UHF Receivers configured for RS-232C remote operation,
or
- One WJ-9902 Equipment Frame containing two WJ-8607 Receivers,
or
- One WJ-9902 Equipment Frame containing two WJ-8607 Receivers and a Host Interface option,
or
- One WJ-9908 Equipment Frame equipped with the Host Interface option and containing one to eight WJ-8607 Receivers,
or
- Up to 29 WJ-NET compatible devices. Devices may be equipment frames, which each contain up to 29 HPIL compatible devices.

1.5 **AVAILABLE OPTIONS**

An optional mounting adaptor (WJ P/N 481896-1) and associated hardware is available which can be used to mount the WJ-9605 to a horizontal or vertical surface. The adaptor allows the unit to be adjusted to ± 45 degrees from the mount surface as required for optimum viewing and reach. See **paragraph 2.2.1** for more details on the installation and use of this option.

1.6 **SOFTWARE VERSION HISTORY**

The following paragraphs describe the version differences in the WJ-9605 MRFP software. The original version of the MRFP software was version 1.0, released April 22, 1991.

Version 1.1 of the MRFP software was released on May 3, 1991. This version changed the startup delay prior to the IOC initialization message being displayed from 200 ms to 350 ms. Sometimes, the shorter delay time resulted in an "IOC COMMUNICATIONS ERROR"

GENERAL DESCRIPTION

WJ-9605 FRONT PANEL UNIT

message being displayed upon powerup. Also, the clearing of the UART buffer is now done approximately 200 ms after powerup instead of 50 ms. On some WJ-8700's without IOC cards, noise on the TX data lines upon powerup sometimes caused a "MODEL NOT RECOGNIZED" message to be displayed on the front panel.

SECTION II
INSTALLATION AND OPERATION

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SECTION II

INSTALLATION AND OPERATION

2.1 UNPACKING AND INSPECTION

BAE SYSTEMS ships the WJ-9605 and its accessories cushioned between molded-in-place expanded plastic pads in a double-walled carton. After unpacking the equipment, retain the shipping container and packing material until the equipment has been thoroughly inspected and it is ensured that reshipment is not necessary. Perform the following initial inspection:

1. Carefully inspect the outside of the shipping container for discoloring, stains, charring, or other signs of exposure to excessive heat, moisture or liquid chemicals. Check for any physical damage to the shipping container such as dents, snags, rips, crushed areas, or similar signs of excessive shock or careless handling.
2. Remove all equipment and accessories from the shipping container. If any items are missing, contact the factory or your BAE SYSTEMS representative.
3. Remove and retain the white 5x6 inch PRODUCT DISCREPANCY REPORT card. This card is to be used if reshipment of the equipment is required. It also contains important warranty adjustment information.
4. Carefully inspect the equipment looking for dents, scratches, damaged or loose controls, indicators, or connectors, or any other signs of physical abuse or careless handling.

If damage is found, forward an immediate request to the delivering carrier to perform an inspection and prepare a concealed damage-report. Do not destroy any packing material until it has been examined by an agent of the carrier. Concurrently, report the nature and extent of damage to the BAE SYSTEMS, giving equipment type numbers and serial numbers, so that necessary action can be taken. Under U.S. shipping regulations, damage for claims must be collected by the consignee; do not return the equipment to BAE SYSTEMS until a claim for damages has been established.

2.2 INSTALLATION

The WJ-9605 Front Panel Unit is designed to be operated on a bench, table top, or any other clean and secure surface. When selecting a location for the WJ-9605, allow sufficient space around the unit (approximately 1.75 inches) for air circulation.

2.2.1 INSTALLATION WITH THE OPTIONAL MOUNTING ADAPTOR

An optional mounting adaptor and associated hardware is available which can be used to mount the WJ-9605 to a horizontal or vertical surface. The adaptor (WJ P/N 481896-1)

INSTALLATION AND OPERATION

WJ-9605 FRONT PANEL UNIT

allows the unit to be adjusted ± 45 degrees from the mount surface as required for optimum viewing and reach. **Figure 2-1** illustrates the WJ-9605 attached to the mounting adaptor and mounted to a horizontal surface. To install the adaptor on the WJ-9605, perform the following procedures:

- a. Mount the adaptor to the mounting surface with appropriate hardware, using the four holes provided in the base of the adaptor.
- b. Remove two countersunk phillips-head screws from each side of the cover (four total).
- c. Install a spring plunger (P/N S-48A) in the lower screw hole on both sides of the unit (see **Figure 2-1**) and hand tighten.
- d. Align the top holes of the adaptor with the top screw holes of the unit.
- e. Install a shoulder screw (P/N A3D11) through the top hole of the adaptor mount into the top screw hole of the unit and hand tighten.
- f. Adjust the WJ-9605 to the optimum angle.

2.2.2 CONNECTOR SIGNALS

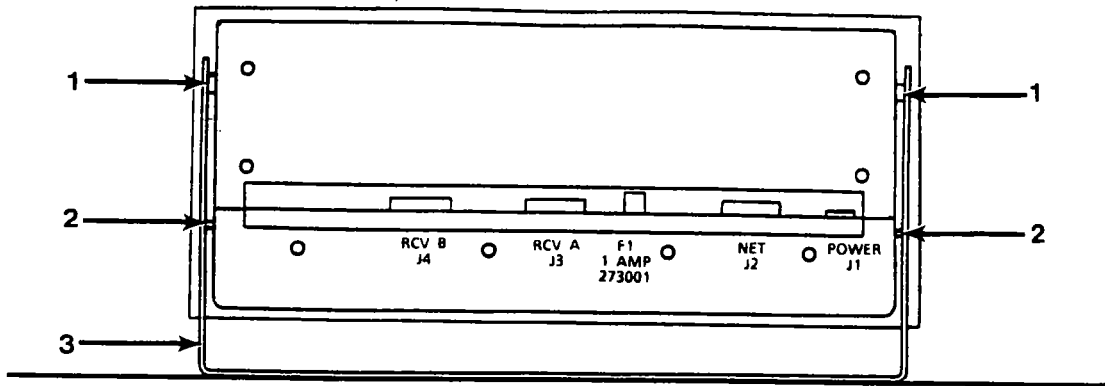
Table 2-1 lists all external connectors on the WJ-9605 and provides a brief description and the reference designator for each. The connectors are located on a ledge on the rear panel except for the PHONE jack which is located on the front panel. **Figure 2-2** shows the location of the rear panel connectors.

Table 2-1. List of Connectors

Connector	Reference Designator	Description
POWER	J1	Three-pin LEMO. Accepts +10 to +14 Vdc for powering the unit.
NET	J2	Nine-pin male D-type. WJ NET Bus Interface.
RCV A	J3	Nine-pin female D-type. RS-232 interface, audio input from one or two receivers, and +12 Vdc power input from an equipment frame.
RCV B	J4	Nine-pin female D-type. RS-232 interface and audio input from one receiver.
PHONE	A1A1J10	1/4-inch stereo headphone jack. Headphone audio output.

WJ-9605 FRONT PANEL UNIT

INSTALLATION AND OPERATION



<u>Item</u>	<u>Description</u>	<u>Part No.</u>	<u>Quantity</u>
1	Shoulder Screw, 4-40X3/16	A3D11	2
2	Spring Plunger	S-48A	2
3	Adaptor Mount	481896-1	1

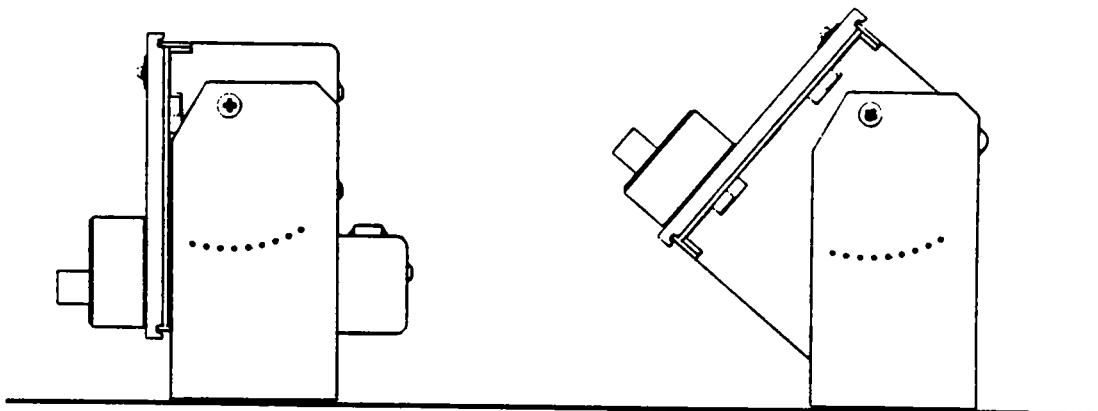


Figure 2-1. Installing the WJ-9605 with the Optional Mounting Adaptor

2.2.2.1 POWER, Power Input Connector (J1) - This three-pin, LEMO-type connector accepts +12 Vdc for powering the WJ-9605. However, this connector should not be connected to a power source if the WJ-9605 is connected to a unit with a host interface via the RCVR A connector (J3) (see **paragraph 2.2.2.3**). The WJ-9605 requires approximately 5 watts. See **Figure 2-2** for the pin assignments of this connector.

2.2.2.2 NET, Net Control Bus Interface Connector (J2) - This nine-pin, male D-type connector is used to connect the WJ-9605 to the WJ NET interface bus. This interface allows the WJ-9605 to control any device connected to the bus. See **Figure 2-2** for the pin assignments of this connector.

2.2.2.3 RCV A, Receiver A Interface Connector (J3) - This nine-pin, female D-type connector provides the interface between the WJ-9605 and its controlled device(s). This interface at this connector can be used to control a single device (device direct) or can control multiple devices via a Host Interface option (IOC routed) installed in the device's frame. See **Figure 2-2** for the pin assignments of this connector.

When this connector is connected with a frame containing a Host Interface option, the WJ-9605's POWER connector (J1) must be disconnected from any power source (pin 1 of J3 provides +12 Vdc from the host interface to power the WJ-9605).

Pins 3 and 9 of this connector provides the RS-232C interface between the WJ-9605 and its connected device(s). Pin 3 is the transmit data line (FPTXD) and pin 9 is the receive data line (FPRXD).

Pins 2, 4, 6, and 8, provide audio inputs to the WJ-9605 from the connected device(s). The audio provided is dependent on the equipment hookup between the WJ-9605 and its controlled device(s) i.e., device direct or IOC (host interface) routed. See **paragraph 2.2.4** for more details on audio routing.

2.2.2.4 RCV B, Receiver B Interface Connector (J4) - This nine-pin, female D-type connector provides the interface between the WJ-9605 and the connected device. This interface is only used during device direct operations (not IOC routed). See **Figure 2-2** for the pin assignments of this connector.

Pins 3 and 9 of this connector provides the RS-232C interface between the WJ-9605 and the connected device. Pin 3 is the transmit data line (FPTXD) and pin 9 is the receive data line (FPRXD).

Pins 2 and 6 provide the audio inputs to the WJ-9605 from the connected device. The WJ-9605 must be set for device direct audio routing to provide this audio to the front panel phone jack. See **paragraph 2.2.4** for more details on audio routing.

WJ-9605 FRONT PANEL UNIT

INSTALLATION AND OPERATION

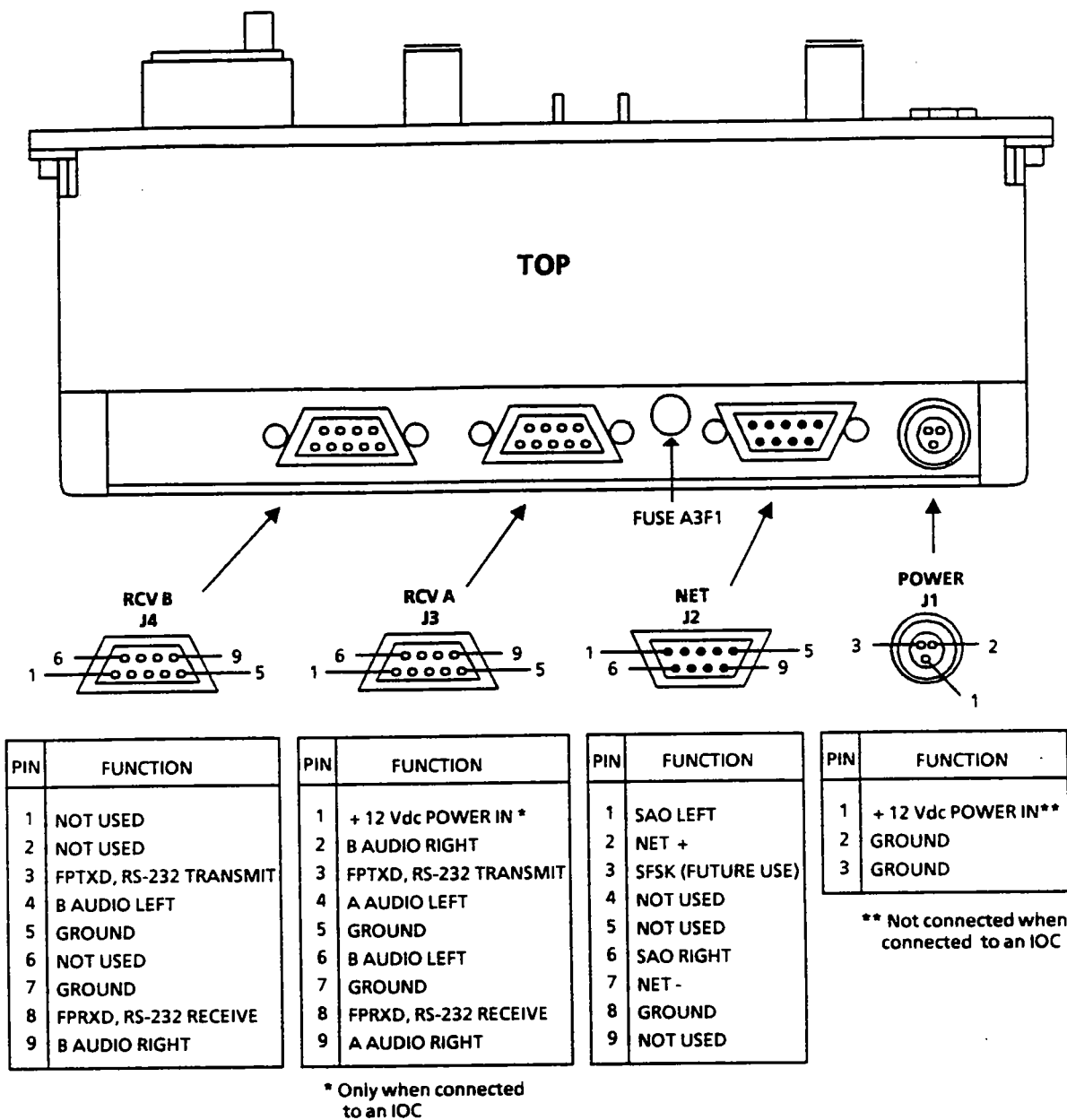


Figure 2-2. WJ-9605 Rear Panel Connectors

2.2.3 WJ-9605 I/O OPERATION

The WJ-9605 is electrically and functionally similar to the front panels installed on the WJ-9902 when configured with a front panel option, the WJ-9401, or the WJ-8700. As such, it can be generically categorized with these devices as a Front Panel Unit (or FPU). However, the WJ-9605 is mechanically different from the front panels on these units. The functional and electrical similarity of the WJ-9605 to these FPUs allows the WJ-9605 to drive a number of

different equipment under a very flexible operational scenario. In order to fully take advantage of the capabilities of a device configured to operate with the FPU, it is important to gain a complete knowledge of the FPU I/O operations and its governing protocol before installation or operation. For general information on this subject, refer to the Front Panel Unit (FPU) Operator's Manual. For information that specifically addresses the WJ-9605's mechanical nature, refer to the following paragraphs. For purposes of the following discussion, it is important to recognize the difference between the generic term "FPU" and the mechanically specific term "WJ-9605".

2.2.3.1 Types of WJ-9605 I/O Operations

The WJ-9605 allows two types of I/O operations: device direct or IOC routed. Device direct operations occur when the WJ-9605 is interfaced with one or two devices via dedicated RS-232C interface links. See **Figure 2-3(A)**. IOC routed operations (**Figure 2-3(B)**) are those operations that occur when the WJ-9605 sends messages with attached addressing commands directly to an internal Remote Interface card or IOC card. The IOC card then routes the messages to the specified device. The selection of device direct or IOC routed operation is made by setting position 1 of DIP switch A1S1 on the Front Panel Controller card to the appropriate position (refer to **paragraph 2.2.4** for details).

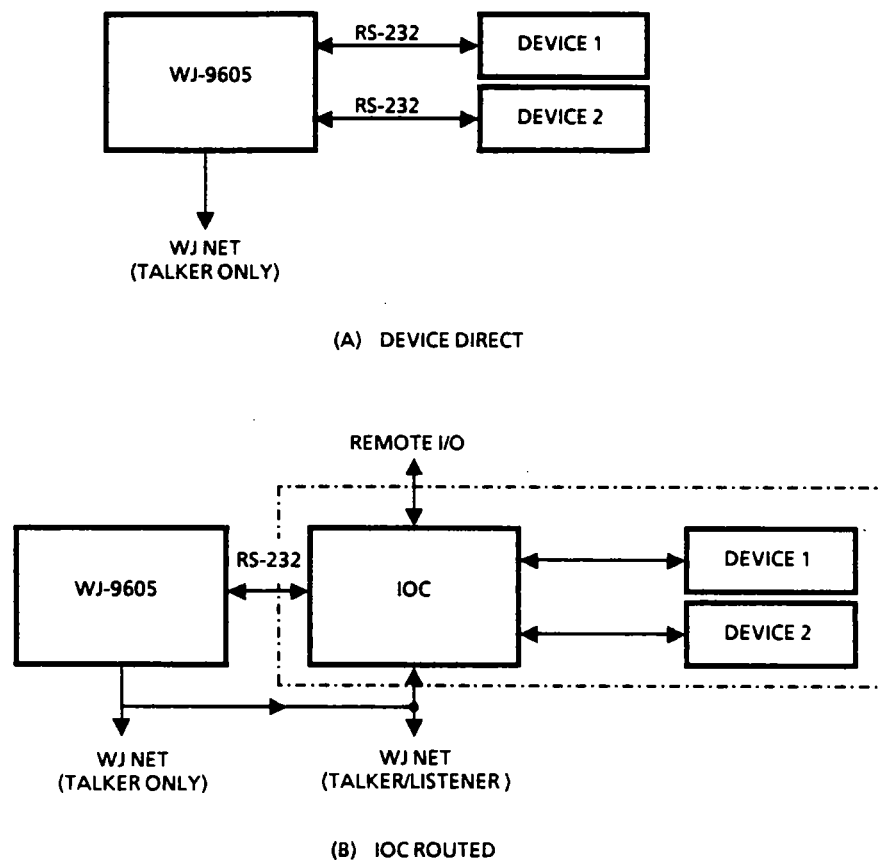


Figure 2-3. WJ-9605 Operational Configurations and WJ NET Operation

NOTE

In the WJ-8700 Dual VLF/HF Receiver manual the remote control circuit card is referred to as the "Remote Interface" card. In the WJ-9908 Equipment Frame manual and the WJ-9902 Equipment Frame manual, the designation is "Host Interface", while various other literature uses the designation "IOC". Despite the differences in terminology and minor circuit differences between equipment, the Remote Interface, Host Interface, and IOC cards all perform the same function.

Figure 2-3(B) shows an example of IOC routed operation in which the WJ-9605 is controlling the device via an IOC card. The WJ NET port present on the various types of equipment allows access to devices in other frames regardless of the type of operation. However, access to another frame is limited according to whether or not the equipment frame is configured with an IOC card.

In device-direct operation (**Figure 2-3(A)**), the WJ-9605 may control an external equipment frame via the WJ NET interface if the external frame has an IOC card installed. In this case, the WJ-9605 is merely substituting for the FPU on the external equipment, and "can talk" to the external equipment via the IOC card. However, since the local frame has no IOC card, the WJ NET port is one-way and no remote FPU can control the local equipment.

In IOC routed operation (**Figure 2-3(B)**), the WJ-9605 may talk to any external frame with an IOC card, just as in device direct operation. However, any external FPU may control equipment in the local equipment frame as well, and the WJ NET port is therefore two-way.

It should be noted that any FPU may control any external equipment frame with an IOC card, whether or not that frame also has an FPU installed, since the WJ NET interface is through the external frame's IOC card. In addition, any equipment frame can be controlled via the WJ NET by a suitable controller. See the instruction manual for the controlled equipment for further information.

Control of frame devices by a resident FPU is only a single example of an IOC routed operation. **Figure 2-4** shows three additional types of routed operations as follows:

- A WJ-9605 controls resident devices via the IOC card,
- A WJ-9605 acts as an external RS-485 Controller and interfaces with resident devices via the IOC card,
- External RS-232C or IEEE-488 Controller interfaces with resident devices via the IOC card.

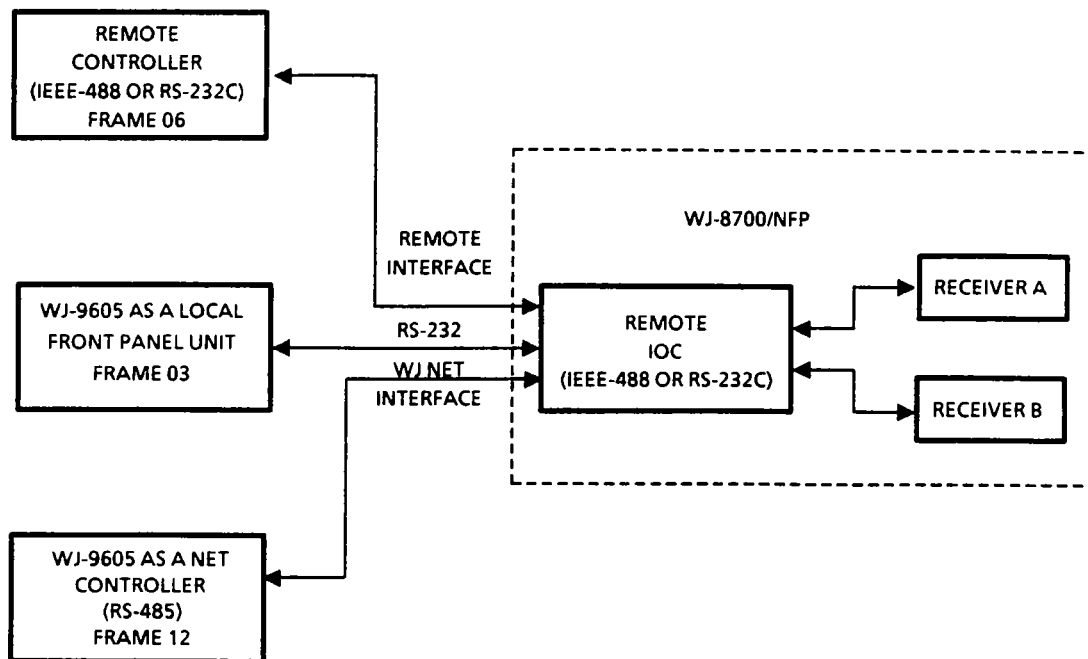


Figure 2-4. Example of IOC Routed Operations

2.2.3.2 Token Exchange Protocol

All three of the IOC routed interfaces shown in **Figure 2-4** could be configured simultaneously; however, only one of the three possible controlling devices could have control of a resident device at any given time. A governing protocol determines the order of precedence that establishes how each controlling device gains or relinquishes control of a device.

As an alternative to a hardware "remote-local" control, a "token exchange" protocol is utilized. This concept is based on the pre-assignment of token numbers to all controllers capable of interfacing with and controlling a device, whether locally from a WJ-9605, or remotely via a remote interface (IEEE-488 or RS-232C) or the WJ NET (from an external Front Panel).

2.2.3.2.1 **Front Panel Token Operation**

The following steps describe the operation of the token concept when control is attempted from an FPU, either local or remote (interfaced via the WJ NET).

1. A Front Panel Unit (FPU) attempts to take control of Receiver A by sending a token request. In the example shown in **Figure 2-4**, the local FPU would request a token of 03, which is the local FPU's frame number.

2. If Receiver A is in use by an external controller or external FPU, it will respond to the token request with "TOKEN XX", where XX is the token assigned to the controlling device. This informs the local FPU that Receiver A is being controlled by another device, and will cause a "DEV. CNTRLED BY XX mntr take abort" message to appear on the local FPU display. The local FPU is therefore prevented from taking control of Receiver A unless the operator uses the "take" selection.
3. If Receiver A is not in use, it will respond to the token request with "TOKEN 03," which informs the local FPU that it now has control of Receiver A. Note that Receiver B is available for control by either the remote front panel or one of the two external controllers shown in Figure 2-4.
4. When the local FPU is returned to the SELECT menu, the FPU software will automatically return the token to Receiver A, thereby making it available for use by another FPU.

2.2.3.2.2 Remote Controller Token Operation

Token operation using a remote controller, whether via the remote interface or the WJ NET, is accomplished in the same manner as operation using a FPU. However, the following differences apply:

1. When operating from a remote controller, the controlling software must begin with a token request to capture control of the receiver, and must conclude with a token return to release the receiver for use by another controller or FPU.
2. Unlike FPU operation, even if the receiver responds to the controller's token request by indicating that it is already being controlled by another controller or FPU, the requesting controller may still send commands to the receiver. The receiver will then process all commands received, regardless of source. There is no "lockout" to prevent multiple control (as exists in the FPU software) unless the controller software is written to include such a feature.

2.2.3.2.3 Token Assignment

When operating units from a local FPU or remote FPU (via the WJ NET), the token will always be the frame number of the frame in which the FPU resides, and will be a number between 01 and 30. When using a remote controller, the token may be any number between 01 and 99 assigned by the user. However, the following convention is recommended for token assignments using:

FPU tokens:	01 to 30
Controller tokens:	31 to 60
Reserved tokens:	61 to 99

2.2.4 FPU HARDWARE CONFIGURATION

The FPU contains an 8-section DIP switch, A1S1, which allows selection of I/O operation, baud rates, and audio routing. **Figure 2-5** shows the location of this DIP switch which is part of the Front Panel Controller Card (A1). This DIP switch is factory-set for each specific equipment configuration, but may be changed in the field if required. **Table 2-2** lists the switch sections and the available settings for each. The following paragraphs define the functions controlled by the settings of this switch.

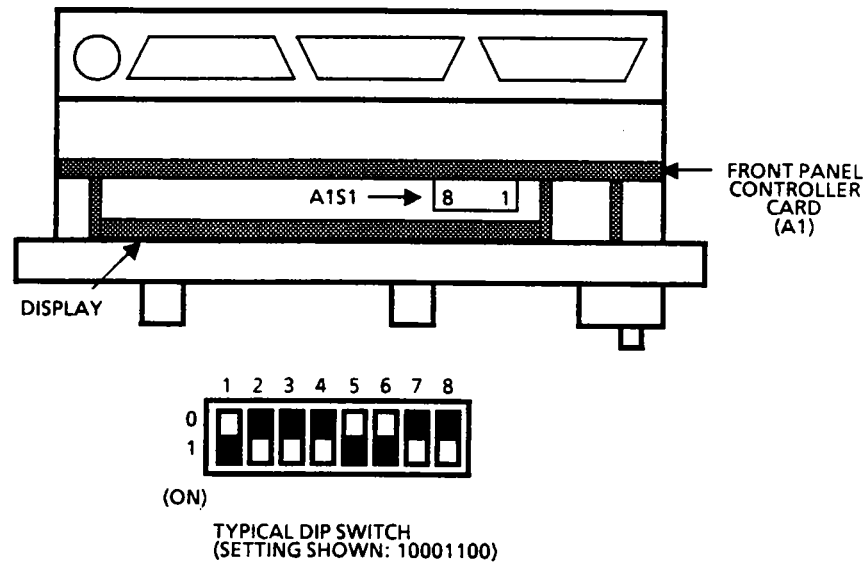


Figure 2-5. Top View of FPU Showing Location of DIP Switch A1S1 (Cover Removed)

2.2.4.1 I/O Protocol

A1S1, section 1 sets the I/O protocol by which the WJ-9605 interfaces with local devices. Refer to **paragraph 2.2.3** for a description.

2.2.4.2 Monophonic Direct Audio

A1S1, section 2 sets the Monophonic Direct Audio according to the device controlled by the WJ-9605. See **Table 2-2**. Monophonic direct audio is the operator-selected channel from the device being controlled by the WJ-9605. The WJ-9605 headphone jack can provide simultaneous two-channel (stereo) audio from a source such as a WJ-8700 Receiver in ISB detection mode. However, the audio from single channel sources such as the WJ-8607 Receiver are only present on one earphone. The WJ-9605's DIP switch A1S1 provides a means of routing single-channel audio to both earphones.

As shown in **Table 2-2**, A1S1 section 2 has two possible settings. The 0 position is used with the WJ-8700 and WJ-9401 which are two-channel audio source. (Note: the WJ-8700 routes monophonic audio to both channels.) Position 1 is for use with the WJ-9902 Equipment Frame and the WJ-9908 Equipment Frame, both of which house the WJ-8607 Receiver (single-channel audio).

Table 2-2. FPU DIP Switch A1S1 Setting

Section	Function and Settings
1	FPU Protocol: 0 = Device direct 1 = IOC routed
2	Mono direct audio: 0 = WJ-8700 1 = WJ-9902, WJ-9908, WJ-8607
3	SIO1 Baud rate 0 bit (see Note 1)
4	SIO1 Baud rate 1 bit (see Note 1)
5	SIO2 Baud rate 0 bit (see Notes 1, 2)
6	SIO2 Baud rate 1 bit (see Notes 1, 2)
7	Local audio: 0 = Direct FPU audio (default) 1 = SAO-controlled
8	NET SAO: 0 = No SAO commands to NET (see Note 3) 1 = Use SAO commands on NET (default) (see Note 3)

Note 1:	<u>Bit 1</u>	<u>Bit 0</u>	<u>Baud Rate</u>
	0	0	1200
	0	1	4800
	1	0	9600 (default)
	1	1	19200

Note 2: SIO2 setting not applicable if protocol is set to IOC routed.

Note 3: The WJ-9605 must be configured with a frame address when operating on the WJ NET (see **paragraph 2.5.4.4**).

2.2.4.3 Baud Rate, SIO1 and SIO2

The communications baud rate for the two Device Direct RS-232C (Serial Input/Output) ports from the WJ-9605 or the IOC in the controlled device is set by A1S1, sections 3, 4, 5, and 6. If the FPU operations protocol is IOC routed, then the setting of A1S1 sections 5 and 6 is disregarded. The selected baud rate must match the connected interface, either an IOC or individual receiver. See **Table 2-2**.

2.2.4.4 Local Audio

The setting of A1S1, section 7 determines how the local device audio is routed to the WJ-9605. When the WJ-9605 is used as a device direct controller with the WJ-8700 Receiver, WJ-9401 Demodulator, or WJ-9902 Equipment Frame, section 7 of A1S1 should be set to 0. When the WJ-9605 is used with equipment containing a host interface, or with a WJ-9908 Equipment Frame that is configured for local SAO operation, section 7 of A1S1 should be set to 1.

INSTALLATION AND OPERATION

WJ-9605 FRONT PANEL UNIT

2.2.4.5 **NET SAO**

The setting of A1S1, section 8 enables or disables the FPU's ability to send SAO (Selected Audio Output) commands via the WJ NET. If the system control software utilizes the SAO feature, this switch should be set to 0.

2.2.5 **POWER REQUIREMENTS**

The WJ-9605 is powered from a +9 to +14 Vdc source. The power input may be connected in either of two ways: to the three-pin POWER connector (J1) if in a device direct equipment setup (see paragraphs 2.2.6.1 and 2.2.6.2), or to the RCV A connector (J3) if in a IOC routed equipment setup (see paragraphs 2.2.6.3 thru 2.2.6.5). In an IOC routed setup, the dc power input for the WJ-9605 is input at pin 1 of connector J3. The unit requires approximately 5 watts.

A 1 amp microfuse (A3F1) is provided for overcurrent protection from the dc power input at either J1 or J3. This fuse may be accessed by removing its accessing cap which is located on the rear panel ledge between the NET and RCV A connectors (see Figure 2-2).

To remove the fuse, finger-grasp it and pull straight out of the access hole. If the fuse is blown, replace it with a Tracor Inc. P/N 273001 microfuse. To re-install a fuse, align its pins with the pin sockets in the access hole and gently press the fuse in place until seated. Replace the access cap.

2.2.6 **EQUIPMENT CONNECTIONS**

As discussed in the I/O operations (paragraph 2.2.3), the WJ-9605, may be connected and interfaced with several different equipments in various ways. These are:

- Connected to two stand-alone WJ-8607 Receivers (device direct operation).
- Connected to two WJ-8607 Receivers installed in a WJ-9902 Equipment Frame (device direct).
- Connected to an IOC installed in a WJ-9902 Equipment Frame to control up to two installed WJ-8607 Receivers (IOC routed).
- Connected to an IOC installed in a WJ-9908 Equipment Frame to control up to eight installed WJ-8607 Receivers (IOC routed).
- Connected to a WJ-8700 Dual VLF/HF Receiver with an IOC (IOC routed) and No Front Panel Option.

These equipment setups are further described in the following paragraphs.

2.2.6.1 **Equipment Setup with Two Stand-Alone WJ-8607 Receivers**

This setup is a device direct type of operation. Both receivers must be set up for RS-232C operation. Figure 2-6 shows the equipment connections required. The RCV A connector (J3) of the WJ-9605 is connected to the SERIAL INTFC and AUDIO connectors of the WJ-8607 designated as receiver A. The RCV B connector (J4) of the WJ-9605 is connected to the SERIAL INTFC and AUDIO connectors of the WJ-8607 designated as receiver B. The POWER

WJ-9605 FRONT PANEL UNIT

INSTALLATION AND OPERATION

connector (J1) of the WJ-9605 is connected to a nominal +12 Vdc power source. The NET connector (J2) may be connected to the WJ Net bus interface.

In this setup the sections of the WJ-9605's DIP switch A1S1 should be set to the following positions (see paragraph 2.2.4):

<u>Section:</u>	<u>Set to:</u>
1	0
2	1
3*	0
4*	1
5*	0
6*	1
7	0
8	0 or 1

*Assumes WJ-8607 is set for 9600 baud rate; otherwise set the same as WJ-8607.

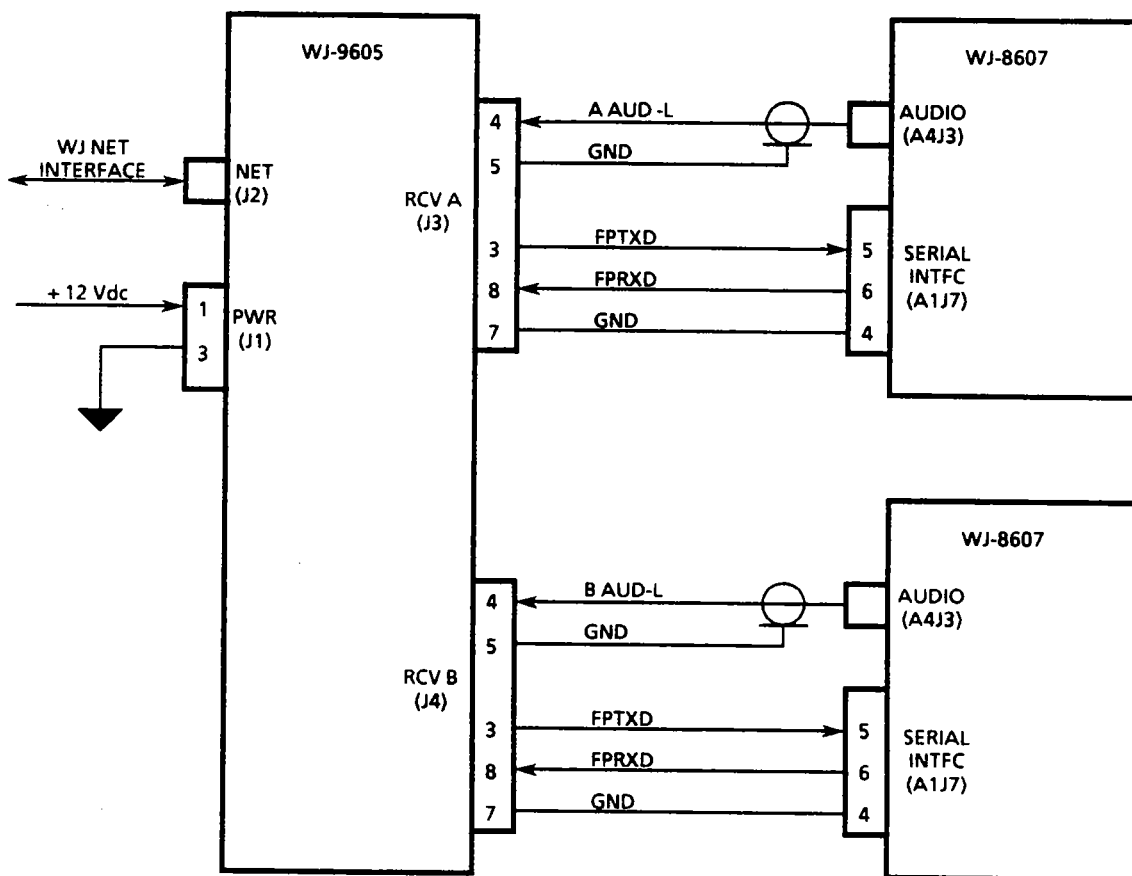


Figure 2-6. Equipment Setup with Two Stand-Alone WJ-8607 Receivers

2.2.6.2 Equipment Setup with Two WJ-8607 Receivers Installed In a WJ-9902/NFP Equipment Frame Without a Host Interface Option

This setup is a device direct type of operation that only requires that the WJ-8607 receivers installed in the equipment frame are set up for RS-232C operation. Figure 2-7 shows the equipment connections required. The RCV A connector (J3) of the WJ-9605 is connected to the RCVR A SER I/O and AUD connectors of the WJ-9902 Equipment Frame. The RCV B connector (J4) of the WJ-9605 is connected to the RCVR B SER I/O and AUD connectors of the equipment frame. The POWER connector (J1) of the WJ-9605 is connected to a +12 Vdc power source. The NET connector (J2) may be connected to the WJ Net bus interface.

In this setup the sections of the the WJ-9605's DIP switch A1S1 should be set to the following positions (see paragraph 2.2.4):

<u>Section:</u>	<u>Set to:</u>
1	0
2	1
3*	0
4*	1
5*	0
6*	1
7	0
8	0 or 1

*Assumes WJ-8607 is set for 9600 baud rate; otherwise set the same as WJ-8607.

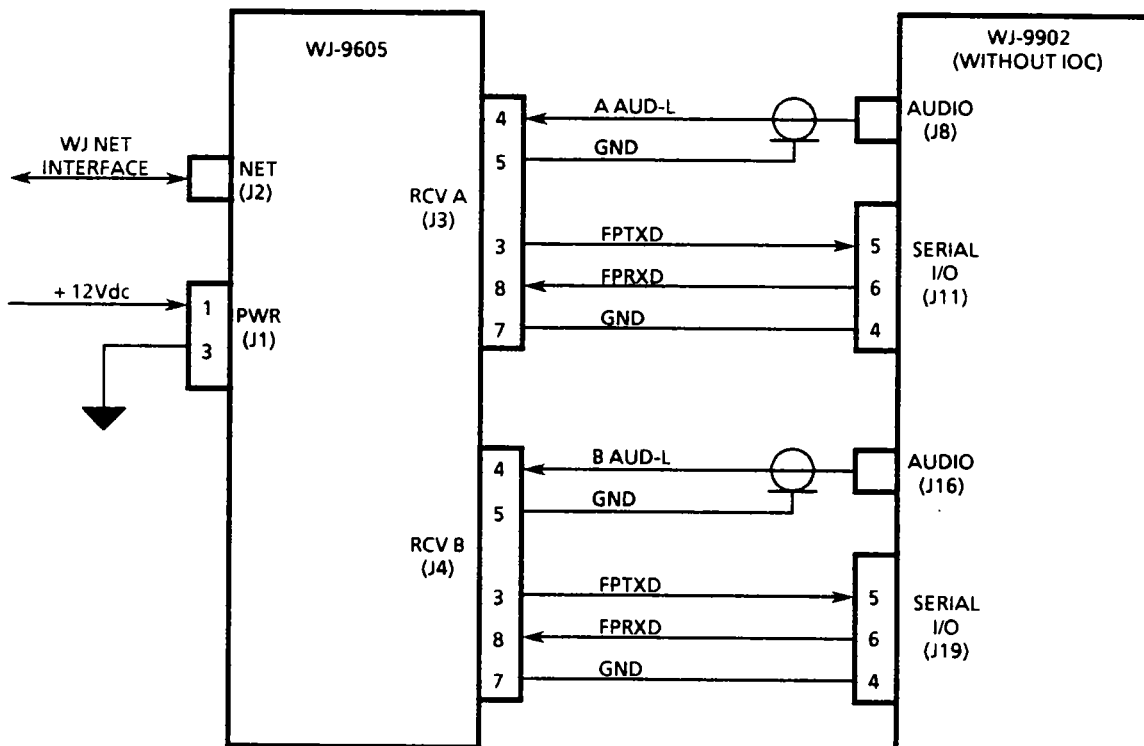


Figure 2-7. Equipment Setup with Two WJ-8607 Receivers Installed in a WJ-9902/NFP Equipment Frame without a Host Interface Option

2.2.6.3 Equipment Setup with Two WJ-8607 Receivers Installed in a WJ-9902/NFP Equipment Frame Equipped with a Host Interface Option

This setup is an IOC routed type of operation that requires that the WJ-9902 Equipment Frame be equipped with a Host Interface option. Figure 2-8 shows the equipment connections required. In this setup, the RCV A connector (J3) of the WJ-9605 is connected to the FRONT PANEL INTERFACE connector on the front panel of the equipment frame. This connection provides the interface between the WJ-9605 and both receivers, via the IOC. It also provides power to the WJ-9605 from the IOC. Therefore, no connection should be made to the POWER connector (J1) of the WJ-9605. The NET connector (J2) may be connected to the WJ Net bus interface.

In this setup the sections of the WJ-9605's DIP switch A1S1 should be set to the following positions (see paragraph 2.2.4):

<u>Section:</u>	<u>Set to:</u>
1	1
2	1
3*	0
4*	1
5-6	N/A
7	0
8	0 or 1

*Assumes IOC is set for 9600 baud rate; otherwise set the same as IOC.

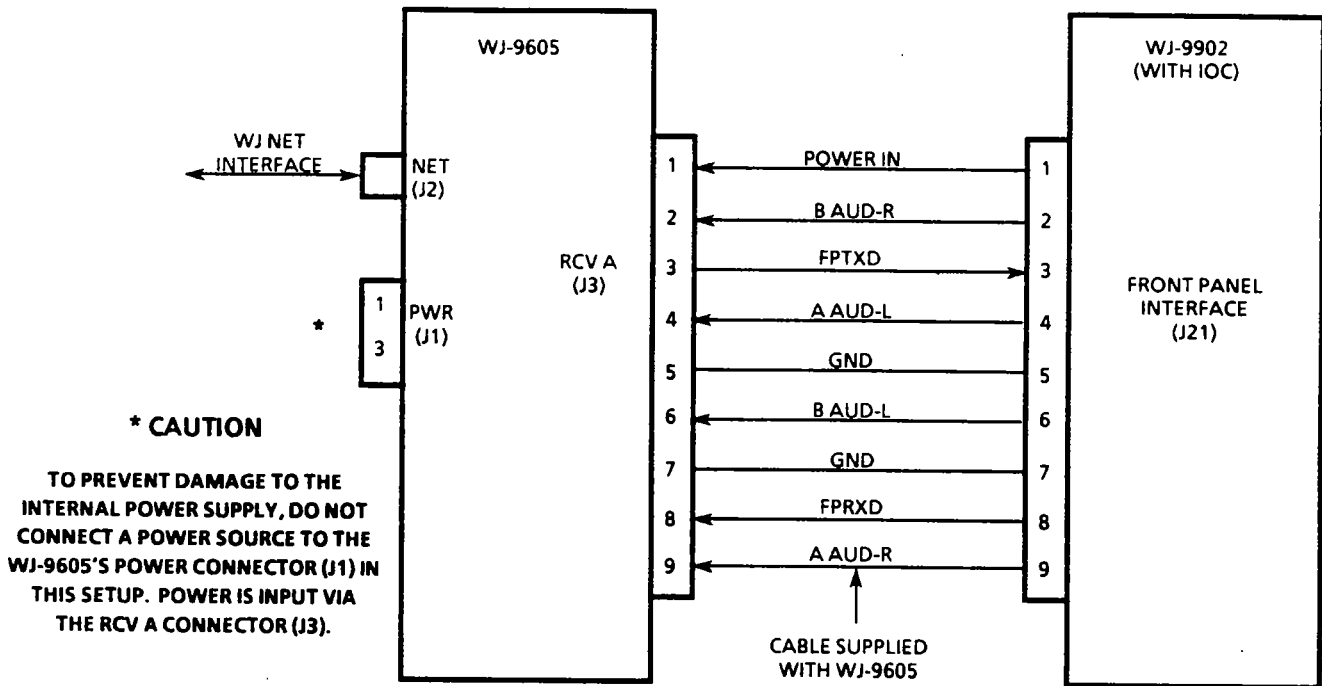


Figure 2-8. Equipment Setup with Two WJ-8607 Receivers Installed in a WJ-9902/NFP Equipment Frame with a Host Interface Option

2.2.6.4 Equipment Setup with the WJ-9908 Equipment Frame

This setup is an IOC routed type of operation that requires that the WJ-9908 Equipment Frame be equipped with a Host Interface option. Figure 2-9 shows the equipment connections required. In this setup, the RCV A connector (J3) of the WJ-9605 is connected to the FRONT PANEL INTERFACE connector on the front panel of the equipment frame. This connection provides the interface between the WJ-9605 and up to eight receivers in the frame, via the IOC. It also provides power to the WJ-9605 from the IOC. Therefore, no connection should be made to the POWER connector (J1) of the WJ-9605. The NET connector (J2) may be connected to the WJ Net bus interface.

In this setup the sections of the WJ-9605's DIP switch A1S1 should be set to the following positions (see paragraph 2.2.4):

<u>Section:</u>	<u>Set to:</u>
1	1
2	1
3*	0
4*	1
5-6	N/A
7	0
8	0 or 1

*Assumes IOC is set for 9600 baud rate; otherwise set the same as IOC.

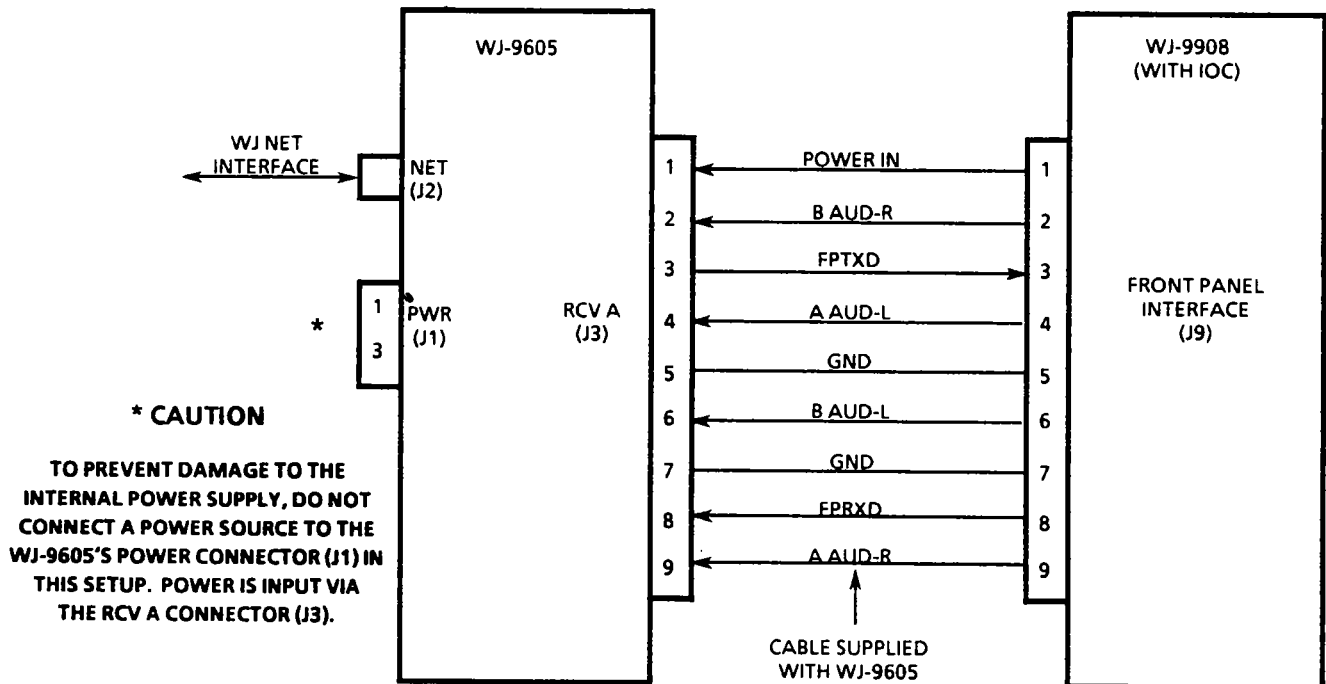


Figure 2-9. Equipment Setup with the WJ-9908 Equipment Frame

2.2.6.5 Equipment Setup with the WJ-8700 VLF/HF Receiver

This setup requires that the WJ-8700 Receiver be equipped with both the No Front Panel option and a Host Interface option. Figure 2-10 shows the equipment connections required. In this setup, the RCV A connector (J3) of the WJ-9605 is connected to the FRONT PANEL INTERFACE connector on the front panel of the receiver. This connection provides the interface between the WJ-9605 and both receivers in the WJ-8700. This connection provides the power to the WJ-9605 from the IOC. Therefore, no connection should be made to the POWER connector (J1) of the WJ-9605. The NET connector (J2) may be connected to the WJ Net bus interface.

In this setup the sections of the WJ-9605's DIP switch A1S1 should be set to the following positions (see paragraph 2.2.4):

Section:	Set to:
1	1
2	0
3*	0
4*	1
5-6	N/A
7	0
8	0 or 1

*Assumes IOC is set for 9600 baud rate; otherwise set the same as IOC.

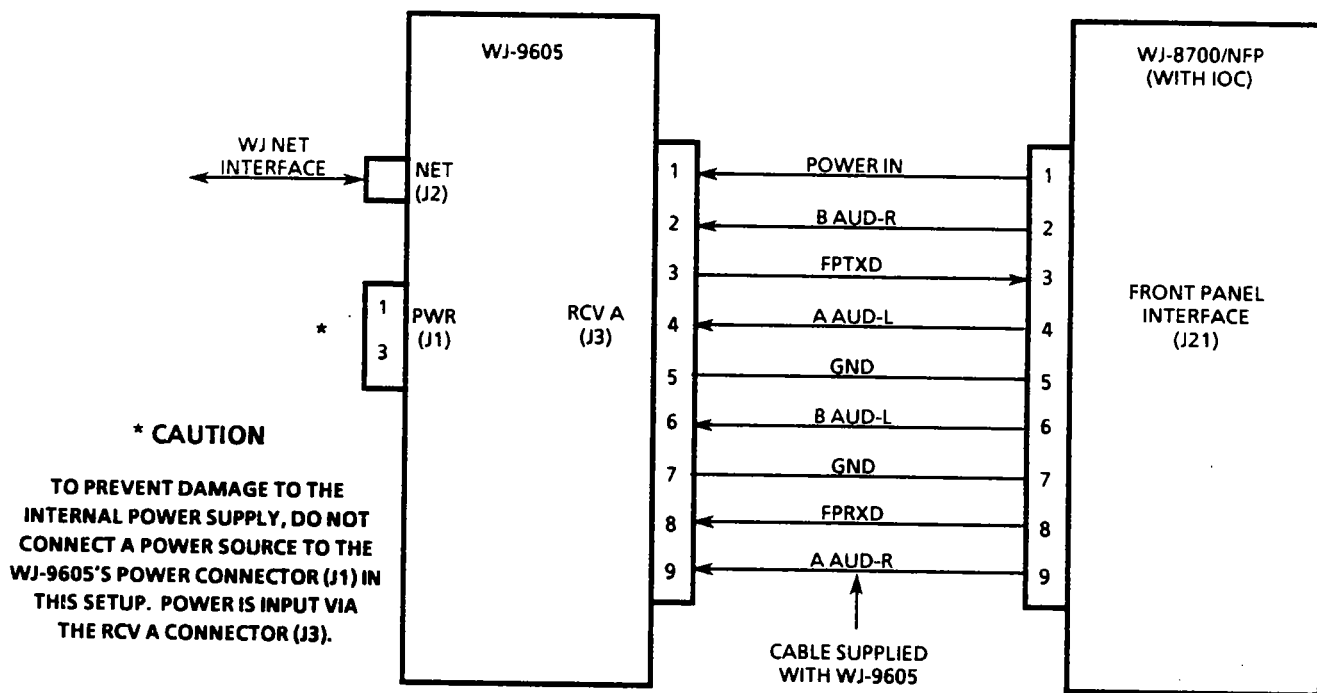


Figure 2-10. Equipment Setup with the WJ-8700 VLF/HF Receiver

2.3 EQUIPMENT MALFUNCTIONS

All units are thoroughly inspected and factory adjusted for optimum performance prior to shipment. If an apparent malfunction is encountered after installation, verify that the correct input signals are present at the proper connectors. Prior to taking any corrective maintenance action or breaking any seals, contact your BAE SYSTEMS representative, or BAE SYSTEMS service department to prevent the possibility of voiding the terms of the warranty. Contact BAE SYSTEMS via mail, wire, or cable at:

BAE SYSTEMS
Customer Service Department
700 Quince Orchard Road
Gaithersburg, Maryland 20878-1794

Toll Call: (301) 948-7550 X7201
TELEX: 89-8402
TWX: 710-828-0546
TELEFAX: (301) 921-9479
EASYLINK: 62928185

If reshipment is necessary, follow the instructions in the following paragraph (Preparation for Reshipment or Storage). Do not return the equipment until a Return for Maintenance Authorization (RMA) number has been obtained from BAE SYSTEMS Customer Service Department. See Item 10 in the **General Terms and Conditions of Sale** paper (Form # WJ-151-X) for more information on equipment returns.

2.4 PREPARATION FOR RESHIPMENT OR STORAGE

If a unit must be prepared for reshipment, the packaging method should follow the pattern established in the original shipment. Use the best packing materials available to protect the unit during reshipment or storage. When possible, use the original packing container and cushioning materials. If the original packing materials are not available, use the following procedure:

1. Wrap the unit in sturdy paper or plastic.
2. Place the wrapped unit in a strong shipping container and place a layer of shock absorbing material (3/4-inch minimum thickness) around all sides of the unit to provide a firm cushion and to prevent movement inside the container.
3. If shipping the unit for service, fill out all information on the 5x6 inch PRODUCT DISCREPANCY REPORT Card (Form # WJC-QA55-0) that was provided with the original shipment. Also ensure that the Return for Maintenance Authorization (RMA) number is recorded on the card. (See **paragraph 2.5** for details on obtaining this number). If this card is not available, attach a tag to the unit containing the following information:
 - a. Return for Maintenance Authorization (RMA) number.
 - b. The Type/Model number of the equipment.
 - c. Serial number.
 - d. Date received.
 - e. Date placed in service.
 - f. Date of failure.
 - g. Warranty adjustment requested, yes/no.

- h. A brief description of the discrepant conditions.
 - i. Customer name and return address.
 - j. Original Purchase Order/Contract number.
4. Thoroughly seal the shipping container and mark it **FRAGILE**.
5. Ship to:

BAE SYSTEMS
Advanced Systems
700 Quince Orchard Road
Gaithersburg, Maryland 20878-1794
U.S.A.

When storing the equipment for extended periods, follow the above packing instructions to prevent damage to the equipment. Store in a dark place. The optimal limits for storage environment are:

Temperature: 25° C ±10° C
Humidity: less than 65%

2.5 **OPERATION**

The WJ-9605 Front Panel Unit is capable of controlling the WJ-8700 VLF/HF Receiver and WJ-8607 UHF/VHF Receivers. The WJ-8607's may be stand-alone units or may be installed in the WJ-9902 or WJ-9908 Equipment Frames.

If controlling the WJ-8700 Receiver, also refer to the WJ-8700 Installation and Operation Manual and to **Section II** in the Front Panel Unit Operators Manual. Section II provides local operations unique to FPU control of the WJ-8700.

Refer to **Section III** in the Front Panel Unit Operators Manual for details on local operations unique to FPU control of the WJ-8607, and to the WJ-8607 Intermediate Maintenance Manual for general information on the receiver. If the WJ-8607 is installed in a WJ-9902 Equipment Frame, also refer to the WJ-9902 Instruction Manual. Accordingly, if the receiver is installed in the WJ-9908 Equipment Frame, refer to the WJ-9908 Instruction Manual.

The following paragraphs provide general details on operations that are identical when controlling either type receiver from an FPU.

2.5.1 **CONTROLS AND INDICATORS**

All controls for the WJ-9605 are shown in **Figure 2-11**. Toggle switches are provided for turning on and off the power and the backlighting for the LCD display. Control knobs are available to set the audio output level and manually tune the equipment being controlled, with a third knob for control of variable parameters as explained in the appropriate equipment sections of this manual. The LCD display provides the status indicators for all equipment functions; there are no discrete indicator lamps or other displays provided. The following paragraphs explain in detail the function of each control and indicator.

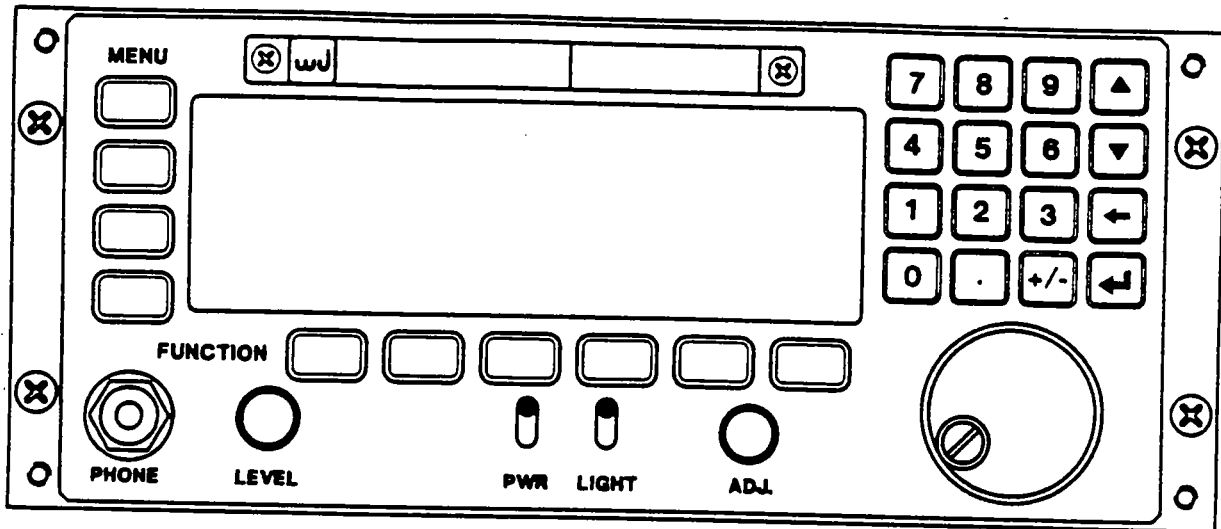


Figure 2-11. WJ-9605 Controls and Indicators

2.5.1.1 **PWR Switch, S1** - This two-position, front panel mounted toggle switch turns the primary power on when in the "up" position.

2.5.1.2 **LIGHT Switch, S3** - This two-position, front panel mounted toggle switch energizes backlighting for the LCD front panel display and keyboard when set to the "up" position.

2.5.1.3 **Parameter ADJ. Control, A1A1S2** - This switch is a 24-position, front panel mounted encoded rotary switch. It mimics the use of the UP (↑) and DOWN (↓) keys, and is utilized to control variable-parameter subfunctions under software control, such as IF bandwidth select, COR level, etc. Although it can be turned continuously in either direction, software will not "roll over" the control when the end of a subfunction parameter range is reached.

2.5.1.4 **LEVEL Control, A1R1 and A1R2** - Two 270-degree rotation potentiometers, mechanically ganged together, form this front panel control which adjusts the left and right audio levels to the front panel PHONE jack.

2.5.1.5 **Tuning Wheel, A1U3** - This front panel mounted encoder with spinner knob can be turned continuously in either direction and is utilized to control frequency subfunctions. Software will not "roll over" the control when the end of a subfunction parameter range is reached; however, an error beep will be generated if enabled.

2.5.1.6 Keypad, A1U2 - This front panel mounted membrane keypad assembly includes: ten numeric (0-9) and six special function keys, all contained in a 4 X 4 square; four software-controlled **MENU** keys arranged vertically along the left side of the LCD display; and six software-controlled **FUNCTION** keys arranged horizontally below the LCD display. Specific keys are defined in paragraphs 2.5.1.6.1 through 2.5.1.6.6.

2.5.1.6.1 0 through 9, +/-, . Keys - These keys are used for numeric entry of parameters, or in response to an operator prompt. Subsequent entries after the first are appended to the right of the first entry. Additional entries beyond a full field (as defined for a given parameter) are ignored.

2.5.1.6.2 Up (↑) and Down (↓) Keys - These keys are used to increment or decrement an active parameter or operator prompt. The amount incremented or decremented is specified by the particular parameter, or is variable in the case of frequency. When one of these keys are pressed for longer than 0.5 seconds, the auto repeat function is enabled. The parameter continues to increment through its range until the key is released or until the parameter's limit is reached.

2.5.1.6.3 DELETE (←) Key - This key provides two modes of operation based on the keypad mode. In numeric entry mode (at least one key has been pressed) the **DELETE** key removes the last entry; if the first numeric entry is deleted, the front panel display reverts to non-numeric entry operation.

Pressing the **DELETE** key while in the non-numeric entry operation mode returns the front panel display to function selection operation.

2.5.1.6.4 ENTER (↵) Key - This key provides two modes of operation based on the keypad mode. In numeric entry mode, **ENTER** causes the entered numeric value to become the new subfunction value. If the entry is valid, the front panel display returns to the subfunction, numeric entry inactive mode; an invalid entry causes a display error prompt that requires operator action.

Pressing the **ENTER** key while in subfunction, numeric entry inactive mode, reverts the front panel display to the function select mode and causes any valid selections to be entered into the equipment.

2.5.1.6.5 MENU Keys - These four software-controlled keys enable the operator to select the appropriate menu, as indicated adjacent to each key on the LCD display, to allow the desired function(s) to be performed. **MENU** keys perform no actual device actions, and do not cause any equipment parameters to be changed.

2.5.1.6.6 FUNCTION Keys - The six software-controlled **FUNCTION** keys allow the equipment to be controlled by the operator. Functions available from any displayed menu are shown on the LCD display above the appropriate **FUNCTION** keys; where more than six functions are available, the far right function key is labeled **more** and allows access to additional functions.

Understanding the operation of the software-controlled **FUNCTION** keys requires two basic definitions related to the front panel display:

- (1) **Function** - As discussed in this manual, a function refers to an operation indicated on the front panel display above one of the horizontal **FUNCTION** keys; for example, **frq** (frequency), **ibw** (IF bandwidth), etc.
- (2) **Subfunction** - As discussed in this manual, a subfunction refers to an operation contained within a function, as indicated on the front panel display above one of the horizontal **FUNCTION** keys after the desired function has been selected. For example, pressing the **ibw** (IF bandwidth) key causes the display to indicate the six available bandwidths, one above each **FUNCTION** key. Selecting one of the bandwidths by pressing the appropriate key is therefore a subfunction action.

FUNCTION keys may have an immediate action, such as toggling a function which is a simple "ON-OFF" selection. They may also select a new group of subfunction keys (as described in the note above for **ibw** selection). Finally, **FUNCTION** keys for parameters which are not currently displayed access an operator prompt on the function key line.

When a **FUNCTION** key is pressed, the corresponding display readout of the selected function changes to uppercase letters, and is bracketed on either side by a black rectangle.

2.5.1.7 LCD Display - The 4.5" X 1.5" backlit LCD display provides visual indication of the status of all equipment functions, labels for the **MENU** and **FUNCTION** keys, and operator prompts or error messages.

2.5.2 MENU DISPLAYS

The FPU uses a data display technique which is best described as a system of nested menus. That is, the opening menu leads the operator to a series of functional menus, each of which allows access to various functions and subfunctions. The following paragraphs briefly describe the use of menu flow diagrams, and define common display parameters which are applicable to all operating menus. Sections of the Front Panel Unit Operators manual describe the operation of specific equipment using the nested menu concept.

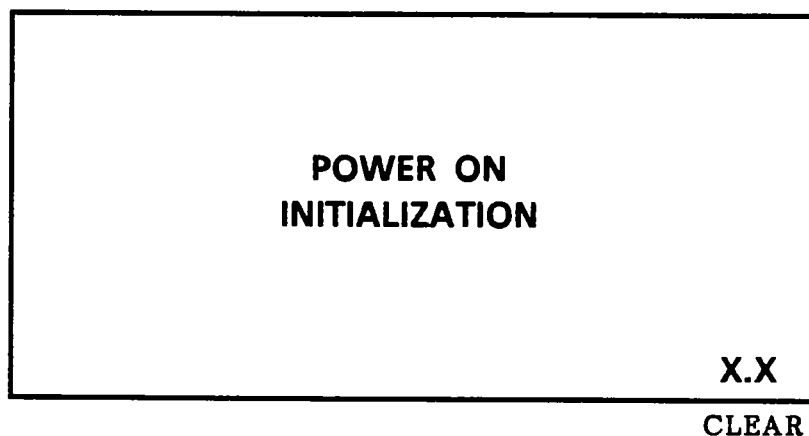
2.5.2.1 Menu Flow Diagrams

In order to more fully describe the operation of the FPU, a set of menu flow diagrams has been developed for each type of equipment capable of being operated under FPU control. These diagrams show the flow of operations from menu to function, and provide a road map to allow quick movement among the various displays. The diagrams for each type of equipment which may be controlled by the FPU are included within the respective sections of the Front Panel Unit Operators manual.

Figure 2-12 is an overall flow chart of menus. As shown in the figure, access to a particular function requires that the operator select the appropriate menu, using the **MENU** keys arranged vertically on the left side of the LCD display. This, in turn, causes the desired function to appear above one of the **FUNCTION** keys, which are arranged horizontally just below the LCD display. Subsequent selection of a **FUNCTION** key either toggles the desired parameter or causes the applicable subfunction(s) to appear on the display above the horizontal keys. Subfunctions are NOT identified on the menu flow diagrams.

Since there are more than four menus and six functions available, one of the **MENU** and/or **FUNCTION** keys may be labeled **more**. Pressing the **more** key allows access to additional menus, functions, and subfunctions, as appropriate.

Upon power-up, the WJ-9605 MRFP displays the following screen:



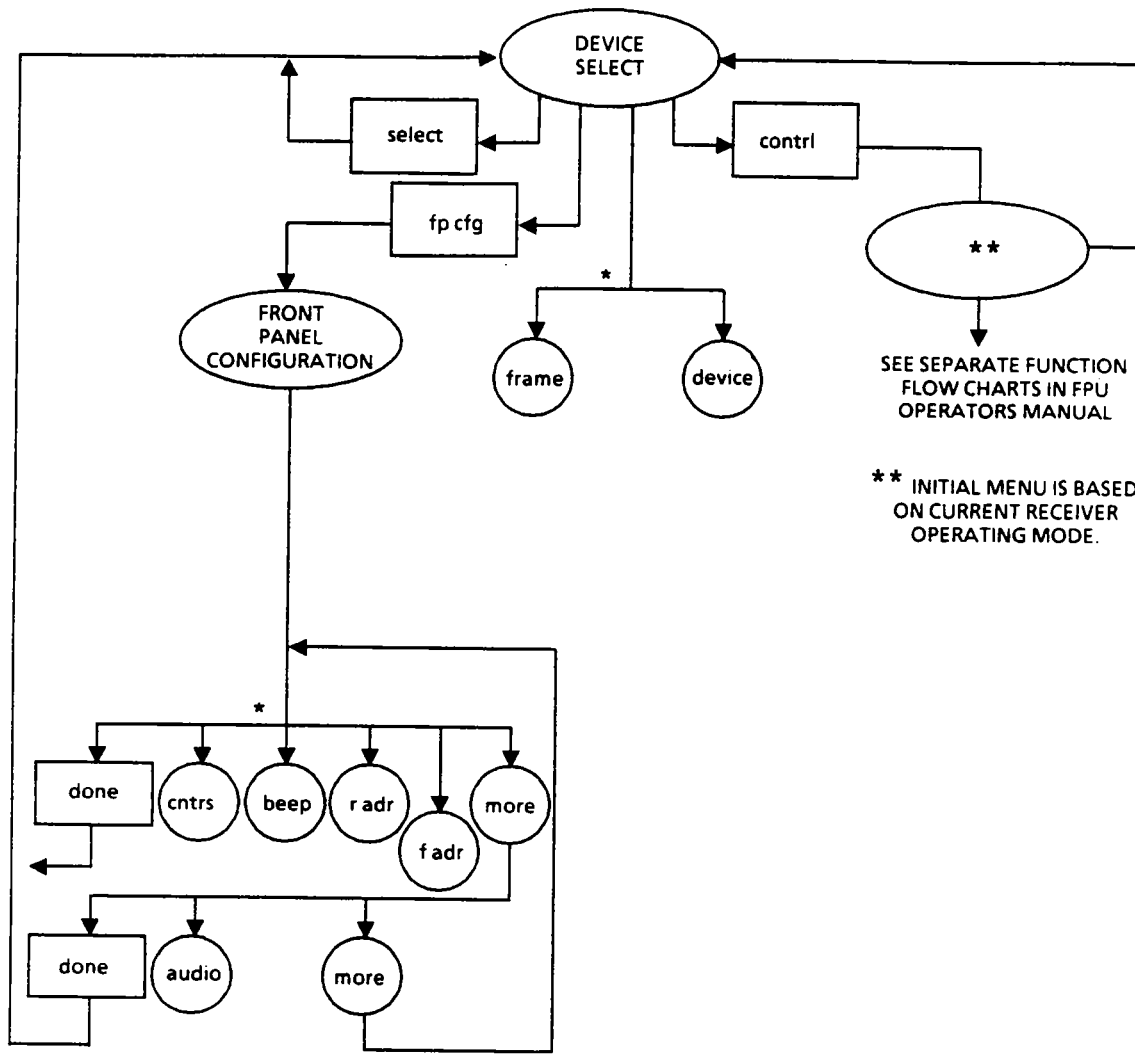
The X.X in the lower right-hand corner of the display indicates the front panel software version number. If the CLEAR key is pressed, it causes all of the battery backed front panel parameters to be reset to their default values. These parameters include contrast, beeper, audio, and the last controlled device and menu. The receiver parameters are unaffected.

2.5.2.2 Operating Menu


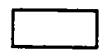

Figure 2-13 shows the general operating menu layout including definitions of the fields and indicators. The following paragraphs describe the three types of display cursors, and the signal strength and tuning indicators. For detailed descriptions of other displayed information, refer to the section of the Front Panel Unit Operators manual which covers FPU operation of the particular equipment in use.

2.5.2.2.1 Display Cursors

Three types of display cursors are used on the LCD display: an active parameter cursor, a tuning resolution cursor, and a numeric entry cursor. The active parameter cursor is used in conjunction with either of the other two cursors; however, the tuning resolution and numeric entry cursors are never active at the same time.



LEGEND:

-  = DISPLAYED MENU
-  = MENU SOFTKEY
-  = FUNCTION SOFTKEY

* SEE DESIRED FUNCTION DESCRIPTION FOR PARAMETER CHOICES AND SELECTION PROCEDURE.

Figure 2-12. Overall Flow Chart of Menus

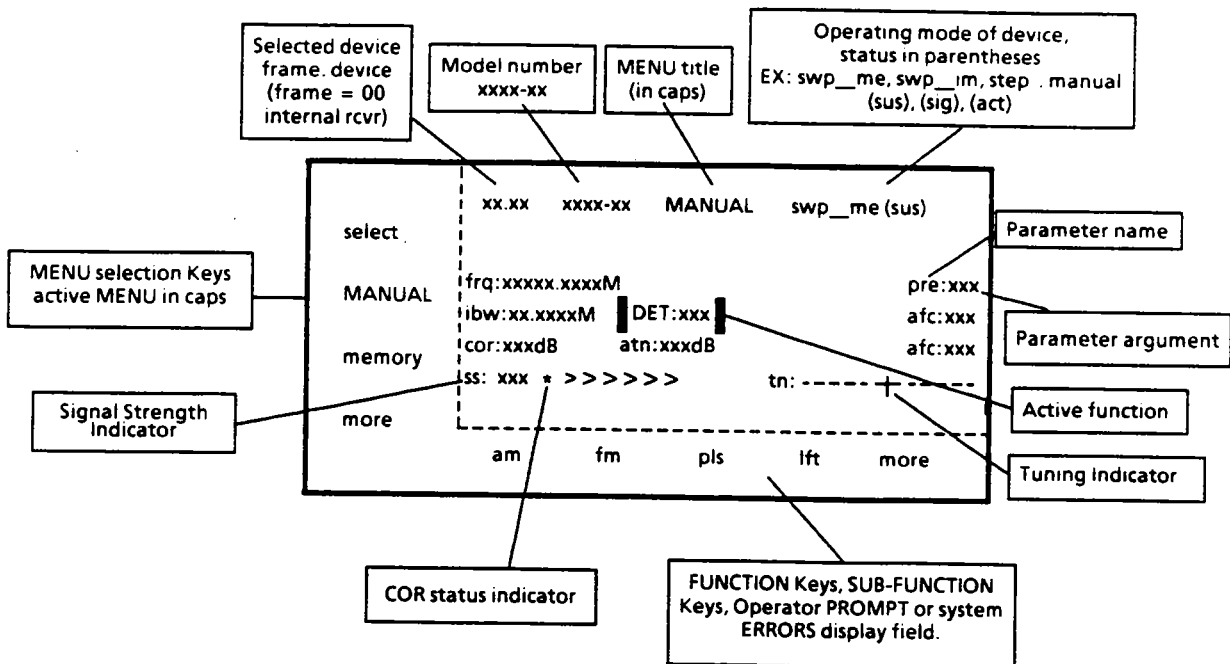


Figure 2-13. FPU Typical Operating Menu

2.5.2.2.1.1 **Active Parameter Cursor**

The active parameter cursor consists of a solid box on each end of the currently active parameter; that is, the parameter selected by a **FUNCTION** key for immediate control or alteration. This cursor is accompanied by a change from lower case to upper case letters of the parameter name, and is present any time the parameter is active in either the numeric or non-numeric mode.

2.5.2.2.1.2 **Tuning Resolution Cursor**

The tuning resolution cursor indicates the current tuning resolution for a frequency parameter. It consists of a blinking underline beneath the most significant digit of the tuning rate. This cursor is present any time the tuning wheel is active (refer to **paragraph 2.5.1.5** for a description of tuning wheel operation).

2.5.2.2.1.3 **Numeric Entry Cursor**

The numeric entry cursor highlights the current active numeric entry field by causing a solid block to blink over the last entered numeric character. This cursor is only present when the display is in the active numeric entry mode.

2.5.2.2.2 **Signal Strength Indicator**

The Signal Strength indicator, designated on the Operating Menu by **ss**, indicates the strength of the received signal in dBm. The row of right-pointing arrows may be used as an analog "peaking" indicator, since the more arrows present, the stronger the signal.

Between the numerical signal strength readout and the right-pointing arrows, an asterisk will appear if the COR is active and the signal level is sufficient to cause it to trip.

When the AGC is turned off, a signal strength too low to provide linear AM demodulation will cause the right-pointing arrows to be replaced with the word "underload." If the signal strength is too high, the word "overload" will appear.

In the event that the receiver is unable to acquire signal strength because of an error, active sweep, or step operation, the SS field will be blank.

2.5.2.2.3 Tuning Indicator

The Tuning Indicator, designated on the operating menu by **tn**, is only active in AM and FM modes of operation and indicates the relative location of the signal within the selected IF passband. The left and right edges of the tuning indicator bar represent 70% below or above the passband center frequency, respectively.

2.5.3 GETTING STARTED — THE DEVICE SELECT MENU

The initial or opening menu is the **DEVICE SELECT** menu, which is shown functionally within **Figure 2-12**. This menu allows the operator to configure front panel operations, select control of the connected receivers, or select control of external frames and devices connected together via the WJ NET.

The following paragraphs describe the functions available, and their means of selection, from the **DEVICE SELECT** menu.

2.5.3.1 Accessing the Front Panel Configuration Menu (fp cfg KEY)

From the opening **DEVICE SELECT** menu, the operator may enter the Front Panel Configuration Menu (refer to **paragraph 2.5.4**) by pressing the **fp cfg** function key.

2.5.3.2 The frame Function

Pressing the **frame** function key on the **DEVICE SELECT** menu allows selection of either a local frame or external frames. The "frame" readout on the display changes to all capital letters, and the word "FRAME" is bracketed. As frames are selected, the "frame" field indicates the model number of the selected device. If the local frame is desired, press the **local** subfunction key. If it is desired to control an external frame on the WJ NET, enter the desired frame address (1 to 30) using the numeric keypad. After making the desired selection, press the **ENTER** key.

NOTE

The local devices may be accessed over the NET if the frame number selected is the same as the frame address on the front panel configuration menu.

2.5.3.3 The device Function

Pressing the device function key on the **DEVICE SELECT** menu allows selection of either local or external devices to be controlled, depending on the frame selection. External devices are controlled over the WJ NET. The "device" readout on the display changes to all capital letters, and the word "DEVICE" is bracketed. As devices are selected, the "model" field indicates the model number of the selected device.

Subfunction labels **dev1** and **dev2**, which represent receivers A and B in the selected frame, appears above the two left-most **FUNCTION** keys. Press **dev1** or **dev2** to select a receiver in the frame, or enter a device address (1 to 30) using the numeric keypad to select a device in the frame. The "DEVICE" readout on the display reflects the address of the device selected. After making the desired selection, press the **ENTER** key.

NOTE

Attempting to select a device not installed in the selected frame results in a "NO DEVICE" message in the 'model' field of the display.

2.5.3.4 Gaining Access to All Other Device Functions (ctrl KEY)

Pressing the **ctrl** function key on the opening **DEVICE SELECT** menu allows entry to the **DEVICE** menus. These menus allow access to all other functions of the device. Refer to the appropriate section in the Front Panel Unit Operators manual for details on using the **DEVICE** menus for a particular device.

2.5.4 **CONFIGURING THE FRONT PANEL**

The **FRONT PANEL CONFIGURATION** menu, which is functionally represented within **Figure 2-12**, allows operator control of the presentation of information on the display. It is selected by pressing the **fp cfg** menu key.

2.5.4.1 The Display Contrast Control (entrs)

The **entrs** key adjusts the contrast of the front panel display over the relative range of 0 to 20. Press the **entrs** key on the **FRONT PANEL CONFIGURATION** menu and select the desired contrast using the preset subfunction values, the parameter adjust knob, the numeric keypad, or the **UP/DOWN** arrow keys. If the numeric keypad is used, press **ENTER** to enter the value. This parameter is retained in battery backed-up memory.

2.5.4.2 Front Panel Feedback Tone Control (beep)

The **beep** key function on the **FRONT PANEL CONFIGURATION** menu provides operator control of the front panel feedback tones. The "off" subfunction renders the beeper inactive. The "key" subfunction causes the beeper to sound a short, high tone on valid key presses and a longer low tone on errors. The "error" subfunction causes the beeper to sound only the error tone.

To select the desired beeper condition, press the appropriate subfunction key followed by the **ENTER** key. This parameter is retained in battery backed-up memory.

2.5.4.3 Selecting the Remote Address (r adr)

The remote address (**r adr**) parameter on the **FRONT PANEL CONFIGURATION** menu allows selection of the installed Remote Interface address. This parameter is not valid unless the device is configured for operation with a Remote Interface card. Valid address selections are 0 to 30. After selection and entry, the unit must be powered down and powered back up to put the new address into effect.

2.5.4.4 Selecting the Frame Address (f adr)

The frame address parameter (**f adr**) on the **FRONT PANEL CONFIGURATION** menu allows selection of the WJ NET frame address of the local frame in which the FPU is connected. This parameter is not valid unless the device is configured for operation with a Remote Interface card. Valid address selections are 1 to 30. After selection, the unit must be powered down and powered back up to put the new address into effect. This address is also used as the token number for device control. (Note: Each unit connected and operated on the WJ NET must be configured with a unique frame address.)

SECTION III
CIRCUIT DESCRIPTION

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SECTION III

CIRCUIT DESCRIPTION

3.1

INTRODUCTION

There are no circuit descriptions provided in an Installation and Operation manual.

NOTES

SECTION IV
MAINTENANCE

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SECTION IV
MAINTENANCE

4.1 **INTRODUCTION**

Only preventive maintenance procedures are provided in this Installation and Operation manual.

4.2 **PREVENTIVE MAINTENANCE**

Preventive maintenance at the operator level consists of cleaning the unit and handling the unit carefully.

4.2.1 **HANDLING**

The LCD panel is made of plate glass, do not apply mechanical shocks or press hard on it. The polarize on the display is easily scratched. Handle with care. Do not remove the panel or frame from the LCD.

WARNING

If the LCD panel breaks, do not allow the liquid crystal to get in your mouth. If the liquid crystal touches your skin or clothes, wash it off immediately with soap and water.

4.2.2 **CLEANING**

The polarizer on the LCD is easily scratched. Therefore, do not wipe it with a dry cloth. Wipe gently with a soft cloth moistened with water. Do NOT use ketone (methylethyl ketone, acetone) or aromatic (toluene, xylene) solvents, as they dissolve or damage the polarizer, and may attack other parts used in the FPU.

NOTES

SECTION V
REPLACEMENT PARTS LIST

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SECTION V

REPLACEMENT PARTS LIST

5.1 UNIT NUMBERING METHOD

The method of numbering used throughout the unit is assigning reference designations (electrical symbol numbers) to identify: assemblies, subassemblies, modules within a subassembly, and discrete components. An example of the unit numbering method used is as follows:

<u>Subassembly Designation A1</u>	<u>R1 Class and No. of Item</u>
Identify from right to left as:	First (1) resistor (R) of first (1) subassembly (A)

On the main chassis schematic, components which are an integral part of the main chassis have no subassembly designations.

5.2 REFERENCE DESIGNATION PREFIX

The use of partial reference designations are used on the equipment and on the manual illustrations. This partial reference designation consists of the component type letter(s) and the identifying component number. The complete reference designation may be obtained by placing the proper prefix before the partial reference designation. Reference designation prefixes are included on the drawings and illustrations in the figure titles (in parenthesis).

5.3 LIST OF MANUFACTURERS

<u>Mfr. Code</u>	<u>Name and Address</u>	<u>Mfr. Code</u>	<u>Name and Address</u>
00681	Mine Safety Appliance Corp. Catalyst Research Division 1421 Clarkview Road Baltimore, MD 21209-2103	04713	Motorola Incorporated Semiconductor Products Div. 5005 East McDowell Road Phoenix, AZ 85008
00779	AMP, Inc. P.O. Box 3608 Harrisburg, PA 17150	09353	C and K Components, Inc. 15 Riverdale Avenue Newton, MA 02158-1057
01537	Motorola, Inc. 2553 Edgington Street Franklin Park, IL 60131-3401	14632	BAE SYSTEMS Advanced Systems 700 Quince Orchard Rd. Gaithersburg, MD 20878-1794

REPLACEMENT PARTS LIST

WJ-9605 FRONT PANEL UNIT

<u>Mfr. Code</u>	<u>Name and Address</u>	<u>Mfr. Code</u>	<u>Name and Address</u>
15818	Teledyne Semiconductor Inc. 1300 Terra Bella Avenue Mountain View, CA 94043-1836	59660	Tusonix, Inc. 2155 North Forbes Blvd. Tucson, AZ 85745
17856	Siliconix, Inc. 2201 Laurelwood Road Santa Clara, CA 95054-1516	61441	Saronix 4010 Transport Street Palo Alto, CA 94303-4913
18324	Signetics Corporation 4130 S. Market Court Sacramento, CA 95834-1222	61722	EPSON America, Inc. 3415 Kashiwa Street Torrence, CA 90505-4024
24355	Analog Devices, Inc. Route 1 Industrial Park P. O. Box 9106 Norwood, MA 02062	62786	Hitachi America Ltd. 1800 Bering Drive San Jose, CA
26742	Methode Electronics, Inc. 7447 W. Wilson Avenue Chicago, IL 60656-4548	70903	Cooper Belden, Inc. 2000 S. Batavia Avenue Geneva, IL 60134-3325
27014	National Semi-Conductor Corp. 2950 San Ysidro Way Santa Clara, CA 95051	75915	Tracor Littlefuse, Inc. 800 East Northwest Hwy Des Plaines, IL 60016
27264	Molex Inc 2222 Welington Ct. Lisle, IL 60532	76493	Bell Industries, Inc. 19070 Reyes Avenue P. O. Box 5825 Compton, CA 90024
2P953	Lemo USA, Inc. P. O. Box 11006 Santa Rosa, CA 95406	80131	Electronic Industries Assoc. 2001 Eye Street, N.W. Washington, DC 20006
55322	Samtec, Inc. 810 Progress Blvd. P.O. Box 1147 New Albany, IN 47150	82104	Standard Gribsbey, Inc. 920 Rathbone Avenue Aurora, IL 60507
56289	Sprague Electric Company 87 Marshall Street North Adams, MA 01247	82389	Switchcraft, Inc. 555 N. Elstron Avenue Chicago, IL 60630-1314

<u>Mfr. Code</u>	<u>Name and Address</u>	<u>Mfr. Code</u>	<u>Name and Address</u>
82573	JST Corporation 1200 Business Center Drive Suite #400 Prospect, IL 60056	9AA13	Maxim Integrated Products 510 N. Pastoria Avenue Sunnyvale, CA 94086
95146	Alco Electronics Products, Inc. 1551 Osgood Street North Andover, MA 01845	9AA34	Sonically 35 Corporate Drive Trumbull, CT 06611

5.4 PARTS LIST

The following parts list in **paragraph 5.5** identifies all the main chassis components used in the unit, along with mechanical parts which may be subject to unusual wear or damage. When ordering replacement parts from BAE SYSTEMS, specify the unit type, serial number, option configuration, and reference designation and description of the part being ordered. The list of manufacturers provided in **paragraph 5.3** is supplied as a guide to aid the user of the equipment while in the field. The parts listed may not necessarily be identical with the parts installed in the unit. However, the parts listed in **paragraph 5.5**, if used, will provide satisfactory unit operation.

Replacement parts may be obtained from any manufacturer provided that the physical characteristics and electrical parameters of the replacement item are compatible with the original part. In cases where components are defined by a military or industrial specification, a vendor who can provide the necessary component is suggested as a convenience to the user.

NOTE

As improvements in semiconductors are made, it is the policy of BAE SYSTEMS to incorporate them in proprietary products. As a result, some transistors, diodes, and integrated circuits that are installed in the unit may not agree with the parts list or schematic diagrams contained in this manual. Replacing these components with the devices listed in this manual, however, will produce satisfactory results.

REPLACEMENT PARTS LIST

WJ-9605 FRONT PANEL UNIT

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5.5

TYPE WJ-9605 FRONT PANEL UNIT

MAIN CHASSIS

REF DESIG	DESCRIPTION	QTY PER ASSY	MANUFACTURER'S PART NO.	MFR. CODE	RECM VENDOR
	Revision A				
A1	Front Panel Assembly	1	796890-3	14632	
A2	Power Supply Assembly	1	766025-1	14632	
A3	Signal Distribution Assembly	1	796929-1	14632	
W3	Cable Assembly, Power Switch	1	382371-1	14632	
W3S1	Switch, Toggle	2	7101-M-D-Z-Q-E	09353	
W3S2	Same as W3S1				

5.5.1 TYPE 796890-3 FRONT PANEL ASSEMBLY

REF DESIG PREFIX A1

REF DESIG	DESCRIPTION	QTY PER ASSY	MANUFACTURER'S PART NO.	MFR. CODE	RECM VENDOR
	Revision A				
A1	Front Panel Controller Assembly	1	796856-3	14632	
A1J5	Connector, Terminal, 12 Pin	1	TSW-111-07-G-S	55322	
A1J7	Housing, Connector, 4 POS	1	PHR-4	82573	
A1J9	Housing, Connector, 6 POS	1	PHR-6	82573	
R1/R2	Potentiometer, Cable	1	282522-1	14632	
U1	LCD Assembly	1	282524-1	14632	
U2	Keyboard	1	481657	14632	
U3	Encoder Assembly	1	282520-1	14632	

5.5.1.1 Type 796856-3 Front Panel Controller Assembly

REF DESIG PREFIX A1A1

REF DESIG	DESCRIPTION	QTY PER ASSY	MANUFACTURER'S PART NO.	MFR. CODE	RECM VENDOR
	Revision A				
BT1	Battery	1	B-400	00681	
C1	Capacitor, Ceramic: .01 μ F, 10%, 50 Vdc	42	841250-19	14632	
C2	Same as C1				
C3	Same as C1				
C4	Capacitor, Tantalum: 33 μ F, 20%, 16 V	1	841293-22	14632	
C5 Thru C7	Same as C1				
C8	Capacitor, Ceramic: 47 pF, 5%, 50 VDC NPO	3	841250-05	14632	
C9 Thru C11	Same as C1				
C12	Capacitor, Ceramic: 22 pF, 5%, 50 VDC NPO	3	841250-03	14632	
C13	Same as C12				
C14 Thru C16	Same as C1				
C17	Same as C8				
C18	Same as C1				
C19	Capacitor, Ceramic: 100 pF, 5%, 50 VDC NPO	1	841250-07	14632	
C20	Capacitor, Tantalum: 1.0 μ F, 20%, 16 V	3	841293-04	14632	
C21	Capacitor, Tantalum: 33 μ F, 20%, 16V	14	841293-22	14632	
C22	Same as C1				
C23	Same as C21				
C24	Capacitor, Ceramic: .10 μ F, 10%, 50 V	7	841250-25	14632	
C25	Capacitor, Tantalum: 3.3 μ F, 20%, 16 V	1	841293-10	14632	
C26	Same as C1				
C27 Thru C35	Same as C8				
C36	Capacitor, Ceramic: 1500 pF, 10%, 50 Vdc	2	841250-14	14632	
C37	Same as C24				
C38 Thru C43	Same as C1				
C44	Capacitor, Ceramic: 33 pF, 5%, 50 VDC NPO	1	841250-04	14632	
C45	Same as C21				
C46	Same as C21				
C47	Same as C20				
C48	Same as C24				
C49	Same as C1				
C50	Same as C1				
C51	Capacitor, Ceramic: .015 μ F, 10%, 50 VDC	2	841250-20	14632	

REPLACEMENT PARTS LIST

WJ-9605 FRONT PANEL UNIT

REF DESIG PREFIX A1A1

REF DESIG	DESCRIPTION	QTY PER ASSY	MANUFACTURER'S PART NO.	MFR. CODE	RECM VENDOR
C52	Same as C21				
C53	Same as C21				
C54	Capacitor, Tantalum: 15 μ F, 20%, 25 V	2	841293-19	14632	
C55	Same as C24				
C56	Same as C21				
C57	Same as C1				
C58	Same as C24				
C59	Same as C21				
C60	Same as C1				
C61	Same as C1				
C62	Same as C21				
C63	Same as C1				
C64	Same as C1				
C65	Capacitor, Tantalum: 68 μ F, 20%, 6.3 V	2	841293-24	14632	
C66	Same as C21				
C67	Same as C1				
C68	Same as C1				
C69	Same as C21				
C70	Same as C24				
C71	Same as C20				
C72	Same as C51				
C73	Same as C21				
C74	Same as C54				
C75	Same as C65				
C76	Same as C21				
C77	Same as C36				
C78	Same as C1				
C79	Same as C1				
C80	Same as C21				
C81	Same as C24				
C82	Same as C1				
C83	Same as C1				
C84	Same as C12				
CR1	Rectifier, 20 V	3	MBRD620CT	04713	
CR2	Same as CR1				
CR3	Same as CR1				
CR4	Diode, Schottky Barrier	3	HSMS-2810T31	28480	
CR5	Diode, General Purpose	4	FDSO-1203.SO	27014	
CR6	Same as CR4				
CR7	Same as CR4				
CR8	Same as CR5				
CR9	Same as CR5				

REF DESIG PREFIX A1A1

REF DESIG	DESCRIPTION	QTY PER ASSY	MANUFACTURER'S PART NO.	MFR. CODE	RECM VENDOR
CR10	Same as CR5				
J1	Connector, Terminal, 16 Pin	2	TSW-108-08-G-D-RA	55322	
J2	Same as J1				
J3	Connector, Terminal, 8 Pin	1	TSW-104-08-G-D-RA	55322	
J4	Connector, Receptacle, 4 POS	2	S4B-PH-K	82573	
J5	Connector, Receptacle, 11 POS	1	SSW-111-01-G-S	55322	
J6	Connector, Receptacle, 16 Pin	1	SSW-108-01-G-D	55322	
J7	Same as J4				
J8	Connector, Header, 4 POS	1	B4B-PH-K	82573	
J9	Connector, Header, 6 POS	1	B6B-PH-K	82573	
J10	Jack, Phone, Three Conductor Open Circuit	1	M-112BPC	82389	
JP1	Not Used				
JP2	Wire, Bus	AR	8021-22-AWG	70903	
LS1	Transducer	1	SMAT-14-S	9AA34	
Q1	Transistor	1	MMBT6429L	04713	
R1	Resistor, Fixed: 3.3Ω, 5%, 1/8 W	9	841296-005	04713	
R2	Resistor, Fixed: 100 kΩ, 5%, 1/8 W	56	841296-113	14632	
R3	Same as R2				
R4					
Thru R8	Same as R1				
R9	Same as R2				
R10	Same as R2				
R11	Resistor, Fixed: 10 kΩ, 5%, 1/8 W	22	841296-089	14632	
R12	Same as R2				
R13	Same as R2				
R14	Same as R11				
R15	Same as R11				
R16	Resistor, Fixed: 33.0Ω, 5%, 1/8 W	3	841296-029	14632	
R17	Same as R16				
R18					
Thru R21	Same as R2				
R22	Same as R11				
R23					
Thru R32	Same as R2				
R33	Resistor, Fixed: 10MΩ, 5%, 1/8 W	1	841296-161	14632	
R34	Resistor, Fixed: 2.20Ω, 5%, 1/8 W	4	841296-001	14632	
R35					
Thru R38	Same as R11				

REPLACEMENT PARTS LIST

WJ-9605 FRONT PANEL UNIT

REF DESIG PREFIX A1A1

REF DESIG	DESCRIPTION	QTY PER ASSY	MANUFACTURER'S PART NO.	MFR. CODE	RECM VENDOR
R39 Thru R48	Same as R2				
R49	Resistor, Fixed: 15 kΩ, 5%, 1/8 W	1	841296-093	14632	
R50	Resistor, Fixed: 5.6 kΩ, 5%, 1/8 W	3	841296-083	14632	
R51	Same as R2				
R52	Resistor, Fixed: less than .05Ω	2	841341	14632	
R53	Resistor, Fixed: 470Ω, 5%, 1/8 W	1	841296-057	14632	
R54	Not Used				
R55	Same as R2				
R56	Same as R2				
R57	Not Used				
R58	Not Used				
R59	Same as R2				
R60	Same as R11				
R61	Resistor, Fixed: 12 kΩ, 5%, 1/8 W	1	841296-091	14632	
R62	Same as R2				
R63	Resistor, Fixed: 1.0 kΩ, 5%, 1/8 W	5	841296-065	14632	
R64	Resistor, Fixed: 4.7 kΩ, 5%, 1/8 W	1	841296-081	14632	
R65 Thru R74	Same as R2				
R75	Same as R63				
R76	Same as R11				
R77	Same as R2				
R78	Same as R2				
R79	Same as R11				
R80	Same as R2				
R81	Same as R2				
R82	Same as R2				
R83	Same as R11				
R84	Not Used				
R85	Same as R63				
R86	Same as R1				
R87	Resistor, Fixed: 8.2 kΩ, 5%, 1/8 W	2	841296-087	14632	
R88	Resistor, Fixed: 330Ω, 5%, 1/8 W	2	841296-053	14632	
R89	Same as R11				
R90	Same as R2				
R91	Same as R11				
R92	Same as R11				
R93	Same as R2				
R94	Resistor, Fixed: 20 kΩ, 5%, 1/8 W	1	841296-096	14632	

REF DESIG PREFIX A1A1

REF DESIG	DESCRIPTION	QTY PER ASSY	MANUFACTURER'S PART NO.	MFR. CODE	RECM VENDOR
R95	Same as R63				
R96	Resistor, Fixed: 2.2 k Ω , 5%, 1/8 W	2	841296-073	14632	
R97	Same as R50				
R98	Resistor, Fixed: 100 Ω , 5%, 1/8 W	2	841296-041	14632	
R99	Same as R98				
R100	Same as R1				
R101	Resistor, Fixed: 150 Ω , 5%, 1/8 W	2	841296-045	14632	
R102	Resistor, Fixed: 6.8 Ω , 5%, 1/8 W	2	841296-013	14632	
R103	Not Used				
R104	Same as R11				
R105	Same as R88				
R106	Same as R11				
R107	Same as R2				
R108	Same as R11				
R109	Same as R11				
R110	Same as R11				
R111	Same as R63				
R112	Same as R34				
R113	Same as R34				
R114	Same as R87				
R115	Same as R101				
R116	Same as R102				
R117	Same as R11				
R118	Resistor, Fixed: 10.0 Ω , 5%, 1/8 W	4	841296-017	14632	
R119	Same as R11				
R120	Same as R118				
R121	Same as R2				
R122	Same as R2				
R123	Same as R52				
R124	Same as R16				
R125	Same as R50				
R126	Same as R96				
R127	Same as R1				
R128	Same as R118				
R129	Same as R118				
R130	Same as R2				
R131	Same as R34				
S1	Dip Switch, 8 POS	1	ADP-08S	95146	
S2	Switch, Rotary Encoder	1	LCE-24-1(70125)	82104	
U1	Integrated Circuit, Realtime Clock	1	RTC-72423B	61722	
U2	Integrated Circuit, Hex Inverter	1	8674AC04SO14U	14632	

REPLACEMENT PARTS LIST

WJ-9605 FRONT PANEL UNIT

REF DESIG PREFIX A1A1

REF DESIG	DESCRIPTION	QTY PER ASSY	MANUFACTURER'S PART NO.	MFR. CODE	RECM VENDOR
U3	Integrated Circuit, Presetable Binary Counter	1	8674AC161S016U	14632	
U4	Integrated Circuit, Quad 2-Input OR Gate	2	8674HC32SO14U	14632	
U5	Same as U4				
U6	Voltage Regulator, Fixed, +5 V	1	MC7BM05CDT	04713	
U7	Integrated Circuit, Quad 2-Input AND Gate	1	8674AC08SO14U	14632	
U8	Integrated Circuit, Hex Inverter	1	8674HC04SO14U	14632	
U9	Integrated Circuit, 3 to 8 Line Decoder/Demultiplexer	1	8674AC138SO16U	14632	
U10	Integrated Circuit, 3 to 8 Line Decoder	2	8674HC138SO16U	14632	
U11	Integrated Circuit, 10 to 4 Line Priority Encoder	1	8674HC147SO16U	14632	
U12	Integrated Circuit, 12 State Binary Ripple Counter	1	8674HC4040SO16U	14632	
U13	Integrated Circuit, Hex Contact Bounce Eliminator	1	MC14490DW	04713	
U14	Not Used				
U15	Integrated Circuit, Hex Buffer/Line Driver Non-Inverting	1	8674HC365SO16U	14632	
U16	Integrated Circuit, Hex D-Type Flip-Flop	1	8674HC174SO16U	14632	
U17	Integrated Circuit, Triple 3-Input AND Gate	1	8674HC11SO14U	14632	
U18	Integrated Circuit, Hex Buffer/Line Driver	1	8674HC367SO16U	14632	
U19	Amplifier, JFET-Input Dual OP AMP	2	8634002S08	14632	
U20	Integrated Circuit, DAC	1	AD558JP	24355	
U21	DC-DC Converter	1	TSC962COE	15818	
U22	Integrated Circuit, 16 Key Encoder	1	MM74C922N	27014	
U23	Same as U10				
U24	Integrated Circuit, Dual D Flip-Flop	3	8674HC74SO14U	14632	
U25	Same as U24				
U26	Same as U24				
U27	Integrated Circuit, Dot Matrix LCD Controller	1	HD61830AOOH	62786	
U28	EPROM	1	841550	14632	
U29	EPROM	1	841551	14632	
U30	Switch, Quad SPST	3	DG412DY	17856	
U31	Integrated Circuit, Microprocessor	1	MC68HC000FN12	01537	
U32	Integrated Circuit, Dual Asynchronous Receiver/Transmitter	2	SCC2692AC1A44	18324	
U33	Integrated Circuit, Octal D-Type Latch	1	8674HC373SO20W	14632	
U34	Integrated Circuit, Microprocessor Supervisor	1	MAX691CWE	9AA13	
U35	Integrated Circuit, Static RAM	1	HM6164ALFP	62786	
U36	Integrated Circuit, Static RAM	2	8662256LFP-12SLT	14632	
U37	Same as U36				
U38	Integrated Circuit, OCTAL D Flip-Flop	2	8674HC273SO20W	14632	
U39	Amplifier, Audio	2	MC13060D	04713	
U40	Same as U19				
U41	Same as U30				
U42	Same as U30				
U43	Same as U38				
U44	Same as U32				

REF DESIG PREFIX A1A1

REF DESIG	DESCRIPTION	QTY PER ASSY	MANUFACTURER'S PART NO.	MFR. CODE	RECM VENDOR
U45	Integrated Circuit, RS-232 Line Driver/Receiver	1	HMC232C.5X5S	62786	
U46	Same as U39				
U47	Integrated Circuit, Differential Bus Transceiver	1	8675176S08N	14632	
XU14	Socket	3	IC61-0324-033	14632	
XU28	Same as XU14				
XU29	Same as XU14				
XU31	Socket	1	213-068-601	26742	
Y1	Crystal, 12.000 MHz	1	NMS120	61441	
Y2	Crystal, 3.6864 MHz	1	NMS037-20	61441	

REPLACEMENT PARTS LIST

WJ-9605 FRONT PANEL UNIT

5.5.2 TYPE 766025-1 POWER SUPPLY ASSEMBLY

REF DESIG PREFIX A2

REF DESIG	DESCRIPTION	QTY PER ASSY	MANUFACTURER'S PART NO.	MFR. CODE	RECM VENDOR
	Revision A				
C1	Capacitor, Electrolytic, Tantalum: 27 μ F, 10%, 35 V	2	199D276X9035FE4	56289	
C2	Same as C1				
C3	Capacitor, Ceramic, Disc: .1 μ F, 20%, 50 V	2	34475-1	14632	
C4	Capacitor, Electrolytic, Tantalum: 18 μ F, 10%, 20 V	2	199D186X9020DE3	56289	
C5	Same as C4				
C6	Same as C3				
CR1	Diode, Rectifier, 50 PRV	1	1N4001	80131	
F1	Fuse, Plug-In, 1 AMP Microfuse	1	273001	75915	
J1	Connector, PC MT, 16 Pin Dbl Row	1	TSW-108-08-G-D-RA	55322	
J2	Connector	1	26-48-2026	27264	
L1	Inductor: 500 μ H, 20%	2	5256	76493	
L2	Same as L1				
U1	Voltage Regulator, +12 V, 1A	1	LM2940CT-12	27014	

5.5.3 TYPE 796929-1 SIGNAL DISTRIBUTION ASSEMBLY

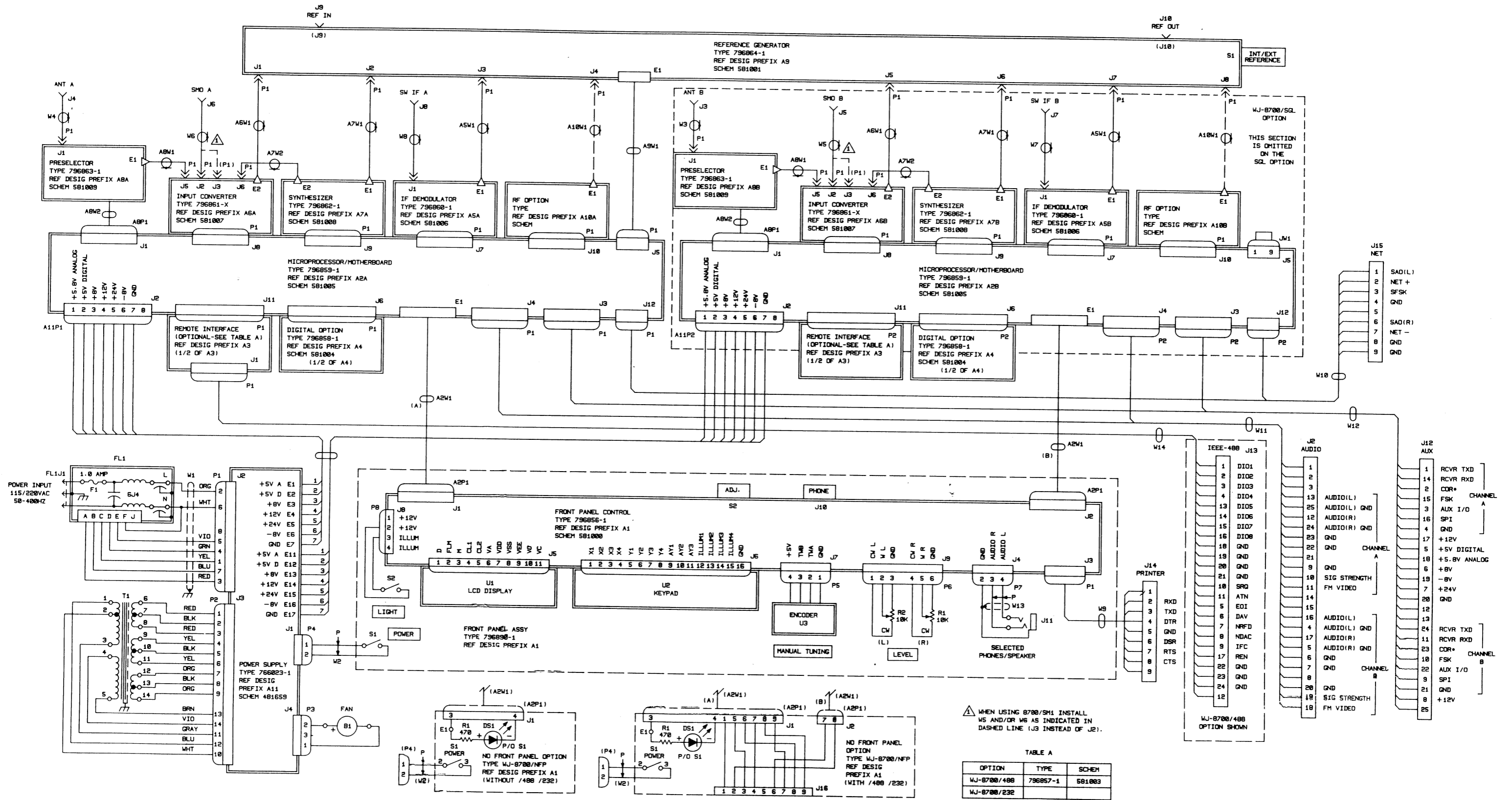
REF DESIG PREFIX A3

REF DESIG	DESCRIPTION	QTY PER ASSY	MANUFACTURER'S PART NO.	MFR. CODE	RECM VENDOR
	Revision A				
C1	Capacitor, Ceramic, Disc: .1 μ F, 20%, 50 V	1	8121-050-651-104M	59660	
F1	Fuse, Plug-In, 1 AMP Microfuse	1	273001	75915	
J1	Connector, Receptacle	1	ECG0B303CNL	2P953	
J2	Connector, D-Type, 9 Pin Male	1	205733-2	00779	
J3	Connector, D-Type, 9 Pin Female	2	205734-2	00779	
J4	Same as J3				
W1	Connector/Cable Assembly	1	IDMD-08-T-4-A-D2-0	55322	
W2	Connector/Cable Assembly	1	IDMD-08-T-3-A-R	55322	

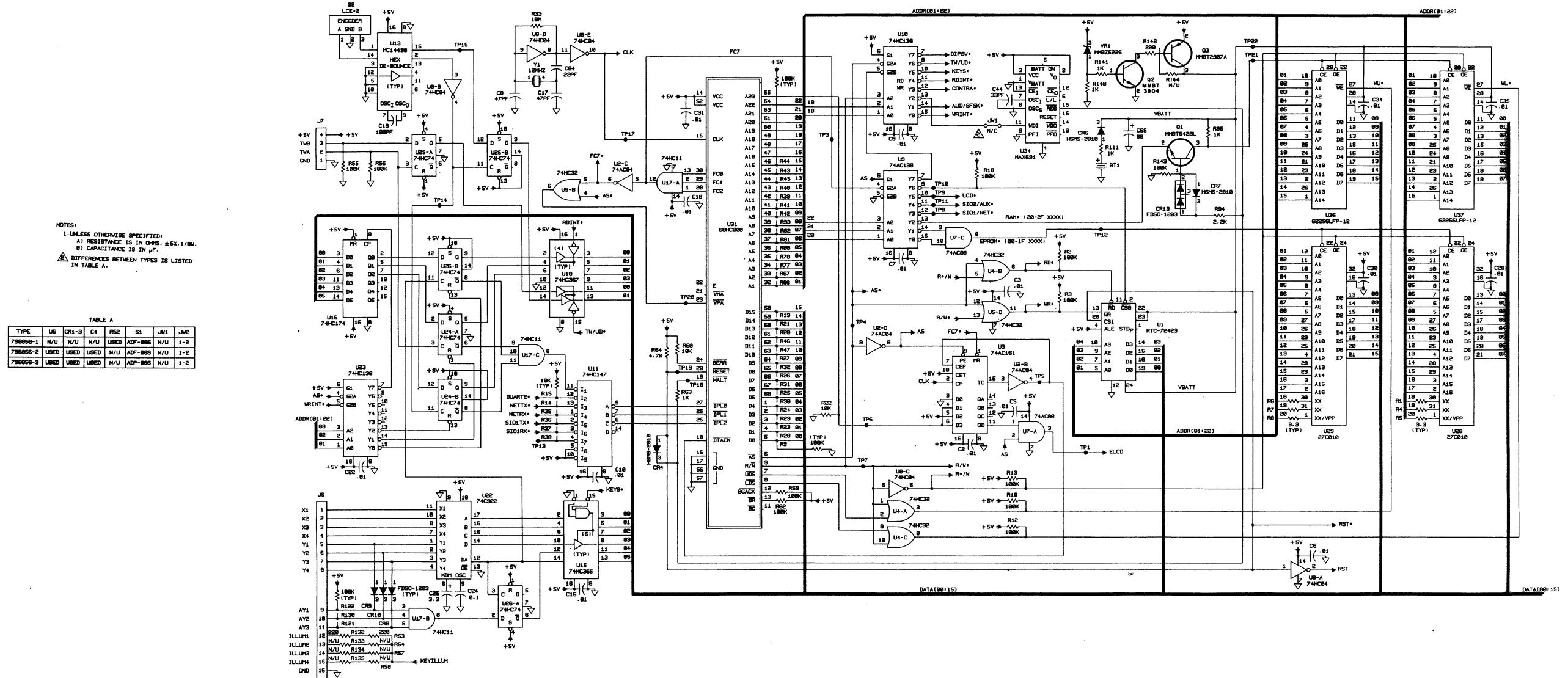
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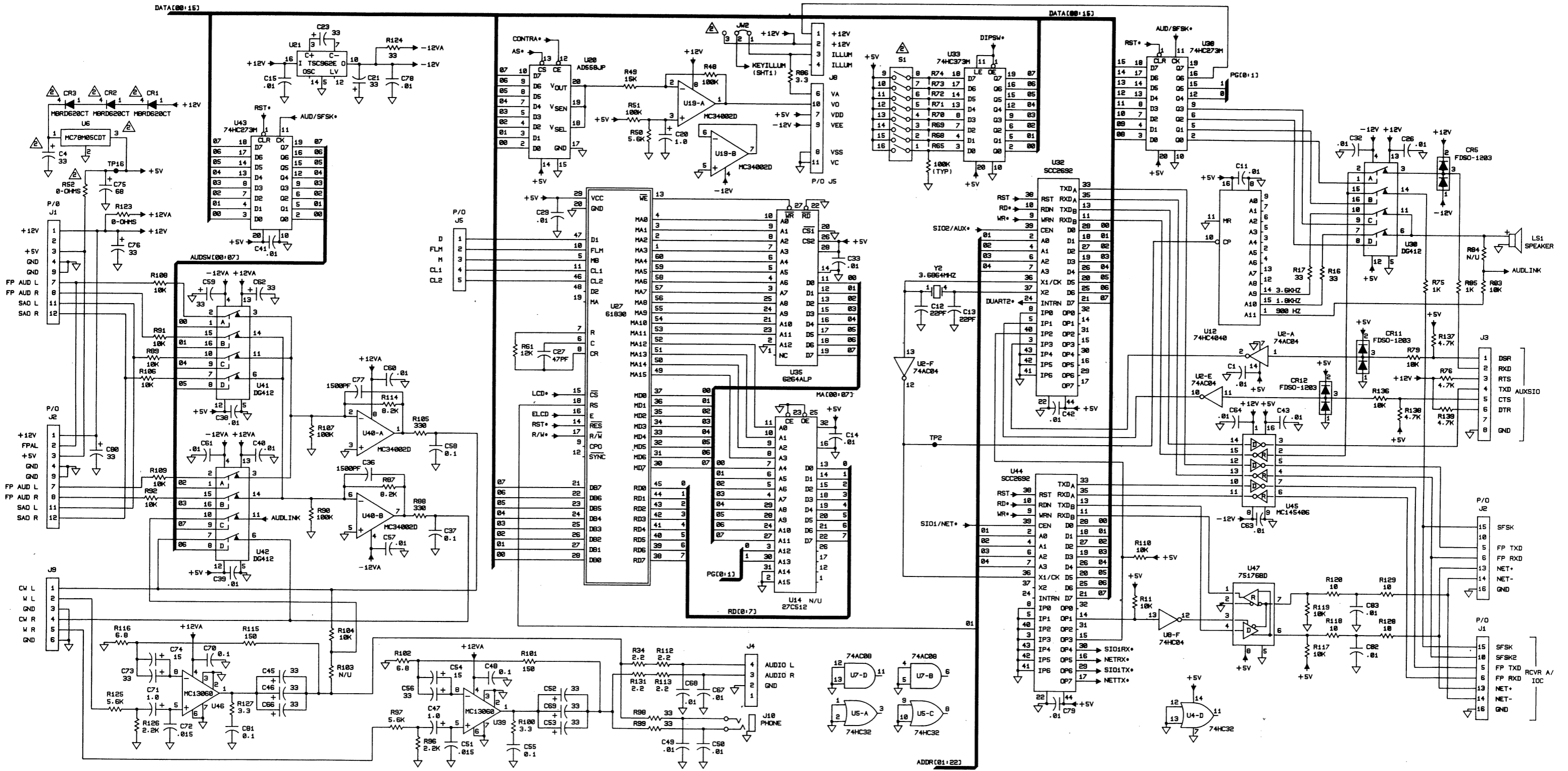
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FO-1. Type 796890-3, Front Panel Assembly (A1), Schematic Diagram 581002
FP-1/(FP-2 blank)





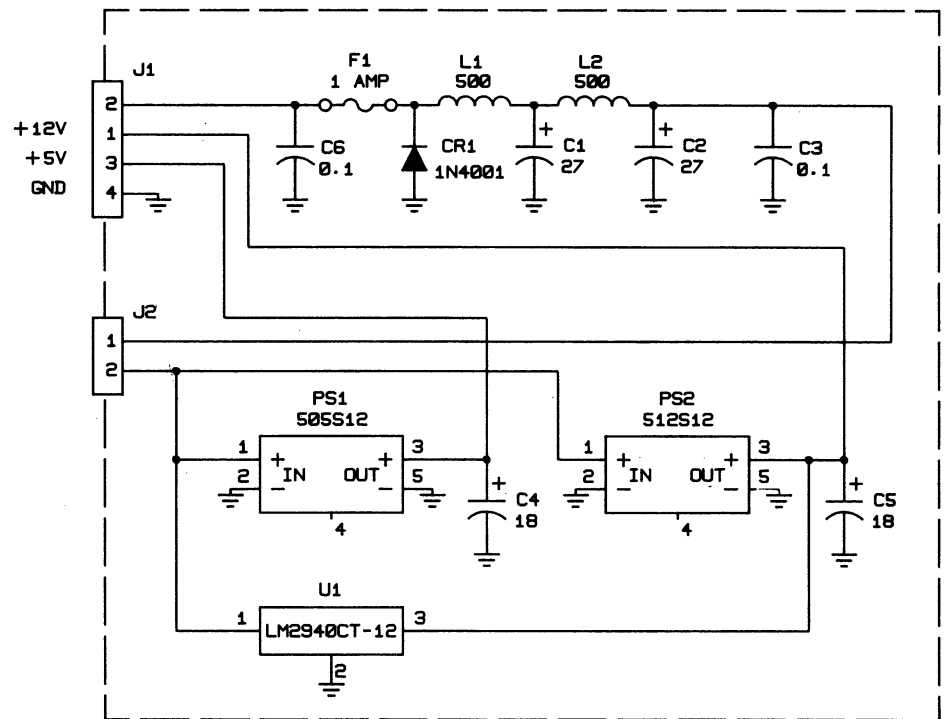
FO-2. Type 796856-3, Front Panel Controller Assembly (A1A1), Schematic Diagram 581000 (Sheet 2 of 2) FP-5/(FP-6 blank)

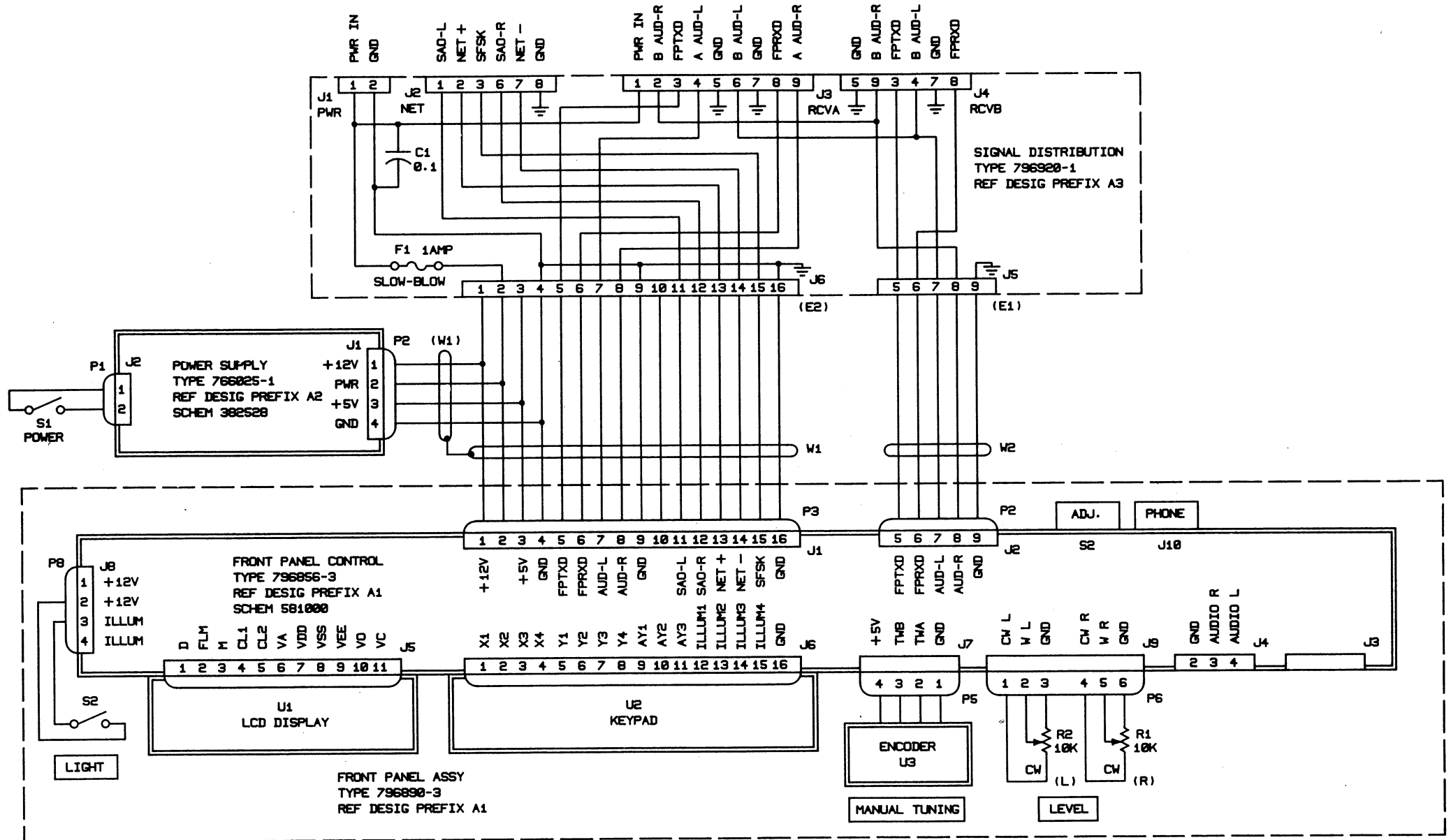
NOTES:

1. UNLESS OTHERWISE SPECIFIED:
 A) CAPACITANCE IS IN μ F.
 B) INDUCTANCE IS IN μ H.

TABLE 1

	U1	PS1	PS2
766025-1	LM2904CT-12	N/U	N/U
766025-2	N/U	N/U	S12S12
766025-3	N/U	S05S12	S12S12





FO-4. Type WJ-9605 Front Panel Control Unit, Main Chassis, Schematic Diagram 382527