TECHNICAL MANUAL

OPERATOR'S, ORGANIZATIONAL, AND DIRECT SUPPORT MAINTENANCE MANUAL TEST SET, ELECTRONIC SYSTEMS AN/UKMm5 INSN 6625u01-073-9858) AND ADAPTER, TEST MX-10062/U (NSN 6625u01-074-7320)

HEAD QUARTERS, DEPARTMENT OF T HE ARM Y

15 OCTOBER 1980

WARNING

Be sure green wire from power cable is connected to earth ground before applying power to the test set group.

WARNING

Be careful when 115 V ac is applied to the equipment. Serious injury or DEATH may result from contact with terminals carrying this voltage.

WARNING

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since TRICHLOROTRIFLUOROETHANE dissolves natural oils, prolonged contact with skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

WARNING

Before unpacking the data link tester press the RELIEF VALVE on the front of the test set case to relieve static pressure.

WARNING

Disconnect power cable from power source before replacing fuses, filter A1FL1, or power supplies A1PS1, A1PS2 and A1PS3.

TECHNICAL MANUAL
No. 11-6625-2937-13

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *15 October 1980*

OPERATOR'S, ORGANIZATIONAL, AND DIRECT SUPPORT MAINTENANCE MANUAL TEST SET, ELECTRONIC SYSTEMS AN/UKM-5 (NSN 6625-01-073-9858) AND ADAPTER, TEST MX-10062/U (NSN 6625-01-074-7320)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in back of this manual direct to: Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, New Jersey 07703.

In either case, a reply will be furnished direct to you.

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CHAPTER 1
INTRODUCTION

Section I. GENERAL INFORMATION

1-1. Scope

This manual contains detailed instructions for operator's, organizational and direct support maintenance of Test Set, Electronic Systems ANIUKM-5 (test set group) and Adapter, Test MX-10062/U (analog test adapter). The test set group includes Test Set, Electronic Systems AN/UKM-4 (data link tester) and Test Set, Electronic Systems AN/UYM-7 (digital tester). Information pertaining to the digital tester is contained in TM 11-6625-2951-13 and is repeated in this manual only to the extent necessary to define the relationship of the two test sets and to eliminate excessive cross-referencing.

1-2. Indexes of Publications

a. DA Pam 3104. Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

b. DA Pam 3107. Refer to DA Pam 310-7 to determine whether there are modification work orders (MWO) pertaining to the equipment.

1-3. Maintenance Forms, Records, and Reports

a. Reports of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, The Army Maintenance Management System (Army). Air Force personnel will use AFM 66-1 for maintenance reporting and TO-00-35D54 for unsatisfactory equipment reporting

b. Report of Item and Packaging Discrepancies. Fill out and forward SF 364 (Report of Discrepancy(ROD)) as prescribed in AR 735-11-2/DLAR 4140.55/NAVSUPINST 4440.127EIAFR 400.54/MCO 430.E

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fil out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPNST 4610.33BIAFR 75-18IMCO P4610.19C and DLAR 4500.15.

1-4. Reporting Equipment Improvement Recommendations (EIR)

If your equipment needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Tell us why a procedure is hard to perform. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, New Jersey 07703. We'll send you a reply.

1-5. Destruction of Army Materiel to Prevent Enemy Use

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.

1-6. Administrative Storage

Administrative storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the PMCS charts before storing. When removing the equipment from administrative storage the PMCS should be performed to assure operational readiness. Disassembly and repacking of equipment for shipment or limited storage are covered in paragraph 2-1.

1-7. Calibration

Refer to TM 11-6625-2951-13 for digital tester calibration procedures. Calibration procedures for the data link tester are contained in TB 11-6625-2937-35.

1-8. Hand Receipt

Hand receipts for End Item/Components of End Item (COEI), Basic Issue Items (BB), and Additional Authorization List (AAL) item are published in a Hand Receipt Manual. The Hand Receipt Manual numerical designation is the same as the related Technical Manual with the letters HR added to the number. These manuals are published to aid in property accountability and are available through: Commander, US Army Adjutant General Publication Center, ATTN: AGDL-OD, 1655 Woodson Road, SL Louis, MO 63114.

Section II. DESCRIPTION AND DATA

1-9. Purpose and Use

a. Test Set Group. The test set group is used for direct support (DS) and depot maintenance of Encoder, Video KY-865/AKT-18B (encoder) and Decoder, Video KY-87 1 /PIQ2B (decoder). These units are components of Radar Surveillance System AN/UPD-7. The encoder is part of Transmitting Set, Radar Data AN/AKT-18B (data transmitting set) and the decoder is part of Receiving Set, Radar Data AN/TKQ-2B (data receiving set). At the DS level, the test set group tests the encoder and decoder microprocessor, as well as standard logic and analog circuit cards, for a pass/fail condition. At the depot level, the test set group is used to isolate the cause of fire to failure or group of parts on the circuit card.

b. Adapter, Test MX-100621U. Analog circuit cards are checked using Adapter, Test MX-10062/U (analog test

adapter) for troubleshooting to the piece-part level at the depot.

1-10. Description of Test Set Group
(fig. 1-1)

The test set group consists of two rnajor components (table 1-1): Test Set, Electronic Systems AN/UKM-4 (data link tester) and Test Set, Electronic Systems AN/UYM-7 (digital tester). Adapter, Test MX-10062/U (analog test adapter) is used with but is not part of the test set group. Each of these units (except for the analog test adapter) is housed in a transit case, along with all cables necessary for installation. The data link tester is described in paragraph 1-11 and the analog test adapter in p1-12. Program cards are supplied with the test set group to perform the necessary microprocessor and standard logic card tests. For a detailed description of the digital tester refer to TM 11-6625-2951-13 (Operator's, Organizational, and Direct Support Maintenance Manual for Test Set, Electronic Systems AN/UYM-7). Refer to TM 11-6625-2937-30P for the complete list of program cards supplied with the test set group.

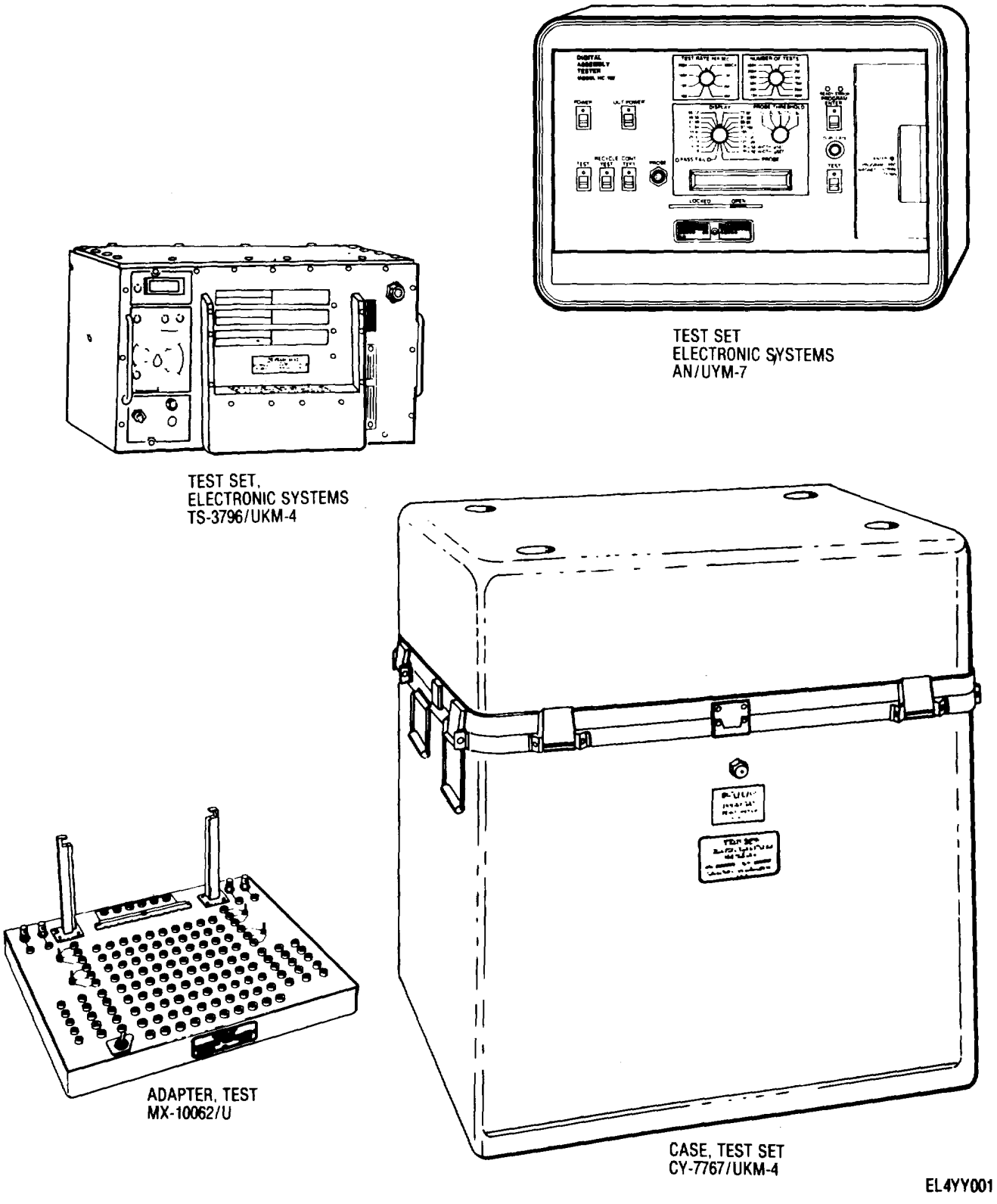


Figure 1-1. Test set group and analog test adapter. 1-3

Table 1-1. Official Nomenclature Cross Reference List

Official nomenclature	Common name
Test Set, Electronic Systems AN/UKM-5	Test set group
Test Set, Electronic Systems AN/UKM-4	Data link tester
Test Set, Electronic Systems TS-3796/-UKM-4	Control-interface unit
Case, Test Set CY-7767/UKM-4	Test set case
Extender, Card SM-D-942431-1	Encoder extender card
Extender, Card SM-D-942431-2	STE extender card
Extender, Card SM-D-942431-3	Decoder extender card
Cable Assembly, Power W1	Cable assembly W1
Cable Assembly, Special Purpose, Electrical W2	Cable assembly W2
Cable Assembly, Special Purpose, Electrical W3	Cable assembly W3
Cable Assembly, Special Purpose, Electrical W4	Cable assembly W4
Adapter, Test, Multipin to Coax SM-D-943085	Coax adapter
Adapter, Test, Dummy Load SM-D-943084	Dummy load
Adapter, Test, Ballast SM-D-943084	Ballast
Connector, 22-Pin, Card Edge	Card edge connector
Test Set, Electronic Systems AN/-UYM-7	Digital tester
Cards, Program	Program cards
Adapter, Test MX-10062/U	Analog test adapter

1-11. Description of Data Link Tester

(fig. 1-2)

The data link tester consists of Test Set, Electronic Systems TS-3796/UKM-4 (control-interface unit), Case, Test Set CY-7767/UKM-4 (test set case), and all accessories necessary for operation of the equipment. These items are described in the following subparagraphs.

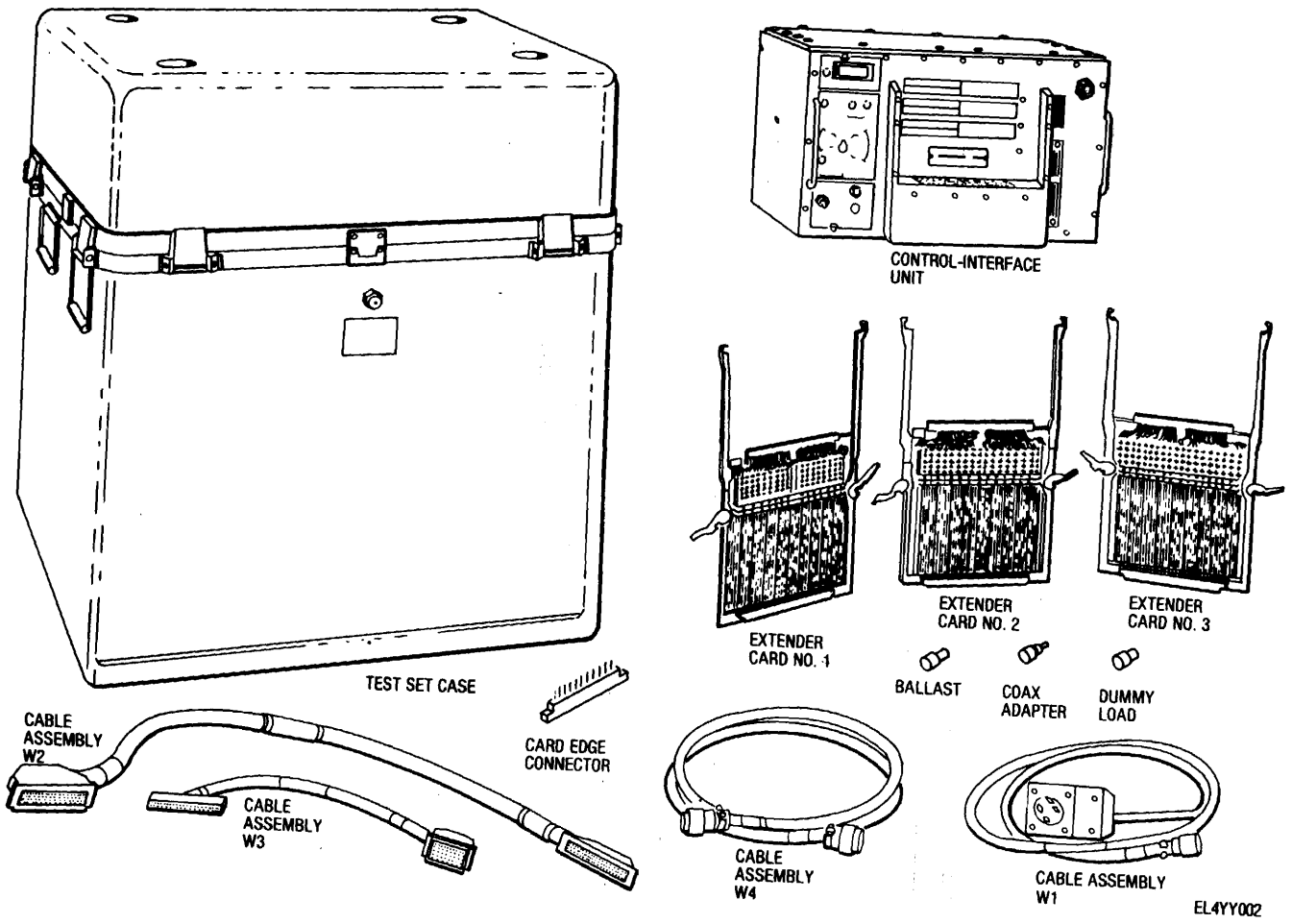


Figure 1-2. Data link tester.

a. Control-Interface Unit (fig. 1-2). The control-interface unit comprises two major assemblies that form an integral assembly: electrical equipment housing (IAI), and circuit card assembly rack (1A2). Electrical equipment housing IAI contains three power supplies, an input power line filter assembly and a circuit breaker. Circuit card assembly rack I A2 is comprised of a front panel and circuit card rack. The front panel contains controls and indicators, and the circuit card rack contains seven circuit cards necessary to the operation of the control-interface unit. The circuit card rack also provides for interconnecting circuit cards under test to the control-interface unit.

b. Data Link Tester Accessory Cables (fig. 1-2). The following subparagraphs describe all accessory cables of the data link tester.

(1) *Cable Assembly, Power, Electrical W1.* Cable W1 is a four-wire cable assembly approximately 72 inches long. It is used to connect three-phase primary input power to the control-interface unit.

(2) *Cable Assembly, Special Purpose, Electrical W2.* Cable W2 is a 156-wire cable assembly approximately 36 inches long. It is used to interconnect signals between the control-interface unit and the digital tester.

(3) *Cable Assembly, Special Purpose, Electrical W3.* Cable W3 is a 44-wire cable assembly approximately 48 inches long. It is used to connect signals from the control interface unit to the microprocessor or standard logic card under test.

(4) *Cable Assembly, Special Purpose, Electrical W4.* Cable W4 is a 10-wire cable assembly approximately 48 inches long. It is used to connect power from the control interface unit to the encoder or decoder for analog circuit card testing.

c. Data Link Tester Extender Cards (fig. 1-2). Three extender cards are supplied with the data link tester for use at DS level. Card No. 2 is for use in the control-interface unit, card No. I is for extending a circuit card in an encoder, and card No. 3 is for extending a circuit card in a decoder.

d. Coax Adapter. The coax adapter is used during testing of the decoder to provide a connection point for an oscilloscope.

e. Dummy Load. The dummy load is used during testing of the decoder to provide a load for the deflection amplifiers.

f. Ballast. The ballast is used during testing of the decoder at J5.

g. Card Edge Connector. A standard connector that plugs into the top of circuit cards thus permitting easy access to any pin by a probe.

h. Test Set Case (fig. 1-2). The test set case is a lightweight, self-sealing carrying case. It is equipped with carrying handles, a pressure-relief valve, and quick-release cover latches. The control-interface unit is stored in the main body of the case with all accessories stored in the cover.

1-12. Description of Analog Test Adapter

(fig. 1-3)

The analog test adapter is a breakout box that is used at the depot for troubleshooting analog circuit cards. This adapter is used in conjunction with standard test equipment to fault isolate to the component level. It consists of 90 front panel test points, POWER ON/OFF switch, voltage and signal input switches, signal generator connectors, input power connectors, right and left switch power ports, and a 90-pin circuit card connector. The 90-pin circuit card connector provides fan-out to the 90 test points on the front panel.

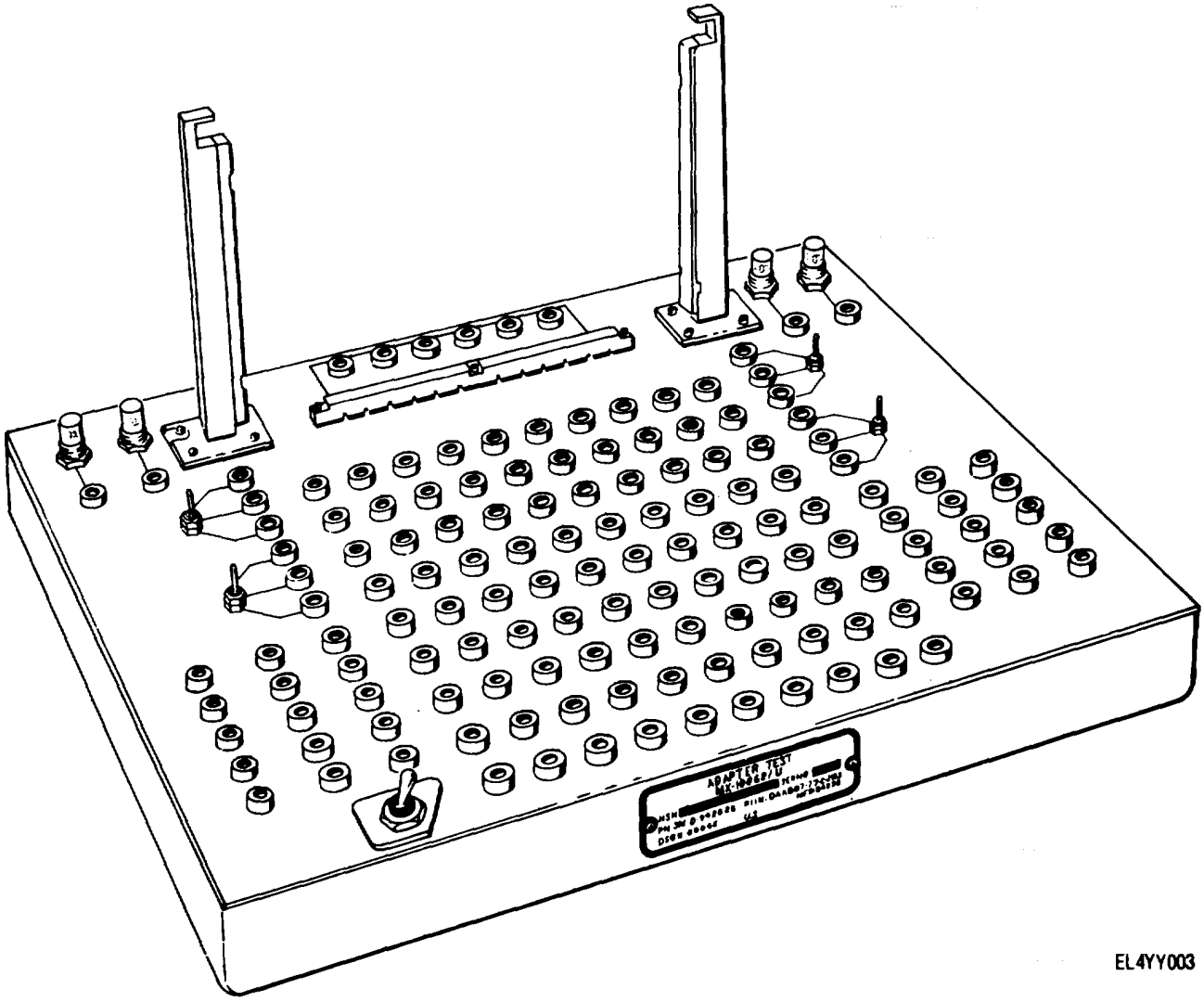


Figure 1-3. Analog test adapter.

1-13. System Application

(fig. 1-4)

The digital tester sups the test number being run, test stimuli and module test power to the control-interface unit The test number input is a verification check for proper switch settings on the control-interface unit The control-interface unit, through switching devices, supplies the test power and stimuli from the digital tester to the microprocessor or standard logic card being tested. Digital outputs from the card being tested are supplied to the control-interface unit, which feeds this data back to the digital tester for comparison. For a detailed description of power and signal distribution, refer to Principles of Operation, Chapter 4.

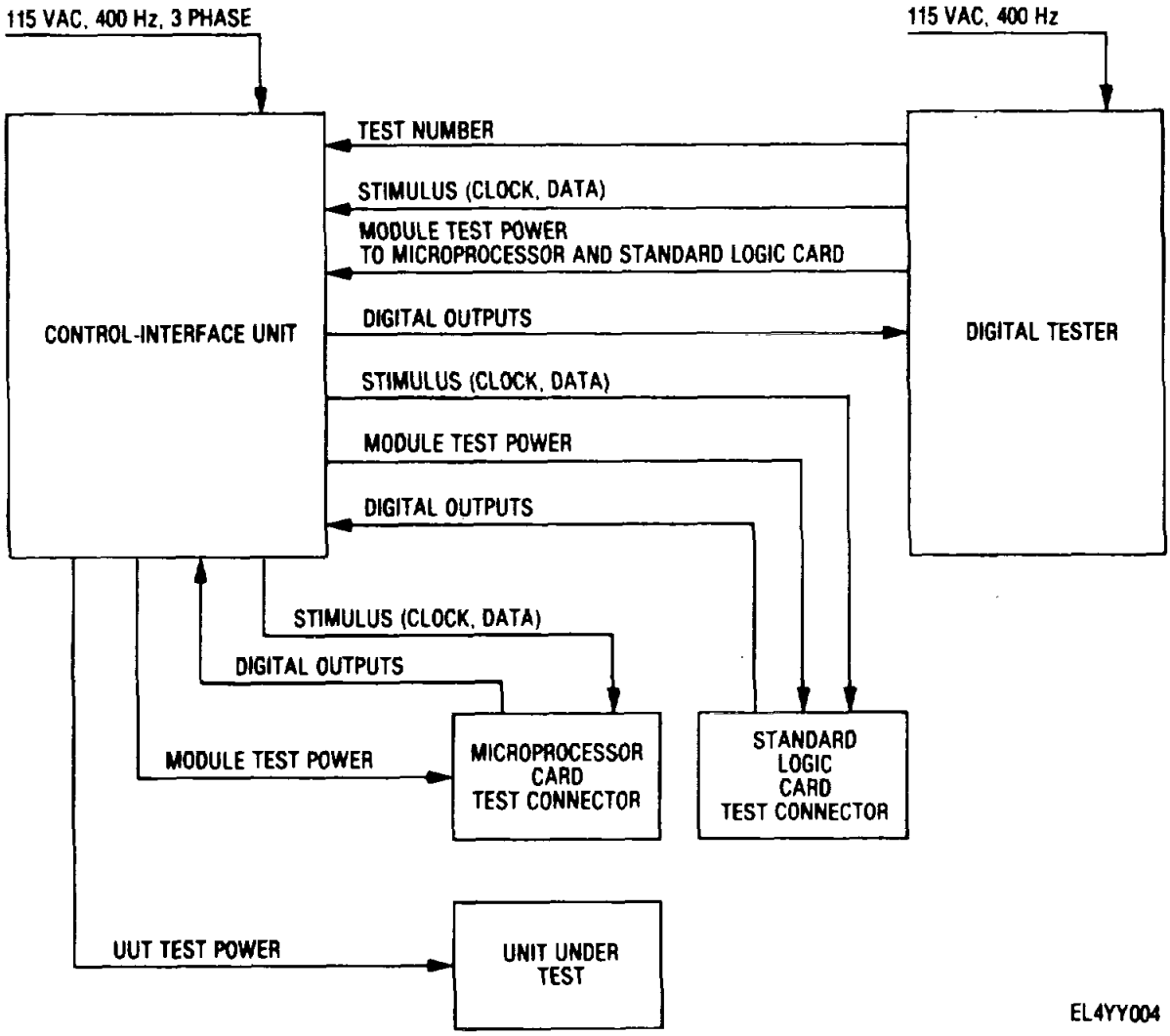


Figure 1-4. Test set group simplified block diagram.

1-14. Tabulated Data

a. Control-Interface Unit

(1) *Power requirements:* 115 volts ac, 400 Hz, 3 phase, 50 watts.

(2) *Dimensions:* Height 13.76 in., Width 17.25 in., Depth 17.30 in.

(3) *Weight:* 37 lb.

b. Test Set Case.

(1) *Dimensions:* Height 31 in., Width 28 in., Depth 24 in.

(2) *Weight:* 79 lb.

c. Digital Tester.

(1) *Power requirements:* 115 to 230 volts ac, 47 to 440 Hz, single phase, 300 watts.

(2) *Dimensions:* Height 14 in., Width 22 in., Depth 25 in.

(3) *Weight:* 85 lb.

d. Analog Test Adapter.

(1) *Power requirements:* Depends on module under test (5 V, i12 V, 15 V, and/or +28 V).

(2) *Dimensions:* Height 1.62 in., Width 14.90 in., Depth 12.72 in.

CHAPTER 2
INSTALLATION AND OPERATING INSTRUCTIONS

Section I. SERVICE UPON RECEIPT AND INSTALLATION

2-1. Unpacking

The following subparagraph describe the unpacking procedure for the test set group.

a. Data Link Tester (fig. 2-1). All units of the data link tester are packaged for shipment or limited storage in the test set case (fig. 2-1) (art of data link tester). The teat set case is 31 inches high, 28 inches wide and 24 inches in depth. The total packaged weight of the data link tester with all accessories is 125 pounds. To remove the control-interface unit, extender cards and cable assemblies from the test set case, proceed as follows:

WARNING

Before unpacking the data link tester press the RELIEF VALVE on the front of the test set case to relieve static pressure.

(1) Unfasten eight quick release cover latches.

(2) Obtain assistance and carefully remove cover containing accessories from test set case.

(3) Remove foam packing from top of test set case.

(4) 0btain assistance and carefully remove control-interface unit from test set case.

(5) Press four quick release fasteners and remove cover plate from Inside of cover.

(6) Remove foam packing inside of cover.

(7) Remove extender cards, cable assemblies, edge connector, ballast, coax adapter and dummy load from cover.

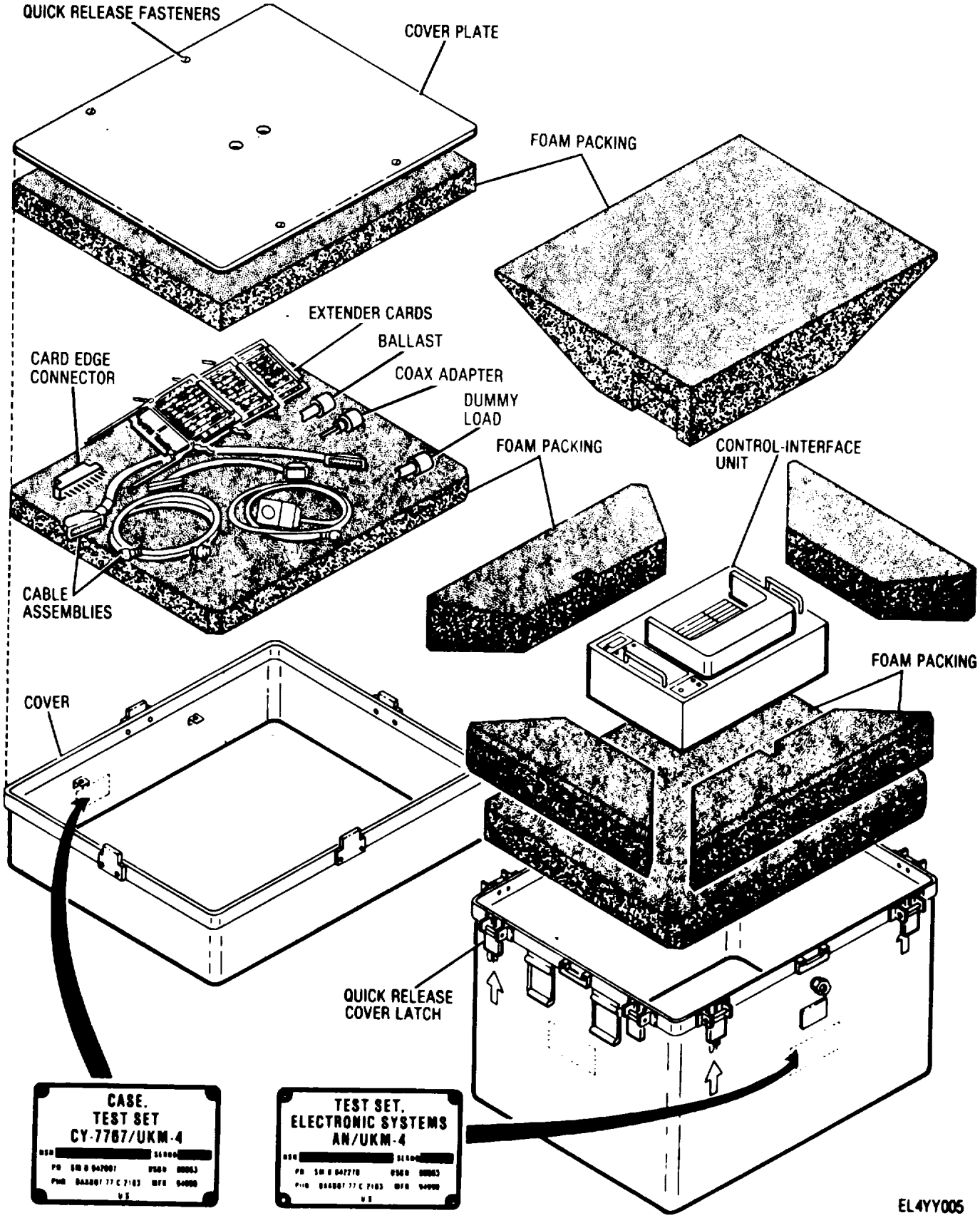


Figure 2-1. Data link tester packaging.

b. Digital Tester. Refer to TM 11-6625-2951-13 for digital tester unpacking procedures.

c. Analog Test Adapter (fig. 2-2). When packaged for shipment or limited storage, the analog test adapter is placed in a double carton. A typical packaging diagram is shown in figure 2-2. To unpack the analog test adapter proceed as follows:

(1) Open outer carton, and open moisture-vapor-proof barrier.

(2) Remove corrugated filler and remove inner carton.

(3) Open inner carton and remove packing material from top and sides of analog test adapter.

(4) Carefully remove analog test adapter from carton.

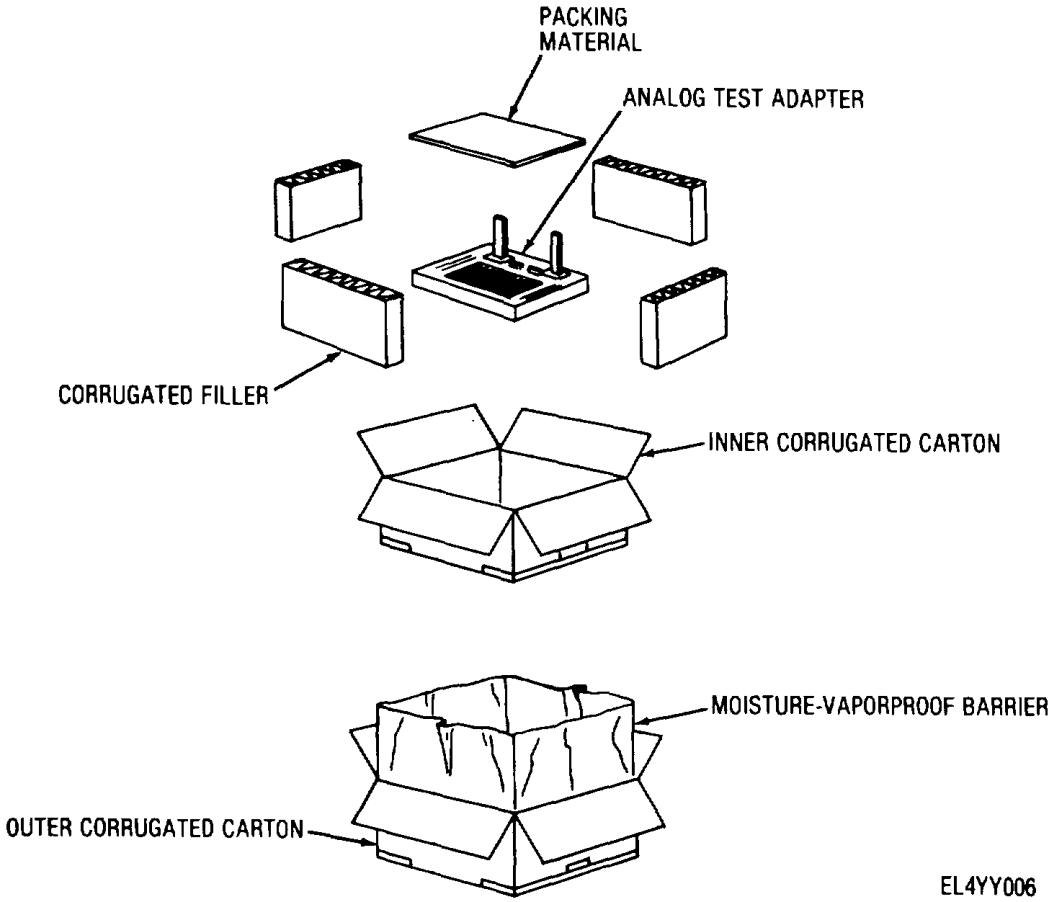


Figure 2-2. Analog test adapter typical packaging.

2-2. Checking Unpacked Equipment

Inspect and check the unpacked equipment as follows:

a. Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on DD Form 6 (para 1-3b).

b. Check the equipment against the component listing in table 1-1 and appendix B to see if the shipment is complete. Report all discrepancies in accordance with the instructions of TM 38-750. The equipment should be placed in service even though a minor assembly or a part that does not affect proper functioning is missing.

c. Check to see whether the equipment has been modified. (Equipment which has been modified will have the MWO number on the front panel, near the nomenclature plate.) Check also to see whether all currently applicable MWO have been applied. (Current MWO applicable to the equipment are listed in DA PAM 310-7.)

2-3. Installation

WARNING

Be sure green wire from power cable is connected to earth ground before operating test group.

The test set group will operate in environments kept reasonably dean to prevent contamination of switch and circuit board contacts and maintained within a temperature range of 41 to 131° F (5 to 55° C). The control-interface unit requires 115-volt ac, 400-Hz, 3-phase primary input power, and the digital tester requires 115-volt ac, 400-Hz, single-phase power. The control-interface unit, digital tester, analog test adapter and extender boards require approximately a six-foot working space on a standard work bench for operation. To interconnect the test set-group for testing, refer to figure 2-6, 2-7, 2-8, or 2-9 as applicable.

Section II. OPERATING INSTRUCTIONS

2-4. Operator's Controls and Indicators

a. Control-Interface Unit (fig. 2-3). The control-interface unit is equipped with both front and rear panel controls, indicators and connectors. The controls, indicators and connectors are shown in fur 2-3 and described in table 2-1.

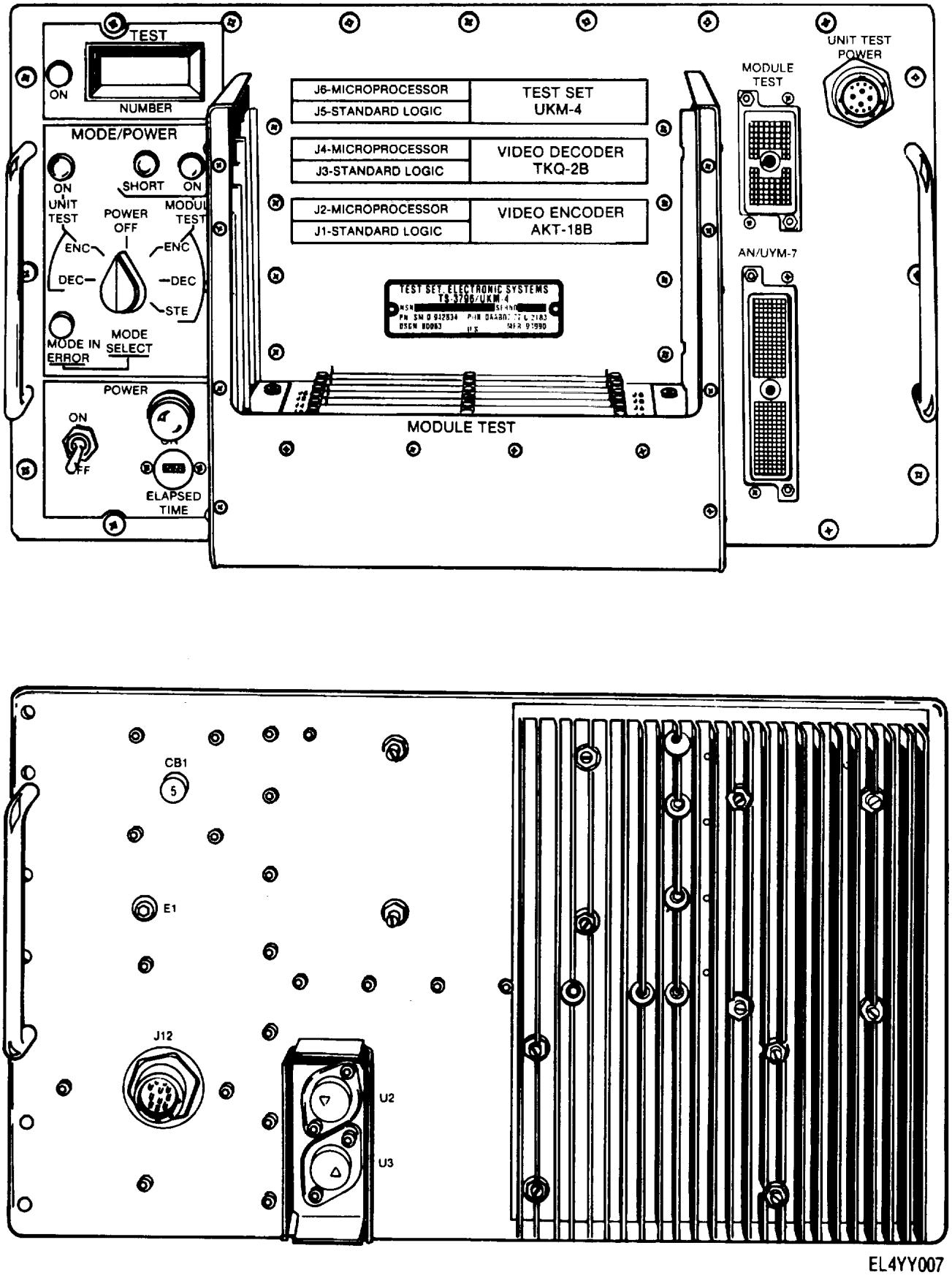


Figure 2-3. Control-interface unit controls, indicators, and connectors.

Table 2-1. Control-Interface Unit Controls. Indicators, and Connectors

Control, indicator, or connector	Function
POWER ON/OFF switch	In ON position, ac power is applied and control-interface unit is turned on. In OFF position, control-interface unit is turned off.
POWER ON indicator	Lights (red) when POWER ON/OFF switch is placed in ON position to indicate presence of ac power.
ELAPSED TIM meter	Indicates number of hours that control-interface unit has been in operation.
MODE SELECT switch	Six-position rotary switch that switches necessary input power to encoder or during unit tests and input power to microprocessor or standard logic cards during card tests. Switch positions are as follows: POWER OFF: No input power is applied to UNIT TEST POWER or MODULE TEST connectors. ENC UNIT TEST: Power is applied to the UNIT TEST POWER connector for encoder unit testing DEC UNIT TEST: Power is applied to UNIT TEST POWER connector for decoder unit testing. ENC MODULE TEST: Power is applied to MODULE TEST connector for encoder microprocessor or standard logic card test (as applicable). DEC MODULE TEST: Power is applied to the MODULE TEST connector for decoder microprocessor or standard logic card test (as applicable). STE MODULE TEST: Power is applied to the MODULE TEST connector for control-interface unit microprocessor or standard logic card test (as applicable).
MODE IN ERROR indicator	Pulses (yellow) if MODE SELECT switch is placed in wrong position for a particular test (e.g., decoder microprocessor or standard logic card prepared for test with MODE SELECT switch in DEC UNIT TEST position).
MODE/POWER UNIT TEST ON indicator	Lights (green) when MODE SELECT switch is in ENC UNIT TEST or DEC UNIT TEST position.
MODE/POWER MODULE TEST ON indicator	Lights (green) when MODE SELECT switch is in ENC MODULE TEST, DEC MODULE TEST or STE MODULE TEST.
MODE/POWER SHORT indicator	Lights (red) during an ENC MODULE TEST, STE MODULE TEST or DEC MODULE TEST when a power problem is detected.
TEST NUMBER ON indicator	Lights (white) when a program card test is being run and goes out at completion of test.
TESTNUMBER display	Provides three-digit display of particular program card test being run. Also, provides fault location information when control-interface unit BITE test is being run.
UNIT TEST POWER connector	Provides interface, between encoder or decoder and control-interface unit.
MODULE TEST connector	Provides interface between control-interface unit and microprocessor or standard logic cards.
AN/UYM-7 connector	Provides interface between control-interface unit and digital tester.
MODULE TEST circuit card rack	Provides connectors for encoder, decoder and control-interface unit, microprocessor and. standard logic cards, to control-interface unit.
Power input connector J12	Provides for connecting line power to control-interface unit.
Circuit breaker CB1	Pushbutton (push-to-reset) 3-phaae circuit breaker in 115-volt ac, 4O0-Hz, 3-phase input line. Interrupts current in excess of five amperes.

b. Digital Tester (fig. 2-4). The digital tester has both front and rear panel controls, indicators, and connectors The controls, indicators, and connectors are shown in figure 2-4 and described in table 2-2.

Table 2-2. Digital Tester Controls. indicators, and Connectors

Control, indicator, or connector	Function
POWER switch-indicator	In up position, digital tester is turned on and red indicator is on. In down position, digital tester is turned off and red indicator is off.
UUT POWER switch-indicator	In up position, dc power is applied through interface connector to the control-interface unit for microprocessor or standard logic cards under test and indicator lights red In down position, no dc power is applied to cards and indicator is out.
TEST switch-indicator (two switches)	Pressing either of these momentary switches to down position initiates complete test sequence. Red indicator is on while test is in progress. Pressing either TEST switch to up -100 initiates tester front panel lamp test.
RECYCLE TEST switch- indicator	Pressing this momentary switch to down position initiates complete test sequence that is repeated continuously with a delay of approximately 3 seconds between test sequence. Red indicator is on during recycle mode. Pressing TEST, RECYCLE TEST or CONT TEST switch-indicator to down position stops recycle mode.
CONT TEST switch-indicator	Pressing this momentary switch to down position places digital tester in continuous test mode. In this mode, red indicator is on and digital tester continuously generates test signals regardless of number of tests selected Pressing TEST, CONT TEST, or RECYCLE TEST switch-indicator to down position stops continuous test mode.
PROBE connector	Provides interface between logic probe and digital tester.

Table 2-2. Digital Tester Controls, Indicators, and Connectors-Continued

Control, indicator, or connector	Function
TEST RATE PER SEC switch	Eight-position rotary switch that controls test pattern rate. Switch setting of 100, IOK (10 thousand), 100K, 200K, 400K, 1M (1 million), 2M, or 4M can be selected.
NUMBER OF TESTS switch	Twelve-position rotary switch that controls number of tests performed during test sequence. Switch setting of IOK (10 thousand), 20K, 40K, 100K, 200K, 400K, 1M (1 million), 2M, 4M, 10M, 20M, or 40M can be selected.
DISPLAY switch	Twenty-position rotary switch that controls which input and output signals of card under test contribute to count indicated on counter display. In PASS/FAIL position, all input and output signals of card under test contribute to count on counter display. In positions 1-8 through 121-128, only input and output signals of card under test for pins corresponding to switch setting contribute to count on counter display. IN + PULSE WIDTH or - PULSE WIDTH position, counter display is appropriate positive or negative pulsewidth in microseconds. In PROBE position, only input counts from logic probe are indicated on counter display.
PASS/FAIL indicators	Red FAIL indicator comes on when card being tested fails est. Green PASS indicator comes on when card being tested passes test. PASS/FAIL indicators operate only when DISPLAY switch is set to PASS/FAIL.
PROBE THRESHOLD switch	Five-position rotary switch that selects minimum voltage threshold required to activate logic probe. Switch setting of IV, 2V, 5V, 7V, or 9V can be selected. Setting normally used is 2V (TTL). Other settings are used with other logic families.
Counter display	Provides eight digit display of total transition counts or pulse-width in microseconds after test sequence, depending upon setting of display switch.
READY/ERROR indicator	Lights (white) when test program has been loaded into tester correctly or duplicate action is completed. Red READY/ERROR indicator is on if no program is currently in tester memory, test program has been loaded into tester incorrectly, or power dropout has occurred.
PROGRAM ENTER switch-indicator	Pressing this momentary switch to down position loads program on program card in card reader slot to be loaded into tester memory. Red indicator is on during program enter period.
Card reader slot	Provides interface between program card and tester. Programs may be loaded into tester from program card, or programs previously loaded into tester memory may be duplicated on blank cards.
DUPLICATE switch	Keylock switch that provides capability of duplicating program previously loaded into tester memory on magnetic stripe of program card
LOCKED/OPEN lever	In OPEN position, allows connector adapter to be inserted into or removed from interface connector. In LOCKED position, locks connector adapter to interface connector.
Interface connector	Provides interface between control-interface unit and digital tester.
Logic probe	Indicates logic levels in card under test. Also provides input to digital tester to permit monitoring transition counts or pulse-widths (positive or negative). Lamp near tip of logic Probe is off when logic 0 (negative voltage or ground) is probed. Lamp is on when logic I (positive voltage or open) is probed. Lamp flashes at I 0-Hz rate when pulse are present at probe input.
10A FAST fuse holder	Houses 10-ampere, 125-volt line fuse.
115-230 VAC 47440 Hz power receptacle	Provides for connecting line power to tester.
EXTERNAL POWER SUPPLIES receptacle	Provides for connecting external power to unit under test via front panel interface connector and connector adapter.
PROGRAMING PANEL interface connector	Provides interface between tester and optional programming panel.

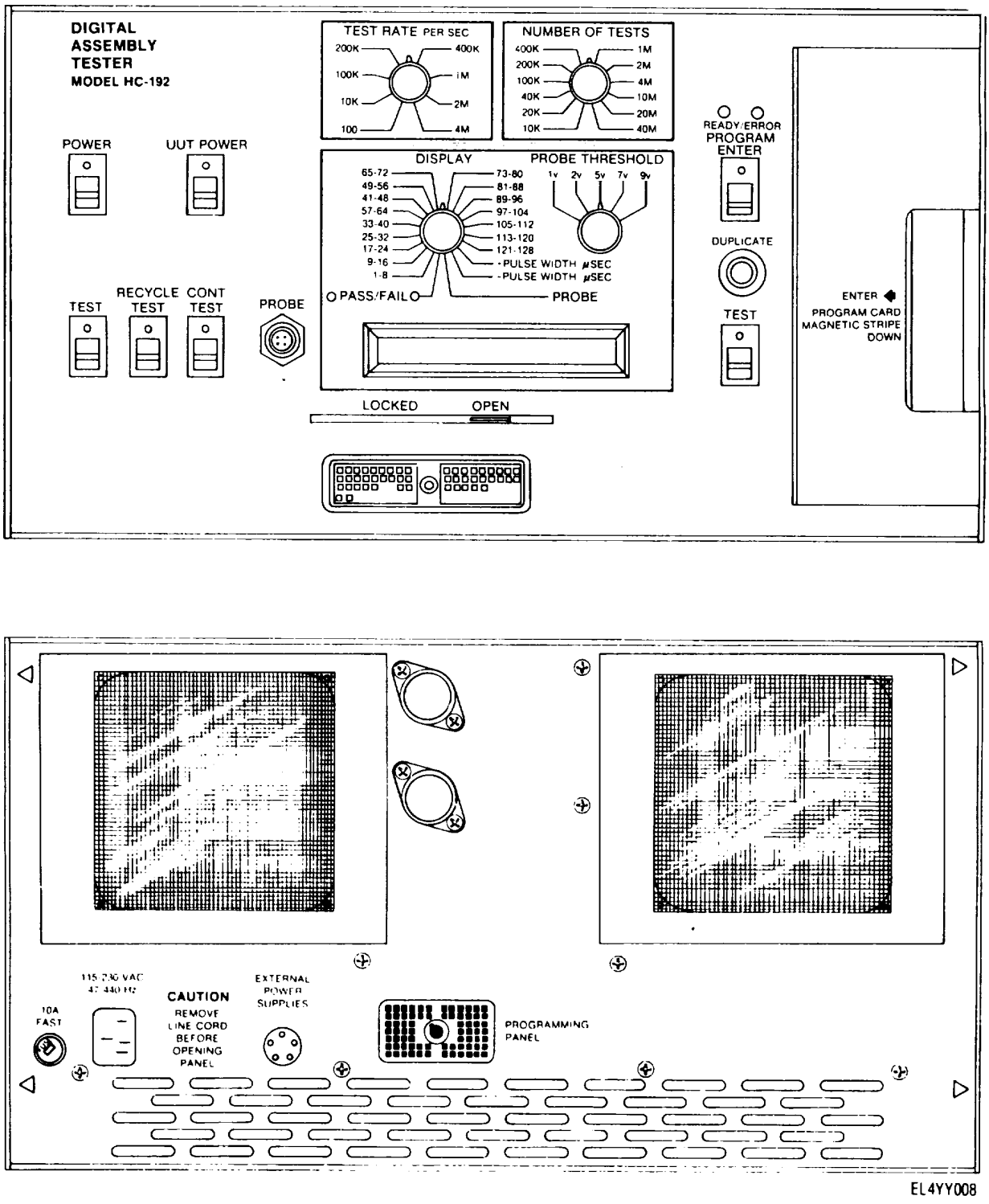


Figure 2-4. Digital tester, controls, indicators, and connectors.

c. Analog Test Adapter (fig. 2-5). The analog test adapters controls, monitor points and connectors are shown in figure 2-5 and described in table 2-3.

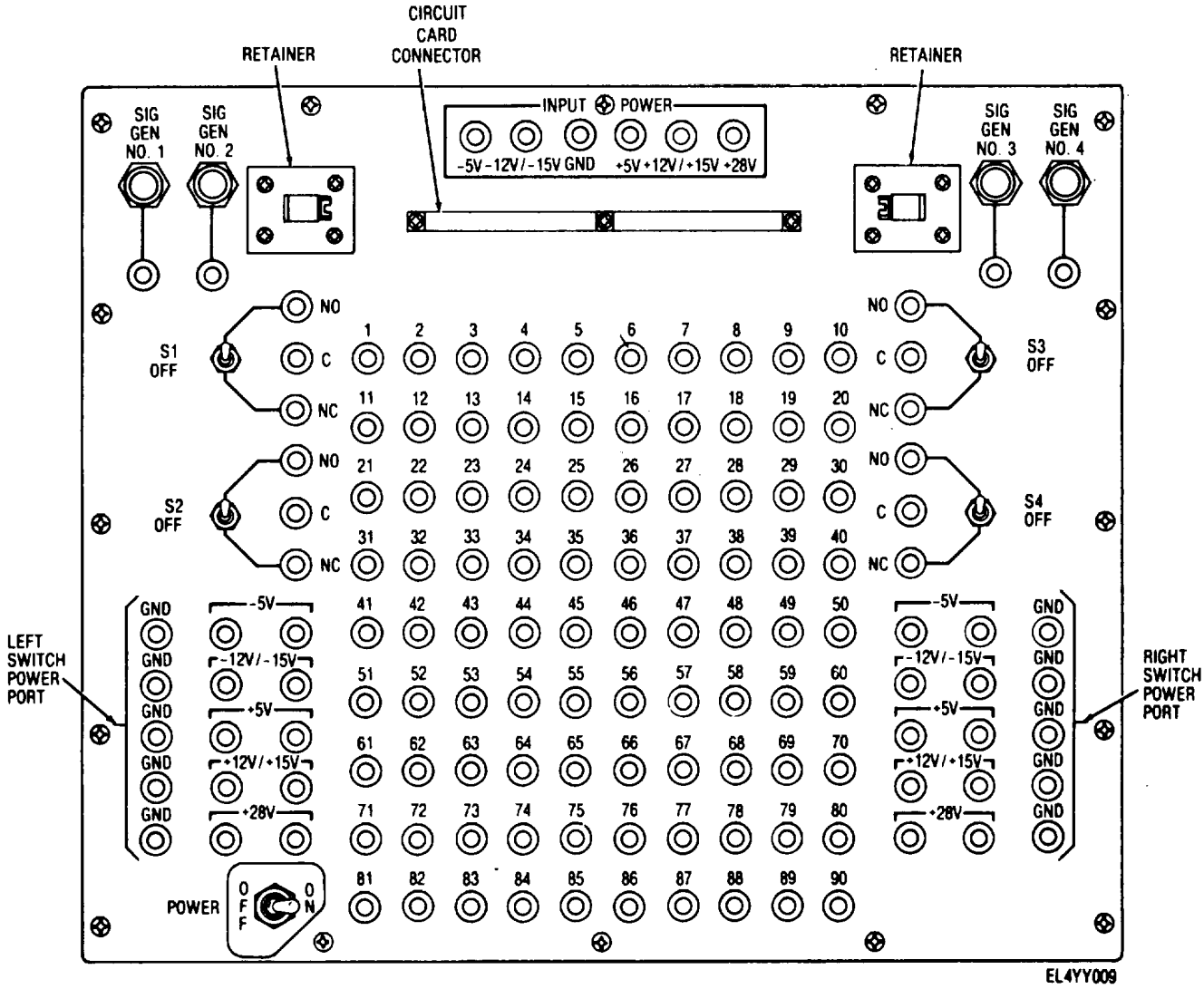


Figure 2-5. Analog test adapter, controls and monitor points

Table 2-3. Analog Test Adapter, Controls and Monitor Points

Control, monitor point, or connector	Function
Right and left switch power port	Supplies necessary input voltages and grounds to test points 1 through 90, as applicable. The following power port voltages are available in accordance with the particular external power supply or supplies connected. Green -5V Blue -12V/-15V Yellow +5V Orange +12V/+15V Red +28V Black GND
Test points 1 through 90	Used for injecting voltage and signal inputs to particular portions of the analog circuit card under test.
POWER ON/OFF switch	In ON position, power is switched from the INPUT POWER CONNECTOR to the left and right switch power ports
Switch S1 through S4	Two position switches that switch voltage or signal inputs to particular portions of analog card under test
SIG GEN NO 1 through NO 4 connector	Provides interface to connect four signal generators to analog test adapter to perform analog circuit card test.
Circuit card connector	Provides interface for connecting circuit card under test to the analog test adapter.
INPUT POWER connector jacks	As necessary, external power supplies are connected to these jacks at the following points: Green -5V

Table 2-3. Analog Test Adapter Controls and Monitor Points-Continued

Control, monitor point, or connector	Function	
	Blue	-12V/-15V
	Black	GND
	Yellow	+5V
	Orange	+12V/+15V
	Red	+28V

2-5. Operation Under Usual Conditions

a. Preliminary Starting Procedure. Set controls on control-interface unit and digital tester in accordance with table 2-4.

Table 2-4. Preliminary Control Settings

Component	Control	Setting
Control-interface unit	POWER ON/OFF switch	OFF position
	MODE SELECT switch	POWER OFF position
	Circuit breaker CB1	Reset (in) position
Digital tester	POWER switch	Down position (off)
	UUT POWER switch	Down position (off)
	DISPLAY switch	PASS/FAIL position
	PROBE THRESHOLD switch	2V position

b. Visual Inspection. Trouble in the test set group may be caused by abnormal conditions that may easily be detected by a visual inspection. Visually inspect the test set group as follows:

(1) Check that all cables and equipment are properly installed, complete, and undamaged.

(2) Check that all cables and equipment are free of dirt, grease, or other foreign material that could cause damage or interfere with proper operation of the equipment.

(3) Check all controls for proper, positive action.

(4) Check circuit breaker on control-interface unit for reset position (in).

c. Control-interface Unit BITE Test. Connect the test set group in accordance with figure 2-6 and proceed as follows:

(1) Set the digital tester controls as follows:

(*a*) POWER switch indicator in up position (on) and observe indicator lights. POWER and PROGRAM ERROR (red) indicators light.

(*b*) UTT POWER switch indicator up position (on) and observe UT7 POWER indicator lights.

(*c*) Set TEST RATE PER SEC switch in 2M position.

(*d*) Set NUMBER OF TESTS switch in 20M position.

(2) Set control-interface unit POWER ON/OFF switch in ON position and observe POWER ON indicator lights.

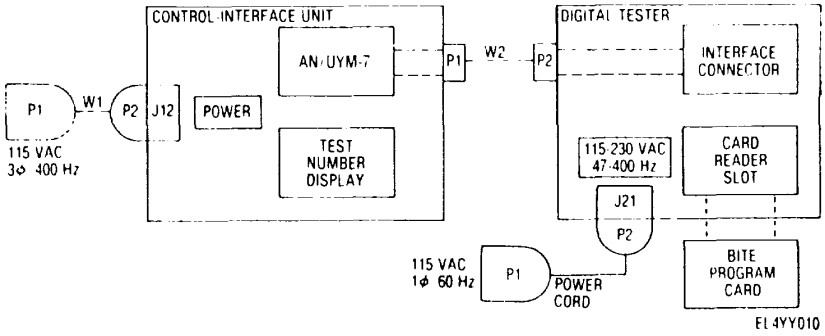


Figure 2-6. Interconnections for control-interface unit BITE test.

(3) Perform BITE test as follows:

(a) Insert BITE test program card in card reader slot of digital tester.

(b) Press PROGRAM ENTER switch-indicator on digital tester to down position and observe PROGRAM ENTER indicator lights.

(c) Observe that READY indicator on digital tester lights after approximately 10 seconds and PROGRAM ENTER indicator goes of.

(d) Press either TEST switch-indicator on digital

tester to down position and observe the following:

1. TEST switch indicator on digital tester lights.

2. TEST ON indicator on control-interface unit lights.

3. All MODE/POWER indicators on control-interface unit flash twice and TEST NUMBER indicates 88.8.

4. At end of BITE test, TEST NUMBER indicator reads 00.5.

5. PASS indicator on digital tester fights at the end of test.

(*e*) Perform phase-displacement check as follows:

1. On the control-interface unit, connect channel A of oscilloscope between pin HI and pin FS (gnd) of MODULE TEST connector.

2. Connect channel B of oscilloscope between pin H2 and pin FS (sod) of MODULE TEST connector.

3. Adjust oscilloscope controls so that waveforms displayed clearly show displacement between signals monitored. Displacement should be less than 100 ns (A, fig 5-2).

4. Disconnect channel B of oscilloscope from pin H2 and F8 (gnd) of MODULE TEST connector.

5. Reconnect channel B of oscilloscope between pin H7 and F8 (gnd) of MODULE TEST connector.

6. Adjust oscilloscope controls so that waveforms displayed clearly show displacement between signals monitored. Displacement should be less than 100 ns (B, fig. 5-2).

7. Remove oscilloscope leads from MODULE TEST connector.

(*f*) Set control-interface unit and digital tester controls in accordance with table 2-4.

d. Digital Tester Self Test. To perform a digital tester self test, refer to TM 11-6625-2951-13.

e. General Operating Procedures. A typical procedure for performing a standard logic card test is contained in *d* below. Figures 2-7 and 2-8 show interconnections for encoder and decoder unit tests, respectively. For detailed procedures for performing unit tests and microprocessor, standard logic and analog circuit card tests, refer to TM 11-5841-287-30 (encoder) and TM 11-5840-361-30 (decoder).

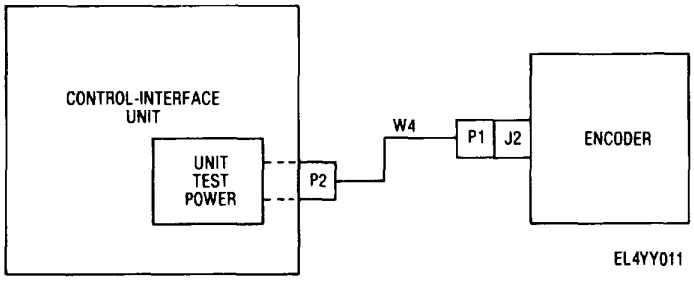


Figure 2-7. Interconnections for encoder unit tests.

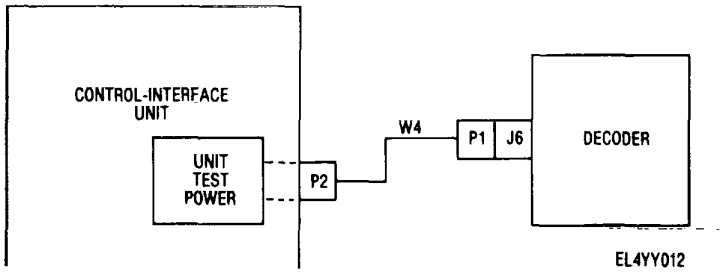


Figure 2-8. Interconnections for decoder unit tests.

f. Typical Standard Logic Card Test. To perform a typical standard logic card test on a decoder card proceed as follows:

(1) Interconnect test set group in accordance with figure 2-9.

(2) Set control-interface unit and digital tester controls in accordance with table 2-4.

(3) Place POWER switch-indicator on digital tester to up position (ON) and observe that POWER and PROGRAM ERROR (red) indicators fight.

(4) Place UUT POWER switch-indicator on digital tester to up position (N) and observe that UUT POWER indicator lights.

(5) Place POWER ON/OFF switch on control-interface unit to ON and observe that POWER ON indicator lights.

(6) Place MODE SELECT switch on control-interface unit to applicable MODULE TEST position (ENC,

DEC or STE) and observe MODULE TEST ON indicator lights.

(7) Insert applicable program card in card reader slot of digital tester.

(8) Press PROGRAM ENTER switch-indicator on digital tester to down position and observe that PROGRAM ENTER indicator lights. Observe READY indicator on digital tester lights after approximately 10 seconds and PROGRAM ENTER indicator goes off.

(9) Set TEST RATE PER SEC switch on digital tester in accordance with program card test.

(10) Set NUMBER OF TESTS switch on digital tester in accordance with program card test.

(11) Press either TEST switch-indicator on digital tester to down position and observe indicator lights.

(a) Observe TEST NUMBER display on control-interface unit for proper program card test.

(b) Observe that MODE IN ERROR indicator does not flash.

(c) Observe that TEST ON indicator on control-interface unit fights during program card test and goes out at end of test.

(d) Observe PASS/FAIL indicator on digital tester lights PASS or FAIL.

(12) Set control-interface unit and digital tester controls to their OFF position.

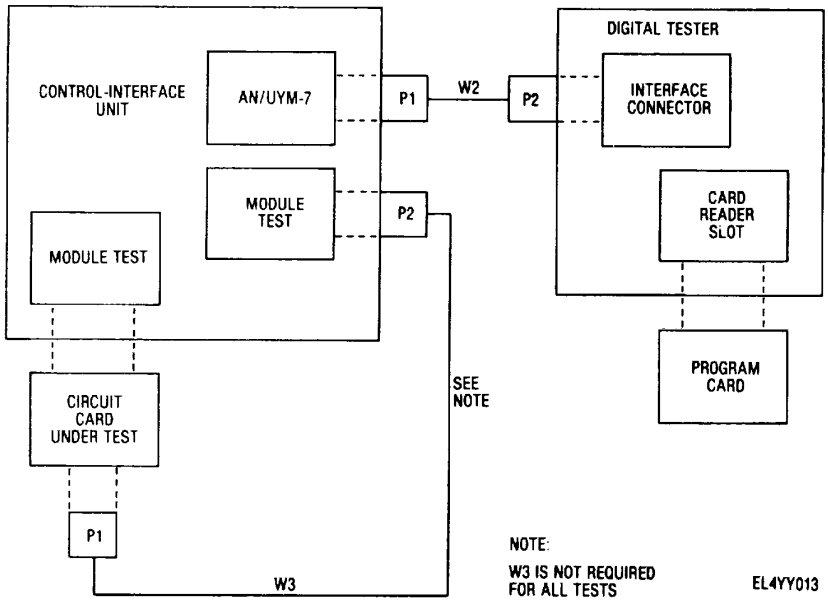


Figure 2-9. Typical standard logic card test connections

g. Shutdown Procedure. To shut the test set group down after the desired tests have been performed proceed as follows:

(1) Set all controls on control-interface unit and digital tester in accordance with table 2-4.

(2) Remove all connecting cables and adapters, except input power cables, that were used during tests. Stow these accessories in the cover of the test set case or in a convenient work bench drawer or cabinet.

2-6. Operation Under Unusual Conditions

a. Operation Under Extreme Environmental Conditions. The test set group is designed as an all weather equipment. However, extreme temperatures and weather conditions can affect equipment performance.

(1) *Extreme moist heat.* When the test set group is operated in extreme moist heat (tropical climates) over prolonged periods of time, the frequency of preventive maintenance (table 3-1) should be increased to daily to avoid equipment breakdown.

(2) *Extreme dry heat.* When the test set group is operated in extreme dry heat over prolonged periods of time, connecting cables and connectors should be inspected weekly for cracks or breaks.

(3) *Extreme cold.* When the test set group Is being operated in low temperatures (arctic climates) over prolonged periods of time, the frequency of preventive maintenance (tables 3-1 and 3-2) should be increased to daily to avoid equipment breakdown.

(4) *Salt air and sea spray.* The test set group should not be exposed to these conditions over prolonged periods of time as rust, corrosion and component breakdown may result

(5) *Sandstorms or duststorms.* Dust or sand are major problems in desert areas Frequent dusting and clean-

ing of the test set group are required to property maintain desert-operated equipment.

b. Operation Under Emergency Conditions. In the event of a digital tester failure the control-interface unit may be operated to supply power to an encoder or decoder for unit BIT or analog circuit card testing.

2-7. Preparation for Movement

a. Preparation of Data Link Tester for Movement. To prepare the data link tester for movement, refer to figure 2-1 and proceed as follows:

(1) Disconnect all connecting cables.

(2) Place and secure cables WI through W4, three extender cards, card edge connector, ballast, coax adapter and dummy load in test set case cover.

(3) Replace foam packing in test case cover.

(4) Replace cover plate inside of test case cover and secure with four fasteners.

(5) Obtain assistance and carefully place control-interface unit in main body of test set case.

(6) Replace foam packing on top of control-interface unit.

(7) Obtain assistance and carefully replace cover on test set case.

(8) Secure cover to test set case with quick release cover latches.

b. Preparation of Digital Tester for Movement. Repack and store accessories of the digital tester in accordance with TM 11-6625-2951-13.

CHAPTER 3
OPERATOR/CREW AND ORGANIZATION MAINTENANCE INSTRUCTIONS

Section I. OPERATOR/CREW MAINTENANCE INSTRUCTIONS

3-1. Operator/Crew Tools and Equipment

Special tools and accessories issued with or prescribed for use by the operator for the test group are listed in TM 1 1-6625-2937-23P.

3-2. Operator/Crew Lubrication Instructions

No lubrication is required.

3-3. Operator/Crew Preventive Maintenance Checks and Services

To ensure that the test set group is always ready for operation, the equipment must be inspected systematically so that defects may be discovered and corrected before they result in serious damage or failure. The necessary preventive maintenance checks and services (PMCS) to be performed are listed in table 3-1. The item numbers indicate the sequence of and minimum inspection required. Defects discovered during operation of the equipment will be noted for future correction to be made as soon as operation has ceased. Stop operation immediately if a deficiency that would damage the equipment is noted during operation. Record all deficiencies, together with the corrective action taken, on the applicable forms (TM 38-750).

NOTE

If the equipment must be kept in continuous operation, check and service only those items that can be checked and serviced without disturbing operation; make the complete checks and service when the equipment can be shut down.

Table 3-1. Operator Crew Preventative Maintenance Checks and Services

B—Before D—During W—Weekly

Item No.	Interval B	Interval D	Interval W	Item to be inspected	Procedure	Equipment will be reported not ready (Red) if:
1	•			Test set group.	Check to see that each switch, circuit breaker and control operates smoothly.	Switch, circuit breaker, or control does not operate smooth.
2	•	•	•	Control-interface unit.	Set all switches and controls in accordance with table 2-4. Set POWER ON/OFF switch to ON. Check TEST NUMBER display for 00.0 reading.	TEST NUMBER display reads other than 00.0.
3	•		•	Test set group.	Perform control-interface unit BITE test in accordance with paragraph 2-5*b*(2).	One or more indicators do not light or TEST NUMBER display does not indicate 00.5at completion of test
4	•		•	Digital tester.	Pace TEST switch indicator in up position and observe all panel indicators fight.	Any panel indicator does not light.
5		•		Control-interface unit.	Check elapsed time meter operation. **NOTE** Meter moves slowly; it only changes at hourly intervals.	Elapsed time meter not operating.
6		•		Control-interface unit.	*a.* Place mode SELECT switch through the following positions and observe the MODE/POWER MODULE TEST ON indicator lights in each position: **NOTE** Disregard the momentary flashing of MODE POWER SHORT indicator. (1) ENC MODULE TEST. (2) DEC MODULE TEST. (3) STE MODULE TEST. *b.* Place MODE SELECT switch through the following positions and observe the MODE/POWER UNIT TEST ON indicator lights in each position: (I) ENC UNIT TEST. (2) DEC UNRT TEST.	*a.* MODE/POWER MODULE TEST ON indicator does not light in one or all positions. *b.* MODE/POWER UNIT TEST ON i or does not light in one or both positions
7	•	•	•	Test set group.	Restore all switches to their OFF position	

3-4. Operator/Crew Troubleshooting

No troubleshooting by the operator/crew is required.

3-5. Operator/Crew Maintenance of the Test Set Group

No maintenance functions are allocated to this maintenance category.

Section II. ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

3-6. Organizational Tools and Equipment

Tools, materials, and test equipment required for organizational maintenance are listed in the maintenance allocation chart (MAC), appendix B.

3-7. Repainting and Refinishing Instructions

a. Control-Interface Unit. To repaint and refinish the control-interface unit proceed as follows:

(1) *Material Requirements.* The following materials are required for repainting and refinishing.

(*a*) Sandpaper (fine).
(*b*) Primer, color Y per MIL-F-14072.
(*c*) Enamel, black, per MIL-F-14072.
(*d*) Paint brush.

(2) *Application.* Remove rust and corrosion from metal surfaces by lightly sanding them with fine sandpaper. Refer to the applicable care and painting of equipment specified in TB 43-0118.

b. Digital Tester. Refer to TM 11-6625-2951-13 (Operators, Organizational, and Direct Support Maintenance Manual for Test Set, Electronic Systems AN/UYM-7) for digital tester repainting and refinishing instructions.

3-8. Organizational Lubrication Instructions

No lubrication is required.

3-9. Organizational Preventive Maintenance Checks and Services

To ensure that the test set group is always ready for operation, the equipment must be inspected systematically at specified intervals so that defects may be discovered and corrected before they result in damage or failure of the equipments. The necessary preventive maintenance checks and services AMCS) to be performed are listed in table 3-2. The item numbers indicate the sequence of and minimum inspection required.

NOTE

The checks and services specified must be accomplished when the operation schedule will permit equipment shutdown.

Table 3-2. Organizational Preventive Maintenance Checks and Services

Q-Quarterly **S**-Semiannually'

Item no.	Interval	Item to be inspected	Procedures
1	Q	Power cables.	Check for dirty or bent pins, cracks and breaks.
2	Q	Interconnecting cables.	Check for dirty or bent pins, cracks and breaks.
3	Q	Connectors.	Check for tightness and bent pins.
4	Q	Control knobs.	Check for loose or broken knobs.
5	Q	Switches.	Check for dirty and inoperative switches.
6	S	Exterior surfaces of equipment.	Remove all dirt, rust and corrosion from equipment.
7	Q	Extender cards.	Check for bent pins, cracks and breaks.
8	Q	Test adapters and connectors.	Check for dirty or bent pins, cracks and breaks.

3-10. Organizational Troubleshooting

No troubleshooting is required by organizational maintenance.

3-11. Organizational Maintenance of Test Set Group

The maintenance duties assigned to organizational maintenance are listed below, together with references to the particular paragraphs covering the maintenance functions. Those instructions supplement the maintenance duties for operator's maintenance (para 3-3).

a. Cleaning Sara 3-13).
b. Removal and replacement of indicator lamps (para 3-14).
c. Fuse replacement (digital tester) (para 3-15).

3-12. Materials

To properly perform the organizational maintenance on the test set group the following materials are required.

a. Lint-free cloths.
b. Cleaning compound (Trichlorotrifluoroethane).
c. Brush.

3-13. Cleaning

The exterior surfaces of the test set group and accessories should be kept clean and free of dirt, grease, and fungus. When necessary clean the equipment as follows:

a. Remove moisture and loose dirt with a clean soft cloth.

WARNING

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE.
Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since TRICHLOROTRIFLUOROETHANE dissolves

natural oils, prolonged contact with skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

b. Remove grease, fungus, and ground-in dirt from the equipment using a soft cloth dampened (not wet) with trichlorotrifluoroethane.

c. Remove dirt from connectors with a brush; remove moisture with a dry cloth.

d. Clean control-interface unit TEST NUMBER display window with a soft clean cloth moistened with water. If dirt is difficult to remove, a mild soap may be used.

e. Clean counter display window on digital tester with a soft cloth moistened with water. If dirt is difficult to remove, a mild soap may be used.

f. Clean switches and control knobs using a soft cloth dampened with water. Use mild soap if necessary.

3-14. Removal and Replacement of Indicator Lamps

a. Control-Interface Unit Indicator Lamp Removal To remove an indicator lamp from the control-interface unit, proceed as follows:

(1) Unscrew and remove the lens assembly by turning it counterclockwise.

NOTE

The lamp comes out of the socket with the lens assembly.

(2) Pull lamp out of lens assembly.

NOTE

POWER ON indicator lamp is removed by pressing in and turning counterclockwise.

b. Control-Interface Unit Indicator Lamp Replacement. To replace an indicator lamp in the control-interface unit proceed as follows:

NOTE

Replace POWER ON indicator lamp by turning it clockwise.

(1) Insert lamp in lens assembly.

(2) Screw lens assembly into the socket by turning it clockwise.

(3) Check lamp for proper operation by performing BITE test (para 2-5b(2)).

c. Digital Tester Indicator Lamp Replacement. To replace an indicator lamp in the digital tester refer to TM 11-6625-2951-13.

3-15. Fuse Replacement (Digital Tester)

To replace the 10 ampere FAST fuse in the rear of the digital tester proceed as follows:

WARNING

Before replacing fuse, disconnect power cable from power source.

a. Press fuse holder cover in, turn counterclockwise and remove cover.

NOTE

The fuse comes out of the holder with the cover.

b. Pull fuse out of cover.

c. Place new fuse in fuse holder cover.

d. Insert fuse in holder, press and turn fuse holder cover clockwise to locked position.

3-16. Testing After Repair

After a repair has been completed on the control-interface unit or digital tester proceed as follows:

a. Set the control-interface unit and digital tester controls in accordance with table 2-4.

b. Perform the BITE test in accordance with paragraph 2-5b(2).

c. Perform the digital tester self test in accordance with TM 11-6625-2951-13.

4-1. Overall System Operation

a. General. The control-interface unit of the test set group extends the capability of the digital tester to test standard logic cards and microprocessor (MPU) cards that cannot normally be tested by the digital tester alone. This extended capability permits fault isolation to the component level to be accomplished on the ground station decoder printed circuit cards, the airborne encoder printed circuit cards and the special test equipment (STE) printed circuit cards. Functions of the test set group are described at the block diagram level in this chapter. Refer to TM 11-6625-2951-13 for the functional description of the digital tester.

b. System Block Diagram Analysis (fig. 4-1). The standard logic cards and microprocessor (MPU) cards of a subsystem which have failed a BITE test are individually connected via the front panel (I A2) connectors to the test set group. The control-interface unit provides the means for interfacing the digital tester to the standard logic cards and microprocessor (MPU) cards that are not readily tested by the digital tester.

(1) *Program card.* To test a printed circuit card, the applicable program card is selected and inserted into the digital tester's card reader slot. Each program card is a plastic card with a magnetic stripe containing the test program for a particular printed circuit card. With the program card inserted in the card reader slot and the module under test inserted in the STANDARD LOGIC connector (al, J3 or J5) or the MICROPROCESSOR connector (J2, J4 or J6), a verification check is made to ensure that the MODE input signal to the STE MPU (1A2A2) agrees with the TEST NUMBER display on front panel 1 A2. The read only memory (ROM) portion of STE RAM/ROM circuit card 1 A2A3 provides the program that is accessed from memory by STE MPU I A2A2 for the verification check. After the verification check is completed, the digital tester outputs the STIMULUS signal to test the module inserted in the STANDARD LOGIC connector. The logic inputs from the digital tester result in an exact and repeatable number of logic transitions (changes in logic state) at each output of the module under test. The module inserted in the MICROPROCESSOR connector receives its stimulus from the STE MPU IA2A2 via the ADDRESS BUS, CONTROL BUS and DATA BUS. In either case, the module under test outputs the DIGITAL COUNTS signal for input to the digital tester. This signal is converted and compared to the transition count which is input to the digital tester from the program card. The transition count provides an accurate means of testing and troubleshooting, since the count which is registered on the digital tester transition counts display is an accurate indication of module pass/fail operation.

(2) *Synchronization.* The MPU under test receives the UUT MICROPROCESSOR CLOCK input from the phase-locked loop (PLL). The MPU divides down this input and generates the 250 KHZ CLOCK feedback signal to the PLL. This 250 KHZ CLOCK input is compared by the PLL with the 250 KHZ REFERENCE signal from the digital tester. If these signals are not in phase, the PLL voltage-controlled oscillator (VCO) is adjusted so that synchronization between the digital tester and the MPU under test is established. Synchronization between the encoder SYSTEM CLOCK signal and the control-interface unit is maintained by a similar PLL circuit.

(3) *System control.* STE MPU IA2A2 resets the MPU under test and then outputs SYSTEM CONTROL. This signal is used to turn control over to the MPU under test. It also sets up the module bus switching circuit (1A2A7) by using the ROM portion of STE RAM/ROM I A2A3 to generate the appropriate ADDRESS and CONTROL BUS signals. The STE ROM portion of STE RAM/ROM IA2A3 normally holds the instructions for all of the STE MPU I A2A2 operations. The MPU under test assumes control after all of the previous conditions have been satisfied. It accesses the test ROM portion of the PIT (programmable interval timer) and test ROM portion of the memory (I A2A6). Test ROM I A2A6 provides the test stimulus from the test program stored in this portion of the memory. The PIT in the control-interface unit is set to limit the amount of time that the test can run. The MPU under test then runs the actual test, checking the various memories and peripheral interfaces. Test results are then displayed on the digital tester's front panel. A failure of any part of the test produces a failure indication on the digital tester, and displays a TEST NUMBER readout for the failed test on the control-interface unit. Even if the MPU being tested fails to run, a failure indication occurs only after the prescribed time set by the PIT has elapsed. The test set group takes control again to indicate the failure. Data pertaining to the failure is stored by the MPU under test in the RAM portion of STE RAM/ROM 1A2A3.

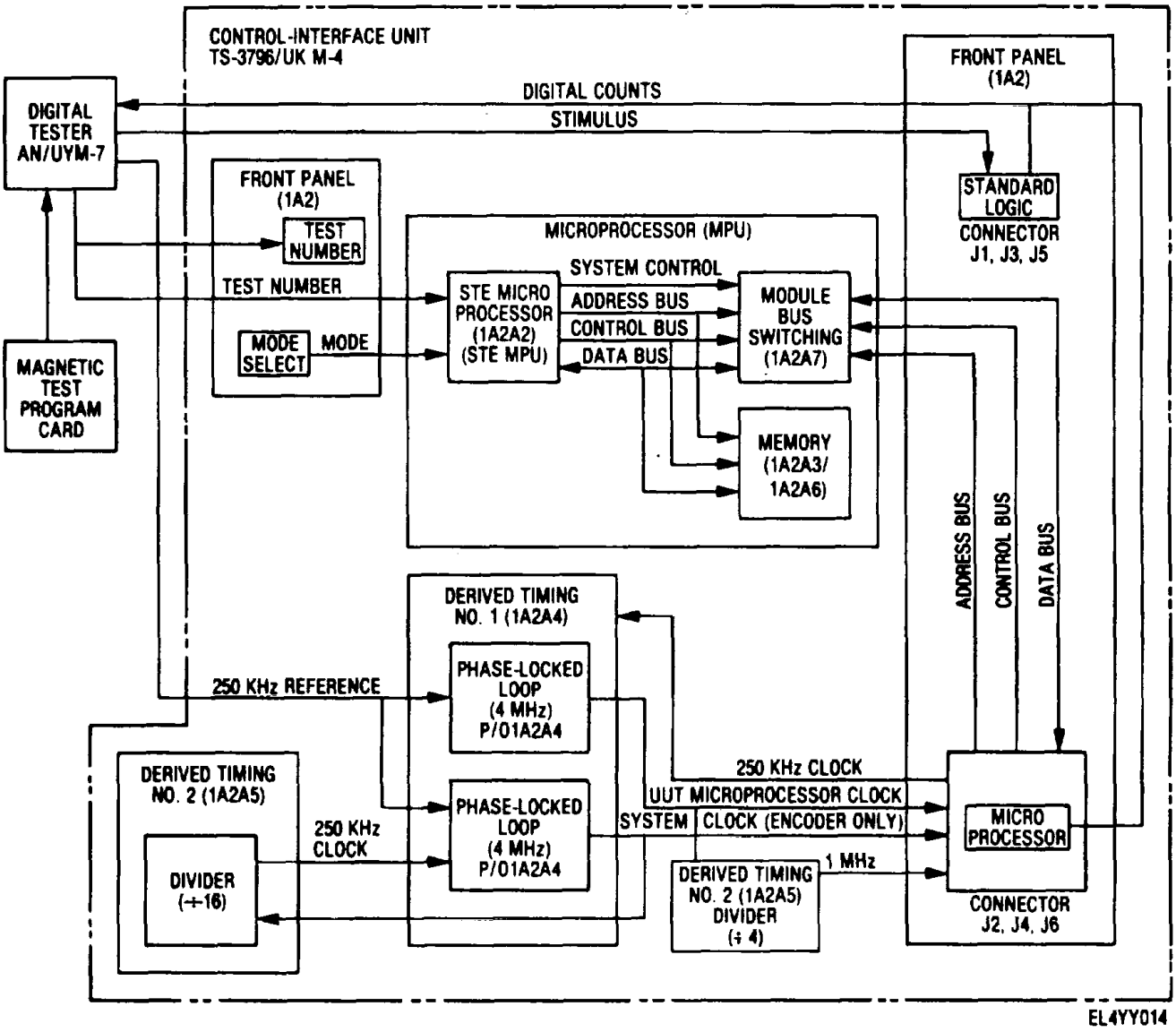


Figure 4-1. Data link tester block diagram.

4-2. Control-Interface Unit Functioning

a. Overall Block Diagram Analysis (fig. 4-2)

(1) *Power fault detection.* The digital tester provides dc power (+5V +12V/+15V and -12V/-15V) to the MODULE TEST connector (1A2) and the power supply monitor circuit (1A2A1) via MODE SELECT switch S2 (1A2). The power supply monitor circuit, in turn, monitors the power input from the MODE SELECT switch and provides SHORT signal to SHORT indicator DS3 (1A2) if the dc voltages selected by the MODE SELECT switch for the encoder (±5V and ±12V) or the decoder and STE (+5V and ±15V) are not within tolerance. The program card inserted in the card reader slot of the digital tester establishes the correct MODE SELECT switch S2 (1A2) position for the appropriate MODULE TEST connector (1A2).

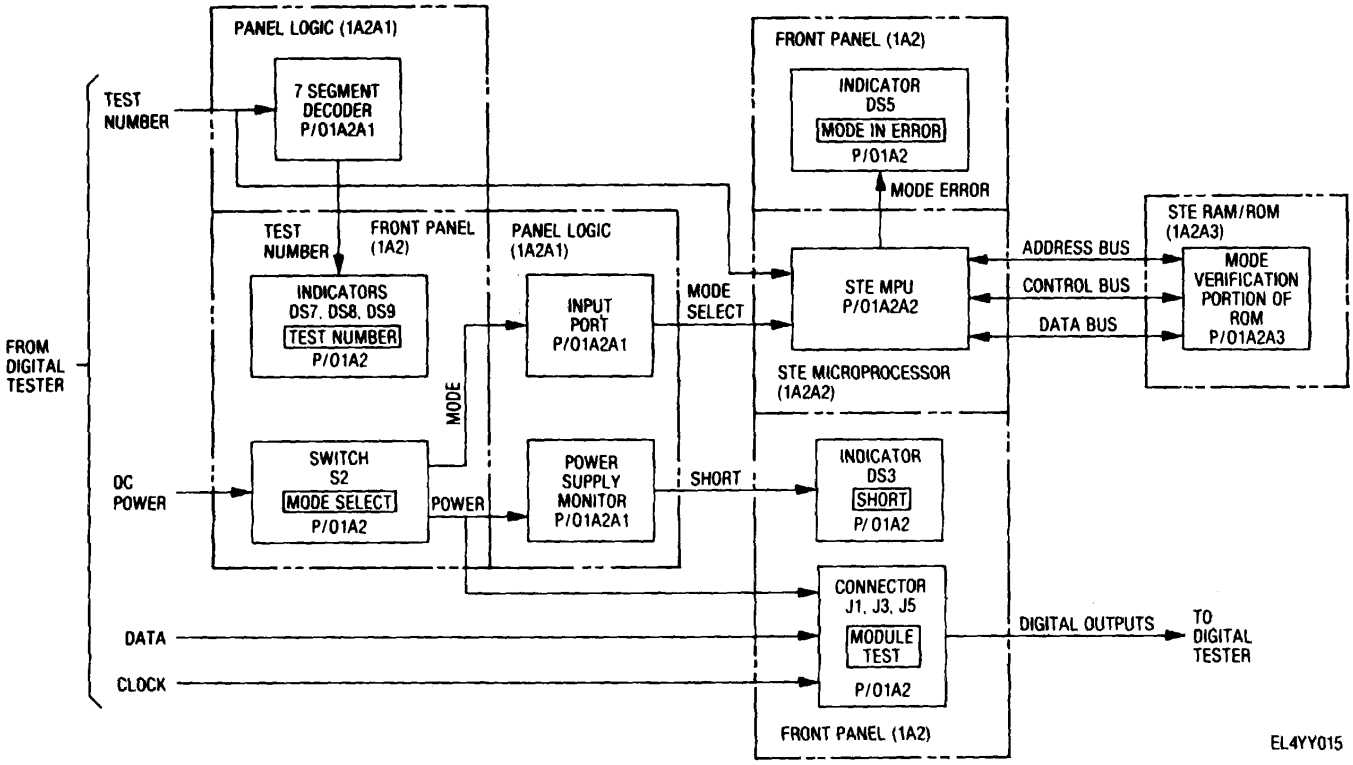


FIGURE 4-2. Control-interface unit overall block diagram (sheet 1 of 3)

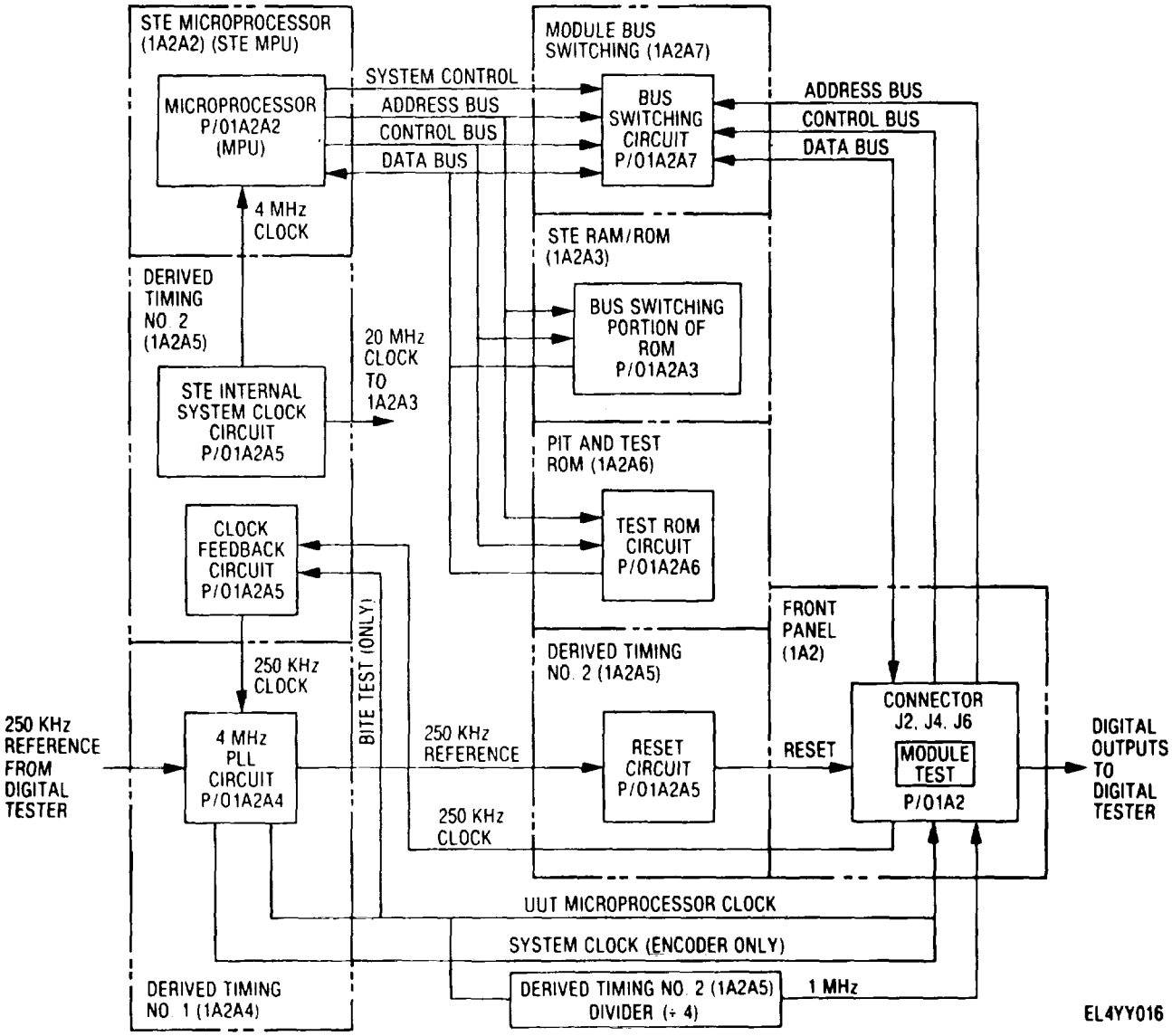


Figure 4-2. Control-interface unit overall block diagram (sheet 2 of 3).

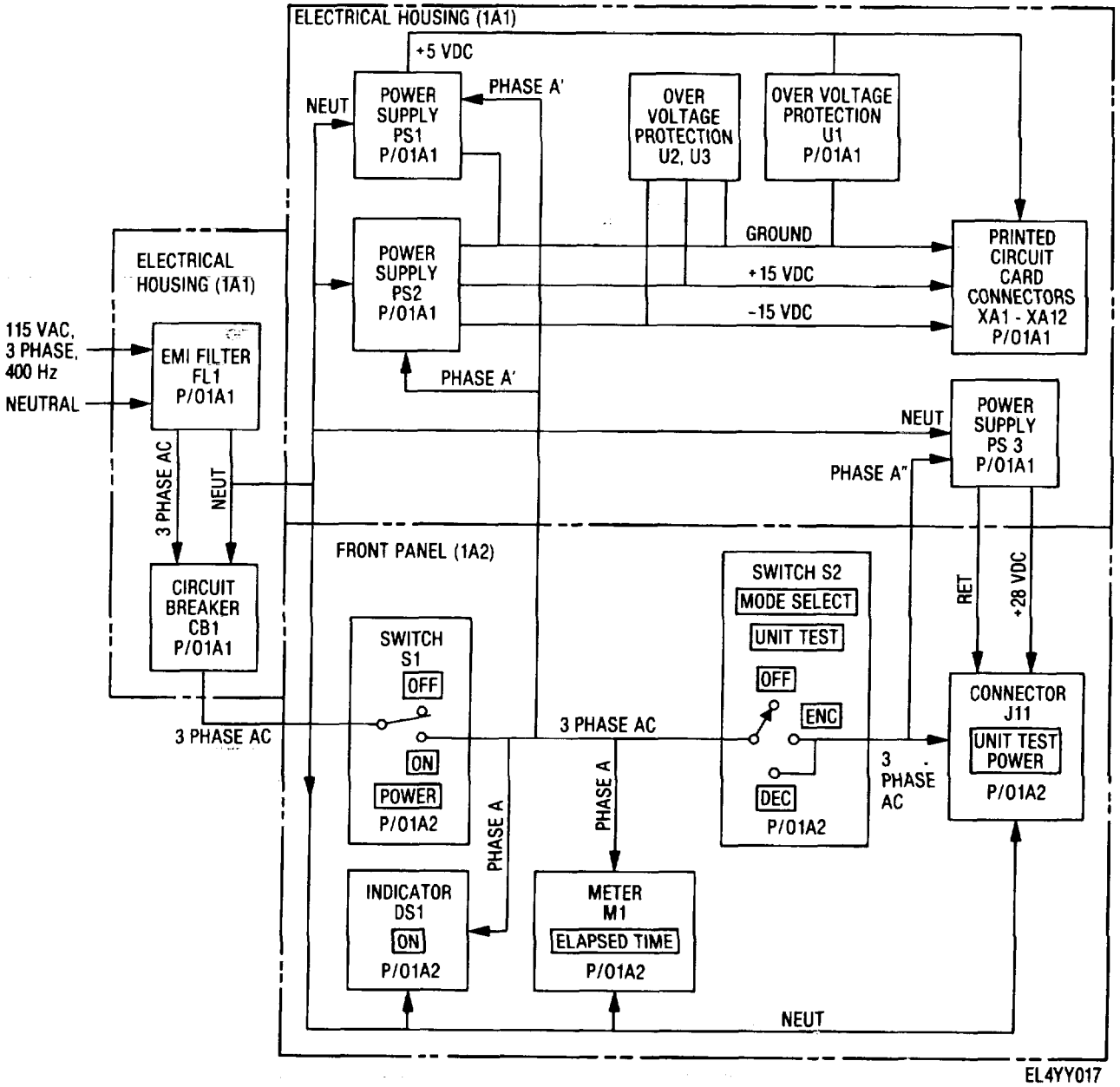


Figure 4-2. Control - interface unit overall block diagram (sheet 3 of 3)

(2) *Mode verification* Mode verification for the DC POWER and MODE SELECT switch S2 (1A2) positions is determined by that portion of the program in the STE program read only memory POM) (IA2A3) which is used for mode verification when executed by the STE MPU (IA2A2). STE MPU (1A2A2) is controlled by the mode verification portion of STE program ROM IA2A3 via the bidirectional DATA BUS and unidirectional ADDRESS BUS and CONTROL BUS. STE MPU 1A2A2 provides MODE ERROR SIGNAL to light MODE IN ERROR indicator DS5 (I A2) if the MODE SELECT i, which is input via the input port circuit (1A2A1), and the TEST NUMBER are not in agreement with each other as determined by the stored program in the mode verification portion of STE program ROM I A2A3. TEST NUMBER input from the digital tester is applied to 7-segment decoder (IA2AI) and STE MPU (1A2A2). The BCD TEST NUMBER data is decoded by a 7-segment decoder (IA2AI) which drives TEST NUMBER indicators DS7 through DS9 (IA2).

(3) *Stimulus and transition counts.* Stimulus in the form of DATA and CLOCK inputs from the digital tester are applied to MODULE TEST connectors JI, J3 and JS (STANDARD LOGIC). Dc power from the digital tester

is applied to MODE SELECT switch S2, to power supply monitor (IA2AI) and connectors J1, 13 and JS. Connectors J3, 13 and J5 are associated with encoder, decoder and STE standard logic cards, respectively. Test data is obtained from the program card to set the TEST RATE PER SEC switch and the NUMBER OF TESTS switch on the digital tester prior to inserting the program card in the card reader slot. The digital tester applies the proper stimulus for the STANDARD LOGIC connectors with these switches set according to the information printed on the program card, and with the probe threshold switch set to 2 volts. After completing the digital tester setup, its input stimulus to the MODULE TEST connectors exercises a standard logic card. The DIGITAL OUTPUTS signal from the standard logic card are applied to the digital tester via the MODULE TEST connectors. This output signal is converted by the digital tester to a transition count for comparison with a transition count that has been input from the program card and stored in the digital tester. This comparison results in the PASS/FAIL indication.

(4) Synchronization. The digital tester provides a 250 KHz REFERENCE signal to the phase-locked loop (PLL) circuit (1A2A4) and the reset circuit (1A2AS). This input signal synchronizes the PLL and is also applied via the reset circuit (IA2AS), which provides a RESET signal to MODULE TEST connectors 12, J4 and J6 (MICROPROCESSOR). The RESET signal assures that a test card inserted in the MICROPROCESSOR connector is reset, and therefore capable of being synchronized to the digital tester. The 4-MHz clock outputs from the PLL, depending on the mode of operation, provide both the SYSTEM CLOCK (for the encoder only) and the UUT MICROPROCESSOR CLOCK for input to J2 of the MICROPROCESSOR card connection. This 4-MHz signal is divided by four before feeding connectors J4 and J6. Either signal is applied via the appropriate MODULE TEST connectors (32, J4 or 16), and is counted down to provide the 250 KHZ CLOCK outputs which are fed back for comparison to the PLL circuit. Connector 32, 34 and 36 are associated with the encoder, decoder and STE processor cards, respectively. The STE internal system clock circuit provides the signals (4 MHz CLOCK and 20 MHz CLOCK) used to synchronize the operation of the control-interface unit.

(5) Bus switching. After mode verification has been completed (para 4-2a(2)), STE MPU 1A2A2 executes the bus switching portion of the STE program ROM (1A2A3). The STE MPU then sets up bus switching circuit 1A2A7 via SYSTEM CONTROL so that the MPU card under test may access the test ROM circuit (1A2A6) via the ADDRESS BUS, CONTROL BUS and DATA BUS. The STE MPU (1A2A2) now disables itself until the end of the test ROM operation. The MPU card under test executes the test program contained in the test ROM circuit (1A2A6) and provides the DIGITAL OUTPUTS signal to the digital tester. This output signal is converted by the digital tester to a transition count for comparison with a transition count that has been stored on the program card. This comparison results in the PASS/FAIL indication.

(6) *Power distribution*. Three-phase (115 V ac) power at 400 Hz is distributed via EMI filter FLI (IAI) and circuit breaker CB1 (IA1) to front panel POWER ON/OFF switch SI(1 A2). In the POWER ON position, 3 PHASE AC power is applied via the UNIT TEST ENC or DEC position of MODE SELECT switch S2 (IA2) to UNIT TEST POWER connector JI 1. PHASE A power is applied, via front panel POWER ON/OFF switch SI, to power supply PSI (1a1), power supply PS2 (1A1), POWER ON indicator DSI (1 A2), and ELAPSED TIME meter MI (IA2). PHASE A power is applied to power supply PSI (1A1) and PS2 (1A1) to develop +5 V and i 15 V, respectively. Each dc output voltage is adjustable and protected by its own overvoltage protection circuit (UI, U2 and U3, respectively), before application to circuit card connectors XA1 through XA12 (1A1) . Power supply PS3 (1A1) receives PHASE A input power from the UNIT TEST ENC or DEC position of MODE SELECT switch S2 (IA2) to provide +28V to UNIT TESTER POWER connector J11.

b. Microprocessor Functioning (FIG. 4-3). The control interface unit and the digital tester provide address information, data signals and control signals to the microprocessing system. These signals are used by the MPU, under program control, to generate the control signals that provide for movement of data throughout the control interface unit, and test information to the module under test. To do this the MPU uses three memories and the programmable interval timer (P1). The read only memory (ROM) contains the program of instruction and look-up tables (data constants) used by the STE MPU to check mode switch settings and verify test number information. The random access memory (RAM) acts as a scratch pad memory and is used by the STE MPU and the MPU under test to store variable data. Under program control, the STE MPU and MPU under test can read or change the contents of RAM, but not the contents of ROM. In a typical operation, the STE MPU stops accessing the program of instructions in the ROM, after the verification check sets the PIT, and turns the microprocessing system control over to the MPU under test. The test ROM contains the program of instructions and look-up tables used to validate the operation of the MPU under test. When the test is finished, the MPU under test stores the variable test information in RAM, stops accessing the program of instruction in the test ROM, and returns microprocessing system control to the STE MPU. The STE MPU also access the program of instructions in the ROM to perform the BITE test. The variable test data stored in RAM is also accessed during operation of

the microprocessing system control program. The PIT operates for approximately 20 seconds after it has been set by the STE MPU. It is used to time events so that, at the conclusion of a test, control returns to the STE MPU.

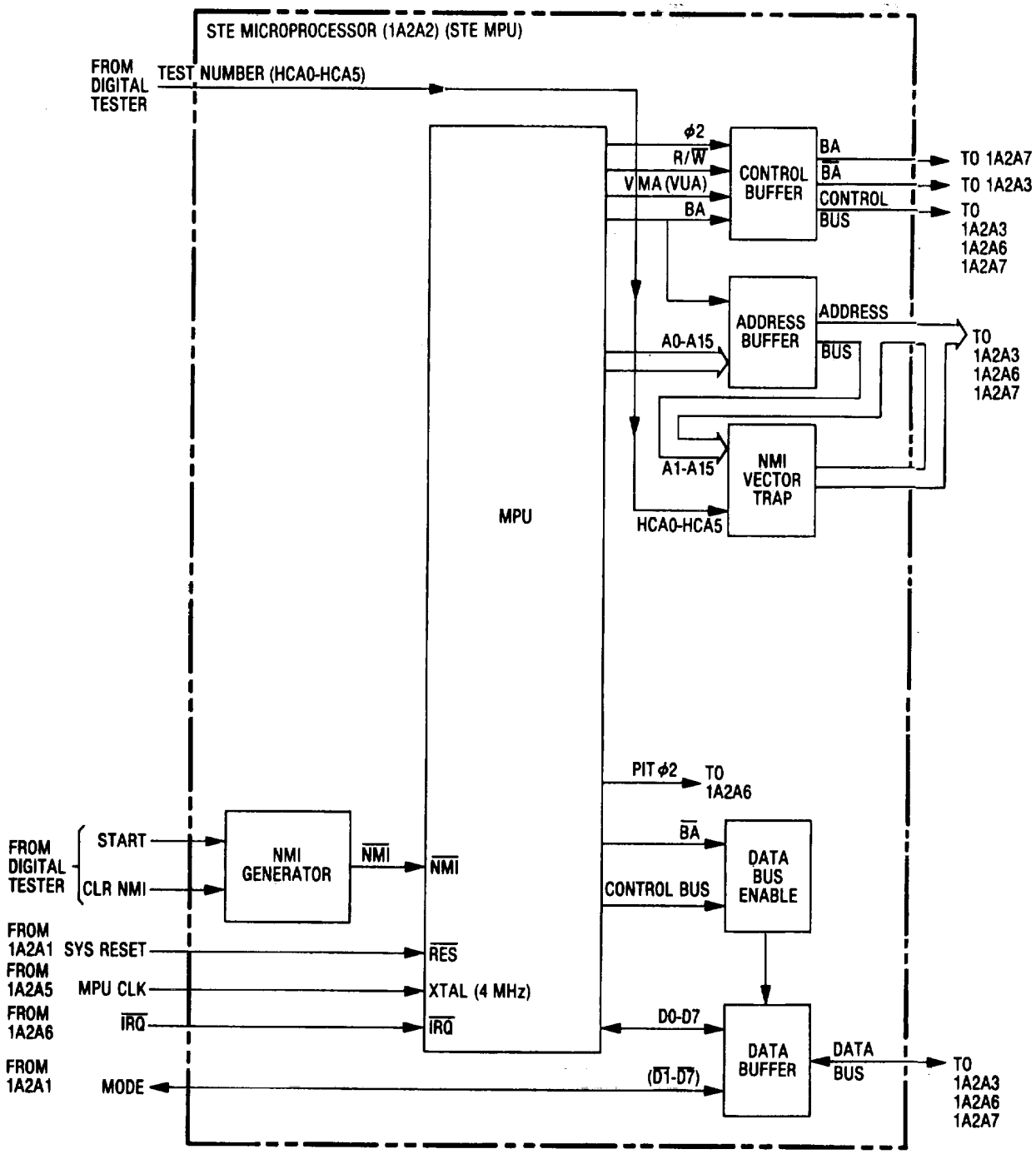


Figure 4-3. Microprocessor block diagram (sheet 1 of 3).

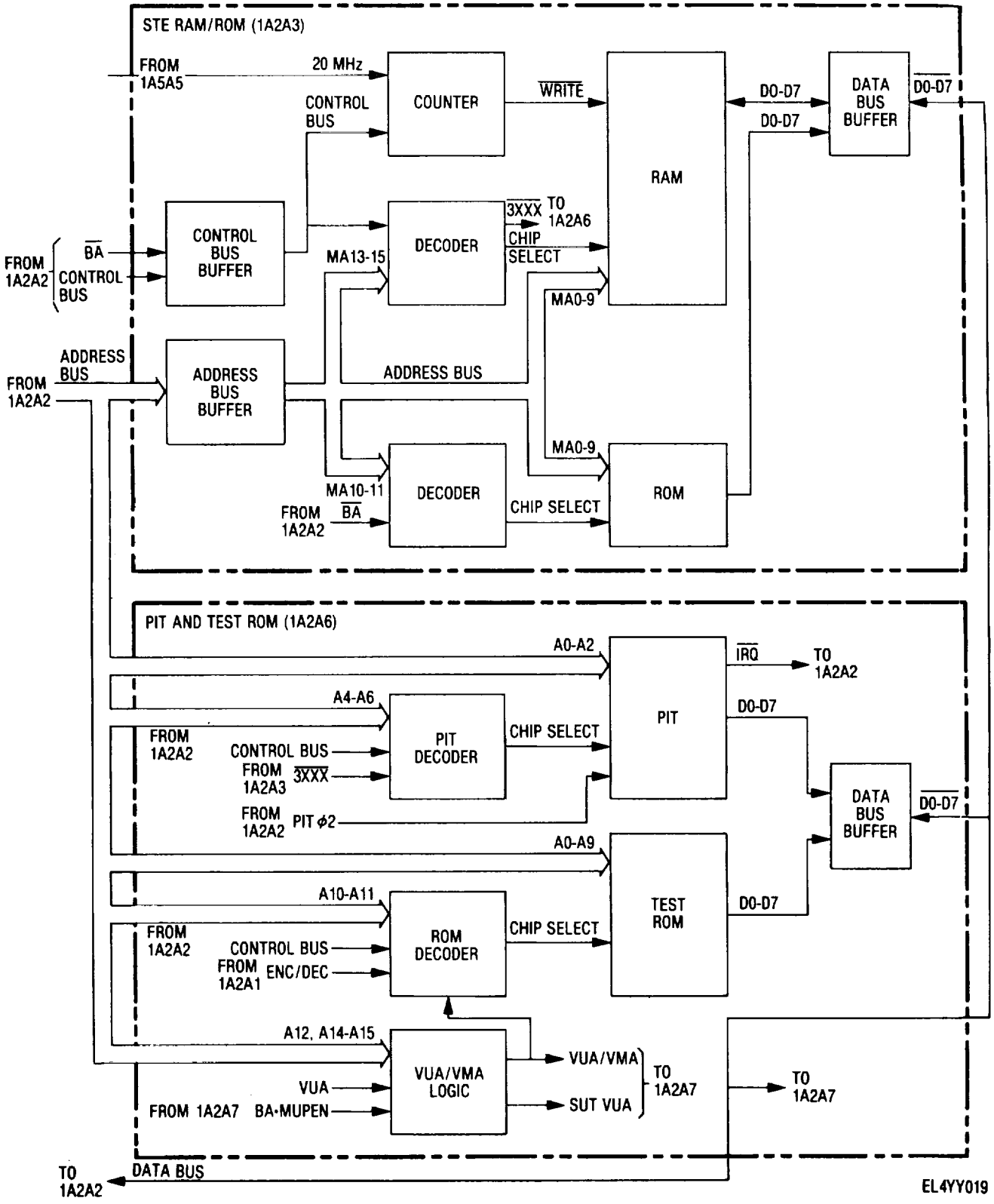


Figure 4-3. Microprocessor block diagram (sheet 2 of 3).

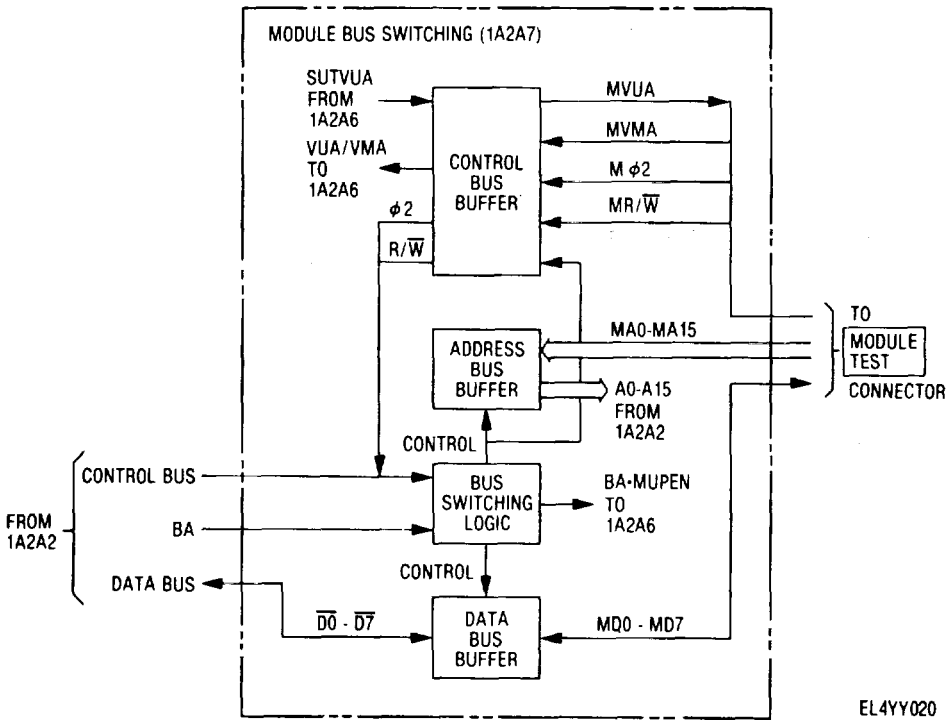


Figure 4-3. Microprocessor block diagram (sheet 3 of 3).

(1) Basic MPU description. The MPU is an eight-bit word (or byte) microprocessor containing six internal registers plus an internal clock oscillator and driver on the same chip. Three of the registers are 16-bit (or 2 byte) registers, while three are eight-bit (or byte) registers: the 16-bit registers are the program counter (PC), the stack pointer (SP), and the index register ([X). The eight-bit registers are accumulator A (ACCA), accumulator B (ACCB), and condition code register (CCR). This MPU is also capable of addressing 65 kilobytes of memory with its 16-bit address lines. It also contains 128 bytes of RAM, the first 32 bytes of which can be operated in a low power mode to prevent the loss of data during power-down situation. In addition, the eight-bit data bus is bidirectional as well as three state, which makes direct memory addressing and multi-procesing possible. Table 4-1 lists the various control and data signals normally associated with the MPU.

Table 4-1. Typical MPU signal Distribution

Signal	Description
AO-AI5	Address bus 16-bits provide 65 kilobytes of addressing
DO-D7	Data bus Eight bidirectional lines that provide transfer of data to and from the memory and various peripheral devices.
R/$\overline{W}$	Read/write. Output signal informs peripherals and memory devices when the MPU is in a read (high) or write (low) state. The normal standby state of this signal is read (high). When the MPU is halted, it is in the logical one state.
BA ($\overline{BA}$)	Bus available, Normally in low (BA). When activated, it goes to the high state BA, indicating the MPU has stopped and the address bus is available.
$\overline{NMI}$	Non-maskable interrupt. A negative-going edge on this input requests that a NMI sequence be generated within the MPU. However, the MPU completes the current instruction that is being executed before it recognized the NMI signal.
XTAK (4.0 MHz CLOCK)	4.0 MHz clock. Triggers an internal oscillator.
VMA (VUA)	Valid memory address. This signal indicates to peripheral devices that there is a valid address on th address bus. Valid user address (VUA) has the same meaning.
$\overline{IRQ}$	Interrupt request. This input requests that an interrupt sequence be generated within the MPU. The MPU waits until it completes the current instruction that is being executed before it recognized th request.
$\overline{RES}$	Reset. This input is used to reset and start the MPU from a power down conditions, resulting from a power failure or an initial start-up of the MPU. When this line is low the information in the registers is lost.
02	Phase two clock. This clock signal is used to synchronize the operation of the microprocessing system.
PIT 02	Programmable interval timer phase two clock. This signal synchronizes data transfer between the MPU and the PIT.
Control Bus	Three pins are used for the control bus. It provides control signals 02, R/W and VMA (VUA).

(2) Microprocessing system description. Under program control, the MPU (IA2A2) accesses memory by outputting two, eight-bit bytes on the ADDRESS BUS. This 16-bit address, which permits access of 65,536 memory locations, is output via the three-state address buffer (IA2A2). The address buffer outputs the address information AO through Al5 on the ADDRESS BUS that connects the MPU (1A2A2) to the rest of the microprocessing system. That is, the ADDRESS BUS connects the MPU (IA2A2) to the STE RAM/ROM (IA2A3), the PIT and TEST ROM (IA2A6) and, via the module bus switching circuit card (1A2A7), to the MPU under test. When not used to drive the ADDRESS BUS, the address buffer (I A2A2) is switched into a high impedance state by control signal BA. TEST NUMBER (HCAO through HCA5) from the digital tester is decoded by the NMI vector trap and is also output from the address bus. The MPU (I A2A2) also outputs control signals 02, R/W and VMA (VUA). These signals are input to the three state control buffer (IA2A2) for output to the CONTROL BUS. The control buffer (IA2A2) operation is identical to the address buffer (IA2A2). The data buffer (1 A2A2) is a three-state bidirectional circuit that connects the data output from the MPU (DO through D7) to the DATA BUS. The data buffer (IA2A2) acts as an input buffer when data under READ control (R/W high) is input to the MPU. The buffer also acts as an output device when the MPU (IA2A2) is driving the DATA BUS under WRITE control (R/W low). When other units are using the DATA BUS, the data buffer (IA2A2) is switched to the high impedance state. That is, data bus buffer (IA2A7) is also a bidirectional device, but it is either driven by the DO through 57 DATA BUS input from the control-interface unit or the MDO through MD7 DATA BUS input from the MPU under test. The control bus buffer (IA2A7) and the address bus buffer (IA2A7) are both bidirectional devices. The operation of these devices is controlled by the STE MPU inputs to the bus switching logic (1A2A7). The selection of a memory ,device by the ADDRESS BUS (for reading or writing operations throughout the microprocessor system) is dependent on a decoder operation in conjunction with the CONTROL BUS input. If, for example, the encoder portion of the test ROM program is to be addressed, a high ENC/DEC input is also necessary.. With the previous conditions satisfied, a two-level mode of addressing occurs to select a particular memory device and the appropriate location in that memory. This method of addressing uses the high order bits of the ADDRESS BUS to generate CHIP SELECT, and the low order bits to specify required memory location. When the appropriate location has been selected, DO through D7 is output to the DATA BUS via data bus buffer (1A2A6). This DATA BUS output (through D7) can be input to the MPU under test or to the STE MPU. Operation of the other memory devices is similar to the procedure just described in that they also are dependent on a two-level mode of addressing and decoding for proper operation.

c. Phase-Locked Loop Functioning (fig. 4-4). The phase-locked loop (PLL) consists of two channels, each of which provides a 4-MHz clock signal to MODULE TEST connector 12. This 4-MHz signal is divided by four before feeding connectors J4 and J6. UUT MICROPROCESSOR CLOCK and SYSTEM CLOCK are applied to connector J2 from the PLL circuits simultaneously. The PLL circuit consists primarily of a phase detector, a loop filter and a voltage-controlled oscillator (VCO). To generate the UUT MICROPROCESSOR CLOCK signal, the phase detector requires a REFERENCE 250 KHZ signal from the digital tester and a 250 KHZ CLOCK signal from the clock feedback circuit (IA2A5). The phase detector output voltage represents the difference in phase between the input signals. After being coupled through the low pass loop filter, this output voltage is input to the VCO as a dc control voltage. The dc voltage applied to the VCO produces an output signal whose frequency is determined by the voltage input from the loop filter. The SYSTEM CLOCK signal is also generated by a PLL that receives a 250 KHZ input from a divide-by-16 divider/counter circuit. The divider/counter is reset by the RESET signal input from the digital tester. The SYSTEM CLOCK is divided down by 16 and outputs the 250 KHZ signal input to the PLL circuit. In the absence of the REFERENCE 250 KHZ signal, this PLL circuit will generate a simulated locked control voltage input to the VCO. This signal is generated via the loop lock simulator circuit when enabled by the 250 kHz dock detector. In normal operation, a portion of the phase detector outputs a digital 4W which is unaffected by the loop lock simulator circuit and is coupled to the phase detector. In the absence of the IRERENCE 2SO KHZ signal, the loop lock simulator is enabled by the output from the 250 KHZ dock detector circuit.

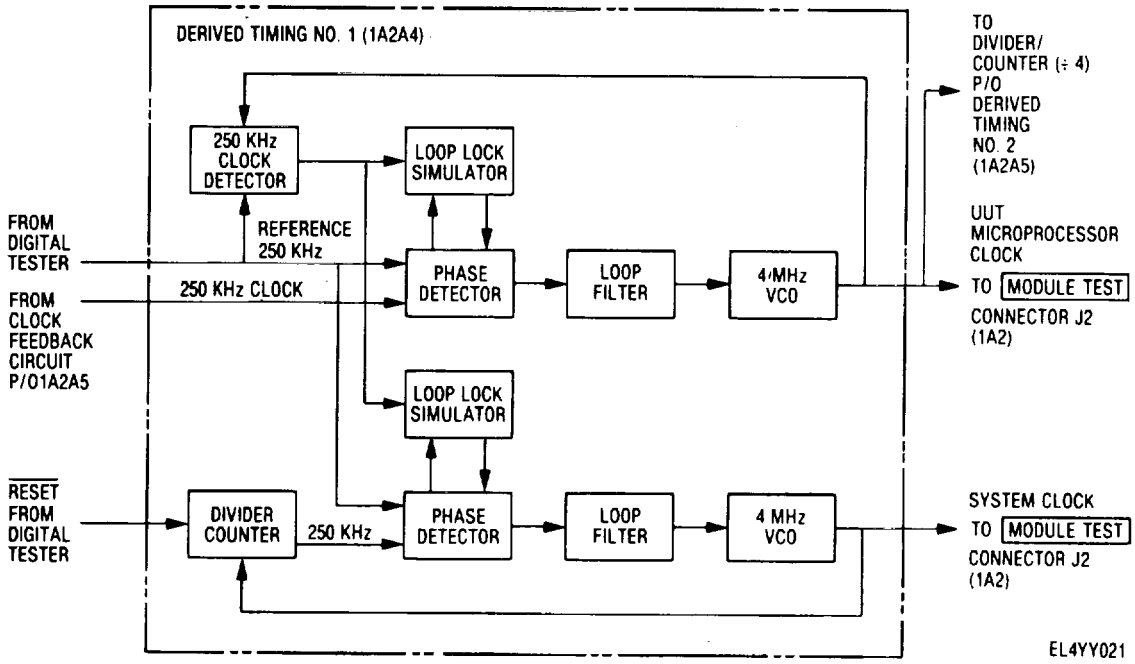


Figure 4-4. Phase-locked loop block diagram.

d Panel Logic Functioning ft. 4-5).

(1) Power. Power from the digital tester and the 5 volt power supply (IA2A1) are APPLIED via the MODULE TEST position of MODE SELECT switch S2 (1A2) to the panel logic circuits . The switch selects one of the three modes of operation: ENC for encoder mode of operation; DEC for decoder mode of operation; and STE for special test equipment mode of operation. Select one of three modes of operation provides the proper voltages for application to the power supply monitor (IA2AI) and the MODULE TEST connectors. When the encoder mode of operation (ENC) is Selected, 5 V and i 12 V are applied to the MODULE TEST connectors and the power supply monitor (IA2AI). If the voltages are out of tolerance, the power supply monitor provides the SHORT sign to fight SHORT indicator DS3 (1A2). When the decoder mode of operation (DEC) or the special test equipment mode of operation STE) is selected, + 5 V and 15 V are applied to the MODULE TEST connectors and the power supply monitor (1A2A1). Out of tolerance voltages light the SHORT indicator DS3 (1A2). SYS RESET, which is used throughout the test set is apple from the power on reset circuit (IA2AI). The clock phased signal input .2 from the STE microprocessor (1A2A2) is t to the power on reset circuit to activate SYS RESET.

(2) *Mode select.* The MODULE TEST position of MODE SELECT switch S2 (I A2) also provide MT ENC, MT DEC or MT STE signs to the select logic circuit, depending on the mode of operation selected. MT ANC specifies module test encoder operation, MT DEC specifies module test decoder operation, and MT STE specifies module test special test equipment. When any one of these signals is applied to the select logic circuit (IA2AI), MT ON signal is applied to ON indicator DS4 (1A2). The UT ON sin from the select logic circuit (1A2Al) is applied to ON indicator DS2 whenever the unit test decoder (UT DEC) or unit test encoder (UT WC-) signals are applied from the UNIT TEST position of MODE SELECT switch S2 (1A2).

(3) BITE *failure.* The write latch (1A2A1) provides the FAIL control sin to the digital tester whenever the control-interface unit fails a BITE test. This signal is provided by the DATA BUS signal written into the write latch and by the LATCH 2 dock input. With the FAIL signal a-led to the digital tester, the normal transition count of a programmed clock output from the digital tester is interrupted. Interrupting the normal transition count causes the red FAIL indicator on the digital tester to fight at the end of the test cycle. The write latch also provides the MODE ERROR which fights MODE IN ERROR indicator DS5 (IA2).

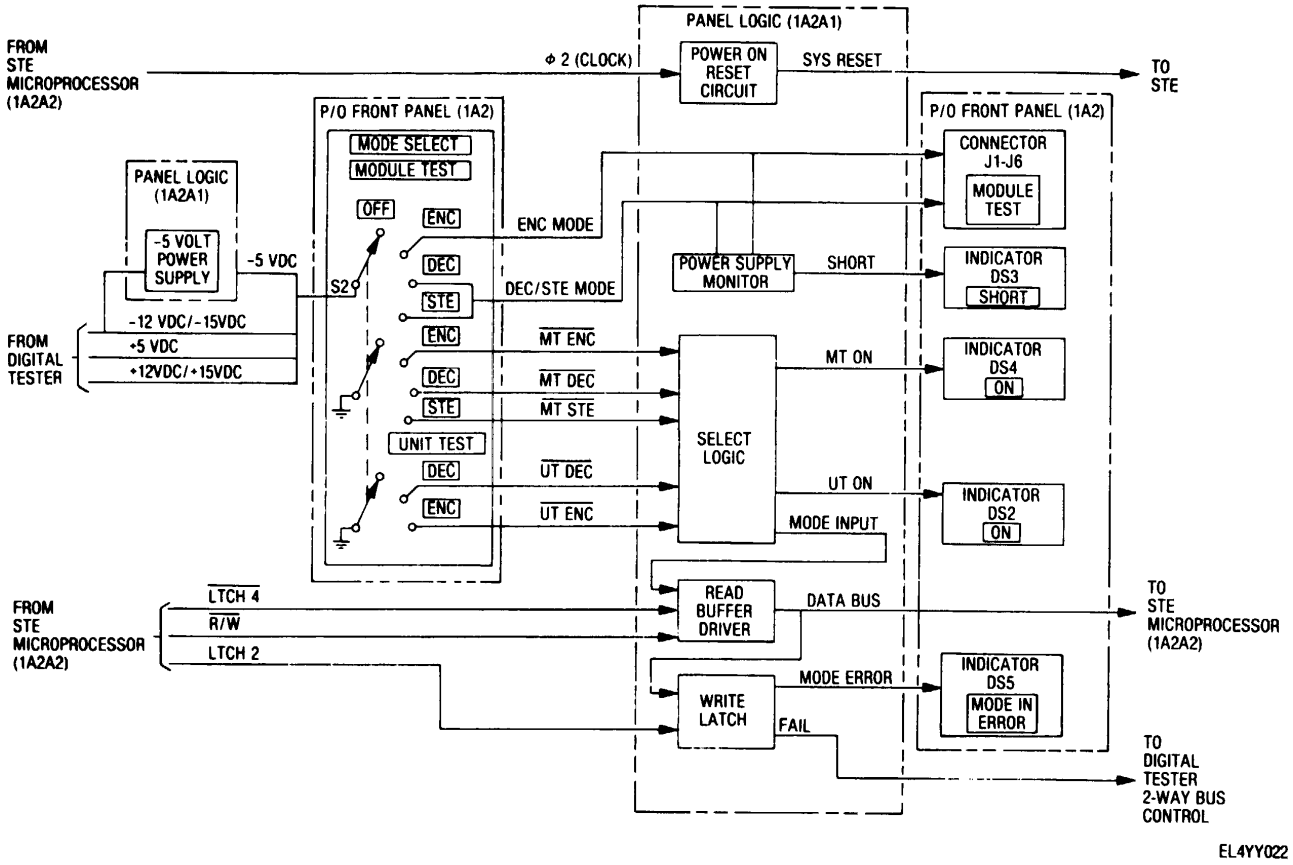


Figure 4-5. Panel logic block diagram.

4-3. Digital Tester Functioning

The digital tester operates on the transition count concept and provides more than 700 unique logic patterns for output to the module under test. In this system, each input pin of a module under test is driven by a logic pattern that differs in pulse repetition rate, duty cycle and polarity. The program card controls the logic pattern of these stimulus signals. The module under test is automatically exercised by up to 40 million test words which are applied at rates up to 4 million words per second. These logic inputs result in an exact and repeatable number of logic transitions at each output pin and at each internal node. Transition counts, which can be verified through fault simulator techniques provide an curate means of testing and troubleshooting a module under test Any fault on the digital assembly will result in a variance in the tester calculated sum of the output pin counts. This count variance can be quickly traced to the defective component through the use of the count readout provided on the tester. For a functional description of the digital tester refer to TM 11-6625-2951-13.

4-4. Analog Test Adapter Functioning

The analog test adapter is basically a breakout box that is used at depot maintenance to gain access to module connector pins of an analog circuit card under test. It consists primarily of a power switch, signal generator connectors, input power jacks, signal input switches, power input ports and a circuit card connector. The circuit card connector provides fan out to the 90 jacks on the panel of the analog test adapter (fig. 2-5). Controls and monitor points are delineated in table 2-3.

CHAPTER 5
DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

Section I. GENERAL

5-1. Introduction Maintenance instructions presented in this chapter apply primarily to Test Set, Electronic Systems TS-3796/UKM-4 (control-interface unit). Maintenance instructions for Test Set, Electronic Systems AN/UYM-7 (digital tester) are given in TM 11-6625-2951-13. The following maintenance duties are assigned to direct support maintenance personnel:

a. Testing the control-interface unit to localize trouble to a faulty subassembly or chassis-mounted part.
b. Replacing faulty subassemblies or chassis-mounted parts.
c. Performing power supply adjustments.
d. Repairing filter assembly AIFLI.

5-2. Voltage and Resistance Measurements

WARNING

Be careful when 115 V ac is applied to the equipment. Serious injury or **DEATH** may result from contact with terminals carrying this voltage.

CAUTION

When making resistance measurements ensure that power is removed from the unit being tested. Failure to comply may result in erroneous readings or in damage to the equipment.

All procedures for making volta3e and resistance measurements are contained in the troubleshooting procedures.

5-3. Waveform Measurements

ALL procedures for making waveform measurements are contained in the troubleshooting procedures.

Section II. TOOLS AND EQUIPMENT

5-4. Tools and Test Equipment Required

The tools and test equipment required for direct support maintenance are listed below.

Test equipment	*Technical manual*	*Common name*
Test Set, Electronic Systems AN/UYM-7	TM 116625-2951-13	Digital tester
Multimeter AN/USM-223	TM 11-6625-654-14	Multimeter
Oscilloscope AN/USM-281C	TM 11-6625-2658-14	Oscilloscope
Tool Kit, Electronics Equipment TK-105/G	SC 518 91C-RO7	Tool Kit

5-5. Materials Required

The materials required for direct support maintenance are listed below.

WARNING

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since TRICHLOROTRIFLUOROETHANE dissolves natural oils, prolonged contact with skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

a. Cleaning compound (tichlorotrifluoroethane).
b. Cleaning cloth.
c. Detergent.
d. Fine bristle brush.
e. Fine sandpaper.
f. Silicone heatsink compound (Dow Corning 340).

Section III. TROUBLESHOOTING

5-6. General

WARNING

Be careful when 115V ac is applied to the equipment. Serious injury or DEATH may result from contract with terminals carrying this voltage.

This section contains information to aid in the direct support troubleshooting of the control-interface unit and each repairable subassembly. The troubleshooting procedure comprises a list of tools and test equipment required, a test setup diagram, a functional test procedure, a troubleshooting table, and additional data as required . Malfunctions listed in the troubleshooting table are assumed to occur during testing of the control-interface unit or its subassembles a s described in Section V The entire test procedure should be repeated after repair to ensure that the malfunction was corrected.

5-7. Control-interface Unit Troubleshooting

a. Tools and Test Equipment Required. The following tools and test equipment are required for troubleshooting the control-interface unit.

Test equipment	*Common name*
Program card SM-A-942909-2	BITE card
Extender card SM-D-942431-2	STE extender card
Multimeter AN/USM-223	Multimeter
Oscilloscope AN/USM-281C	Oscilloscope
Test Set, Electronic Systems AN/UYM-7	Digital tester
Tool Kit, Electronic Equipment TK-IOSG	Tool kit

b. Test Setup. The control-interface unit test setup is shown in figure 5-1. Perform the physical tests given in table 5-3 prior to connecting the equipment in the test setup.

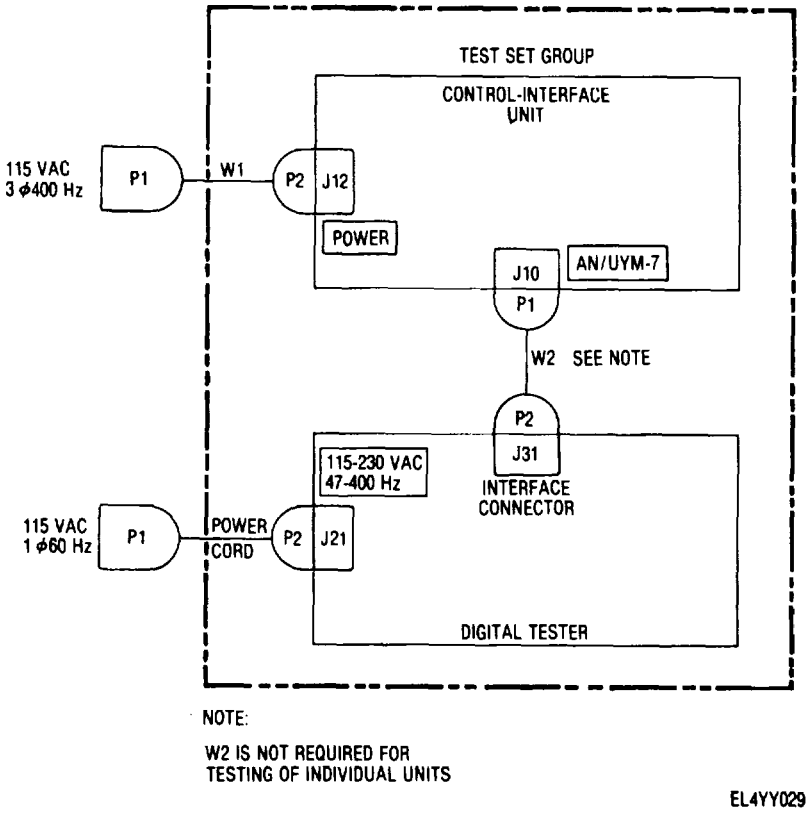


Figure 5-1. Control-interface unit, test setup.

c. Preliminary Control Settings. Set the equipment controls as follows prior to functionally testing the control interface unit.

Control	*Setting*
Control-interface unit:	
POWET ON/OFF	OFF
Power circuit breaker CB1	In (on)
MODE SELECT	POWER OFF
Digital tester:	
POWER	Down (off)
UUT POWER	Down (off)
DISPLAY	PASS/FAIL
TEST RATE PER SEC	2M
NUMBER OF TESTS	20M
PROBE THRESHOLD	2V

d. Testing Procedures. The first step in troubleshooting the control-interface unit is to perform the functional test procedure given in table 5-1. Then, when a faulty indication is obtained, locate the appropriate MALUN ON in table 5-2 and continue as directed by the TEST or INSPECTION and CORRECTIVE action columns of the table.

e. Troubleshooting Procedures. Table 5-2 contains the control-interface unit troubleshooting procedure. If the performance test (table 5-1) fails, refer to the appropriate malfunction in table 5-2. Waveforrns are shown in figure

Table 5-1. Control-Interface Unit Functional Test

Step no.	Control setting: Test equipment	Control setting: Equipment under test	Test procedure	Performance standard
1	Digital tester	None	a Observe digital tester POWER indica-	
a	Indicator fights. POWER: Up (on)		tor.	
	UUT POWER: Up (on)		b Observe UUT POWER indicator	b Indicator lights.
			c Observe READY/ERROR indictor	c Red ERROR indicator lights.
2	None	Control-interface unit POWER: ON	a Observe POWER indicator	a Indicator lights.
			b Observe ELAPSED TIME meter	b Meter counts.
3	Digital tester UUTPOWER (off)	Control-interface unit Down MODULE TEST ENC	Observe control-interface unit SHORT MODE SELECT:	Indicator lights. indicator.
4	Digital tester UUT POWER: Up (on)	None	Observe control-interface unit SHORT indicator.	Indicator goes out.
5	Digital tester UUT POWER: Down (off) DEC	Control-interface unit MODE MODULE TEST	Observe control-interface unit SHORT SELECT:	Indicator lights. indicator.
6	Digital tester UUT POWER: Up (on)	None	Observe control-interface unit SHORT indicator.	Indicator goes out.
7	None	Control-interface unit MODE SELECT: OFF	Insert program and SM-A-942909-2 in digital tester card reader slot.	None.
8	Digital tester PROGRAM EN-	None tor.	a Observe PROGRAM ENTER indica-	a Indicator lights.
	TER: Press down		b Observe READY/ERROR indicator	b Red ERROR indicator goes out and white READY indicator lights.
9	Digital tester TEST: Press down	None	a Observe TEST indicator on digital tester	a Indicator lights and stays on during test cycle.
			b Observe TEST ON indicator on con- trol-interface unit	b Indicator lights and stays on during test cycle (approx20 seconds).
			c Observe TEST NUMBER on control- interface unit display during test cycle.	c TEST NUMBER 00.0 and 88.8 are alternately displayed. Display sequence. is repeated twice before TEST NUMBER increments to 00.5 at the end of test cycle.
			d Observe UNIT TEST ON, MODULE TEST ON, SHORT, and MODE IN ERROR indicators on control-inter- face unit during test cycle	d All indicators light during the time TEST NUMBER 88.8 is displayed Indicator are off during the time TEST NUMBER 00.0 is displayed, and remain off at the end of test cycle
			e Observe PASS/FAIL indicator on digital tester at the end of test cycle.	e Green PASS Indicator lights..
10	Oscilloscope POWER: ON	None	Monitor phase displacement of 250 kHz squarewave signals as follows	
			a On the control-interface unit, connect channel A of oscilloscope between pin HI and pin F8 (gnd) of MODULE TEST connector.	a None.
			b Connect channel B of oscilloscope be- tween pin H2 and pin FS And) of MODULE TEST connector.	b None.
11	Digital tester RECYCLE TEST:	None	Adjust oscilloscope control so that wave- forms displayed clearly show displacement between signals monitored	Signals on channel A and B are similar to A, figure 5-2.. Displace- ment is less than 100 ns.
12	None	None	a disconnect channel B of oscilloscope From pin H2 and F8 (gnd) of MODULE TEST connector.	a None.
			b Reconnect channel B of Oscilloscope between pin H7 and F8 (gnd) of MODULE TEST connector	b.None.

Table 5-1. Control-Interface Unit Functional Test

Step no.	Control setting: Test equipment	Control setting: Equipment under test	Test procedure	Performance standard
13	Digital tester RECYCLE TEST:	None	Adjust oscilloscope controls so that waveforms displayed clearly show displacement between signals monitored.	Signals on channel A and B are similar to B, figure 5-2. Displacement is less than 100 ns.
14	Oscilloscope POWER: OFF Digital tester POWER: Down (dl) UUT POWER: Down (off)	POWER: OFF	Remove oscilloscope leads from MODULE TEST connector.	None.

Table 5-2. Control interface Unit Troubleshooting

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

1. POWER CIRCUIT BREAKER CBI DOES NOT HOLD WITH POWER SWITCH S1 ON.
   Step 1. Remove ac power and check that power supply AIPSI inputs I and 2 (NEUT) are not shorted to each other or to ground (FO-2). Replace defective power supply AIPSI (para 5-13a).
   Step 2. Check that power supply AIPS2 inputs I and 2 (NEIT) are not shorted to each other or to ground (f4 P2). Replace defective power supply AIPS2 (pare 5-19a).
   Step 3. Chock that power supply AIPS3 inputs I and 2 (NEUI) are not shoed to each other or to ground- (fig FO-2). Replace defective power supply AIPS3 p 5-20a).
   Step 4. Check that POWER switch S1inputs (5,8 and 11) and outputs (6,9 and 12) are not shorted to each other or to ground (f 2). Replace defective POWER switch SI (para 5-13b).
   Step 5. Check that circuit breaker CB outputs A2, B2 and C2 are not shorted to each other or to i (fig. FO-2). Replace defective circuit breaker CBI.
2. POWER ON INDICATOR LAMP DSI DOES NOT UGHT.
   Step 1. Check indicator lamp by replacement (para 3-14a). Replace defective indicator lamp.
   Step 2. Check for 115 V ac between pin A and pin B (NEUT) of DSI (4 FO-2).
   (a) if voltage is correct, replace lamp socket.
   (b) If voltage is missing, check filter assembly A1FL1, circuit wiring and power cable assembly W1. Replace defective part or wiring (para 5-16A, fig. FO-2, and table 5-5) or repair A1FL1 (para 5-17)
3. ELAPSED TME METER M1 DOES NOT COUNT.
   Step 1: Check for 115 V ac between A and B (NEI) of Ml ft F}2).
   (a) If voltage is correct, continue to step 2
   (b) If voltage is missing, check filter assembly A1FL1, circuit wiring and power cable assembly W1. Replace defective parts or wiring (para *5-16a*, fig. FO-2 end table 5-5) or repair A1FLI (pa 5-17).
   Step 2. Check meter by replacement.. Replace defective meter.
4. SHORT INDICATOR DS3 LIGHTS WITH DIGITAL TESTER UUT POWER ON.
   Step 1. Check cable W2 for defective wiring (table 5-6). Replace defective cable.
   Step 2. Check power fault detection circuits on circuit card assembly A1 as follows:
   (a) Set control-interface unit POWER ON/OFF switch to OFF.
   (b) Install circuit card assembly A1 on extender card and plug extender card into control-interface unit.
   (c) Set control-interface unit POWER ON/OFF switch to ON.
   (d) Place MODE SELECT switch in MODULE TEST ENC position.
   (e) Using extender card test points, measure the following input voltage to circuit card assembly A1..

Test point	*Voltage*
A1P1-84	+5.0+0.1 V
A1P1-27	-5.0+0.1 V
A1P1-85	+ 12.0+0.1 V

   (f) Place MODE SELECT switch in MODULE TEST DEC position.
   (g) Using extender card test points, measure the following input voltages to circuit card assembly A1.

Test point	*Voltage*
A1P1-26	-15+0.1V
A1P1-86	+15.0+0.1V

   (h) If voltages all check good, replace circuit card assembly A1 (para 5-15).
   (i) If one or more voltage is incorrect, check control-interface unit wiring (fig. FO-2). Remove extender card and reinstall circuit card assembly A1)para 5-15b.)

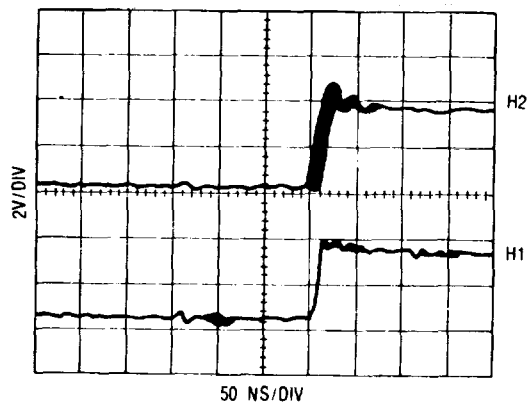
Table 5-2. Control-interface Unit Troubleshooting - Continued

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

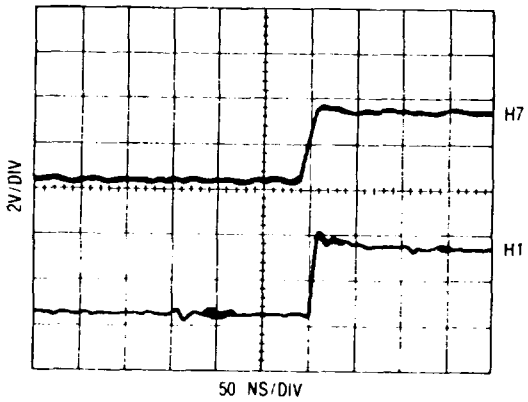
5. SHORT INDICATOR DS3 DOES NOT LIGHT WITH DIGITAL TESTER UUT POWER OFF AND CONTROL INTERFACE UNIT MODE SELECT IN EITHER MODULE TEST ENC OR MODULE TEST DEC.
   Step 1. Check indicator lamp by replacement (para 3-14a).
   Replace defective indicator lamp.
   Step 2. Check power fault detection circuits on circuit card assembly Al (malfunction 4, step 2).
6. TEST ON INDICATOR LAMP DOES NOT LIGHT DURING BITE TEST.
   Step 1. Check indicator lamp by replacement (para 3-14a).
   Replace defective indicator lamp.
   Step 2. Check derived timing No. I circuit card assembly A4 (table 5-1, steps 10 through 13).
   Replace circuit card assembly A4 (para 5-15).
7. TEST ON INDICATOR LAMP LIGHTS, DURING BITE TEST, BUT MODEIPOWER INDICATOR LAMPS DO NOT LIGHT.
   Step 1. Check indicator lamps by replacement (para 3-14a).
   Replace defective indicator lamps.
   Step 2 Check STE microprocessor circuit card assembly A2 (para 5-29fi.
   Replace circuit card assembly A2 (para 5-15).
   Step 3. Check STE RAM/ROM circuit card assembly A3 (para 5-29g).
   Replace circuit card assembly A3 (para 5-15).
   Step 4. Check derived timing No. 2 circuit card assembly AS (para 5-29t).
   Replace circuit card assembly AS (para 5-15).
   Step 5. Check circuit card assembles Al, A6 and A7 0arM 5-29e,Jand k).
   Replace defective circuit card assemblies (para 5-15).
8. MODE/POWER INDICATOR LAMPS LIGHT AND REMAIN ON DURING BITE TEST.
   Step 1. Check PIT and test ROM circuit card assembly A6 (para 5-29j).
   Replace circuit card assembly A6 (para 5-15).
   Step 2. Check circuit card assemblies Al, A2, A3 and A7 (para 5-29e, f g and k).
   Replace defective circuit card assemblies (para 5-15).
9. TEST NUMBER DISPLAY INDICATES 00.0 AT END OF TEST CYCLE.
   Step 1. Check STE microprocessor circuit card assembly A2 (para 5-29fi.
   Replace circuit card assembly A2 (para 5-15).
   Step 2. Check STE RAM/ROM circuit card assembly A3 (bra 5-29g).
   Replace circuit card assembly A3 (para 5-15).
   Step 3. Check derived timing No. 2 circuit card assembly AS (para 5-290.
   Replace circuit card assembly AS (para 5-15).
   Step 4. Check circuit card assemblies Al, A6 and A7 (para 5-29e, J and k).
10 TEST NUMBER DISPLAY INDICATES 00.1 OR 00.2 AT END OF TEST CYCLE.
   Step 1. Check STE RAM/ROM circuit card assembly A3 (para 5-29g).
   Replace circuit card assembly A3 (para 5-15).
   Step 2. Check circuit card assemblies Al, A2, A6 and A7 (par 5-29e, f J and k).
   Replace defective circuit card assemblies (para 5-15).
11. TEST NUMBER DISPLAY INDICATES 00.3 OR 00.4 AT END OF TEST CYCLE.
   Step 1. Check PIT and test ROM circuit card assembly A6 (m 5-29).
   Replace circuit card assembly A6 (para 5-15).
   Step 2. Check circuit card assemblies Al, A2, A3 and A7 (para 5-29e, g g and k).
   Replace defective circuit card assemblies (para 5-15).
12. PHASE DISPLACEMENT BETWEEN 250 KHZ SQUARE WAVES MORE THAN 100 NSEC.
   Step 1. Check derived timing No. I circuit card assembly A4 by replacement (para 5-15a).
   Replace circuit card assembly A4 (para 5-15).
   Step 2. Check derived timing No. 2 circuit card assembly AS (para 5-290.
   Replace circuit card assembly AS (pan 5-15).
   Step 3. Check circuit card assemblies Al, A2, A3, A6 and A7 (para 5-29e, f, g, J, and k).
   Replace defective circuit card assemblies (para 5-15).
   Step 4. Check + 15 V output of power supply AIPS2 as follows:
   (a) Plug STE extender card into connector AS position.
   (b) Check for + 15.0:0.5 V between pin 2 (+) and pin 44 (-) on extender card,
   (c) If voltage is core, continue to step 5.
   (d) If voltage is out of adjustment, adjust AIPS2 (para 5-11).
   (e) If voltage is missing check power supply terminals 7 (+) and 6 (-) for + 15.0:0.5 V. Replace defective power supply (para 5-19).
   Step 5. Check-15 V output of power supply AIPS2 as follows:
   (a) Check for -15.0tO.5 V between pin I (-) and pin 44 (+) on extender card.
   (b) If voltage is out of adjustment, adjust AIPS2 (para 5-11).
   (c) If voltage is missing check power supply terminals 7 (+) and 6 (-) for -15.0:0.5 V. Replace defective power supply O= 5-19).

Table 5-2. Control-Interface Unit Troubleshooting--Continued

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION	
13.	TEST NUMBER INDICATOR DOES NOT INDICATE PROPERLY (SOME SEGMENTS DARK, ETC.). Check circuit card assembly A1 (para 5-29*e*). Replace circuit card assembly Al (para 5-15).
14.	POWER ON INDICATOR LAMPS DSI LIGHTS, MODE/POWER INDICATOR LAMPS DO NOT LIGHT, AND TEST NUMBER INDICATOR IS COMPLETELY DARK. Step 1. Check + 5 V output of power supply AIPSI as follows: (a) Plug STE extender card into connector AR position. (b) Check for +5.0O0.I V between pin 43 (+) and pin 44 (-) on extender card. (c) If voltage is correct, continue to step 2. (d) If voltage is out of adjustment, adjust AIPSI (para 5-10). (e) If voltage is missing check power supply terminals 3 (+) and 4 (-) for +5.0:0.l V. Replace defective power supply (para 5-I8a). Step 2. Check MODE/POWER indicator lamps and TEST NUMBER indicator for defective wiring (fig. FO-2, and table 5-4). Replace defective wiring.
15.	TEST ADAPTER FAILURE. Step 1 If you suspect one or more of the test adapters is not functioning properly, perform continuity tests using the schematics in figure FO-4. Step 2. Non-repairable items. Replace with good adapter.



VOLTS/DIV 2V
TIME/DIV 50 NS
SYNC INT
SWEEP DELAYED
A. WAVEFORMS MONITORED AT MODULE TEST CONNECTOR PINS H1 AND H2 USING PIN F8 AS GROUND



VOLTS/DIV 2V
TIME/DIV 50 NS
SYNC INT
SWEEP DELAYED
B WAVEFORMS MONITORED AT MODULE TEST CONNECTOR PINS H1 and H7 USING PIN F8 AS GROUND

EL4YY028

Figure 5-2. Control-interface unit, waveforms.

5-8. Digital Tester Troubleshooting

Refer to TM I 1-6625-2951-13 for the test procedure and troubleshooting table for the digital tester.

Section IV. MAINTENANCE OF TEST SET, ELECTRONIC SYSTEMS AN/UKM4

5-9. General

This section contains direct support maintenance procedures for adjusting the power supplies in the control interface unit. Direct support maintenance of the control interface unit is limited to the removal and replacement of defective subassemblies or chassis-mounted parts, and the repair of defective wiring in electrical equipment housing 1A1. Refer to TM 11-6625-2951-13 for maintenance of the digital tester.

5-10. Power Supply Al PSI Adjustment

a. Tools and Test Equipment Required. The following tools and test equipment are required for adjusting power supply A1PS1.

Test equipment	*Common name*
Multimeter AN/USM-223	Multimeter
Tool Kit, Electronic Equipment TK-105/G	Tool kit

b. Test Setup. Set up the equipment as shown in figure 5-1.

c. Adjustment Procedure. The following procedure should be performed whenever power supply A1PSI (7, fig. 5-3) is replaced, or when the power supply voltage is determined to be out of tolerance. Perform the procedure with the power supply installed in the control-interface unit.

WARNING

Be careful when 115 V ac is applied to the equipment. Serious injury or DEATH may result from contact with terminals carrying this voltage.

(1) On control-interface unit, set rear panel circuit breaker CBI to off (out).

(2) Remove top access cover from control-interface unit (fig. 5-3).

(3) Connect three-phase power (115 V ac, 400 Hz) to control-interface unit via power cable assembly WI.

(4) Connect multimeter to measure + 5 V between power supply terminals AIPSI-3(+) and AIPSI-4(-).

(5) Set rear panel circuit breaker CBI to on Cm).

(6) Set front panel POWER ON/OFF switch to ON.

(7) Set MODE SELECT switch to POWER OFF.

(8) Adjust power supply output voltage adjustment (ADJ POT) for +5.0 O0.I V.

(9) Set POWER ON/OFF switch to OFF.

(10)Remove multimeter from control-interface unit.

(11)Replace top access cover.

(12)Disconnect three-phase power cable WI from control-interface unit.

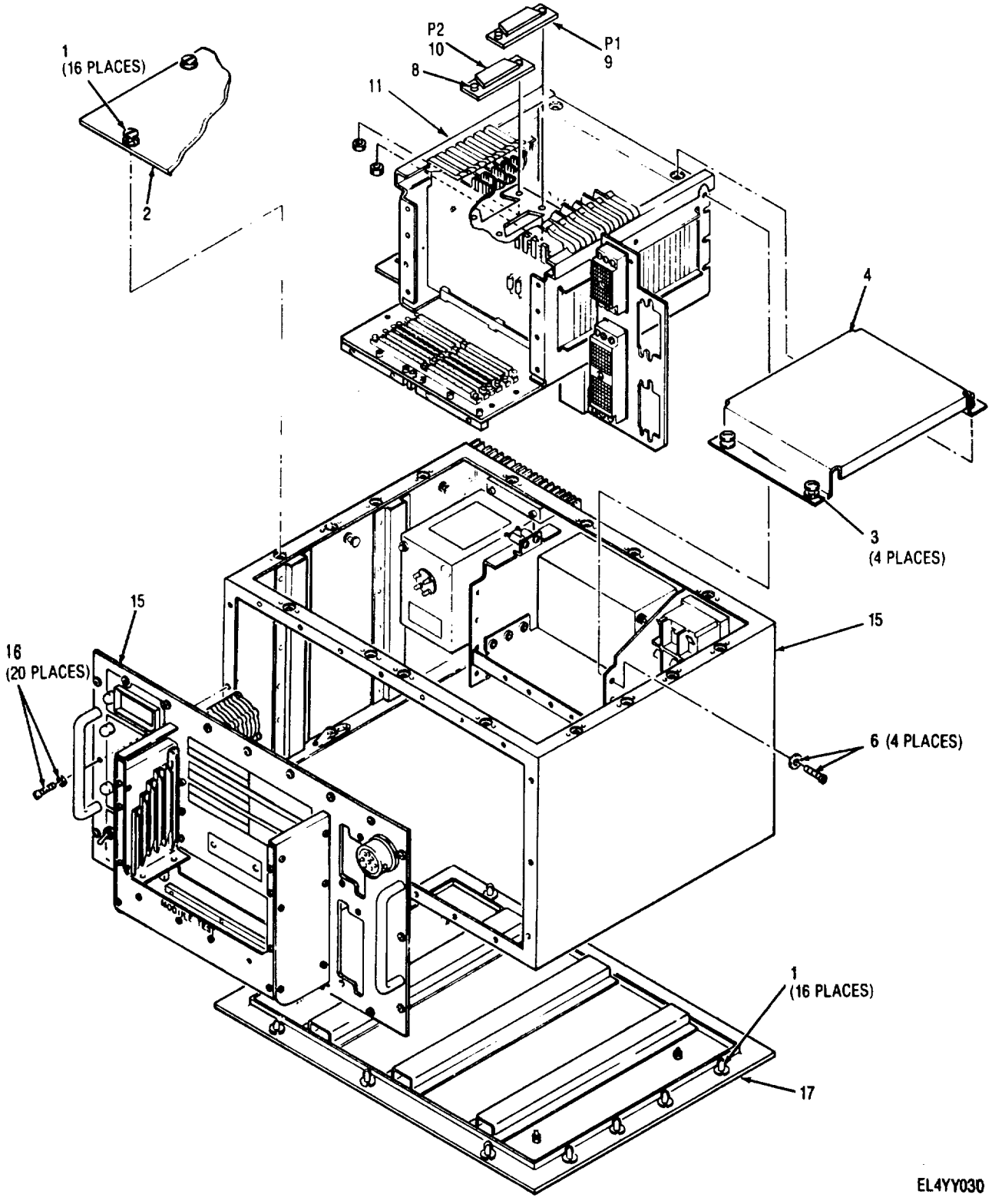


Figure 5-3. Control-interface unit, exploded view (Sheet 1 of 2)

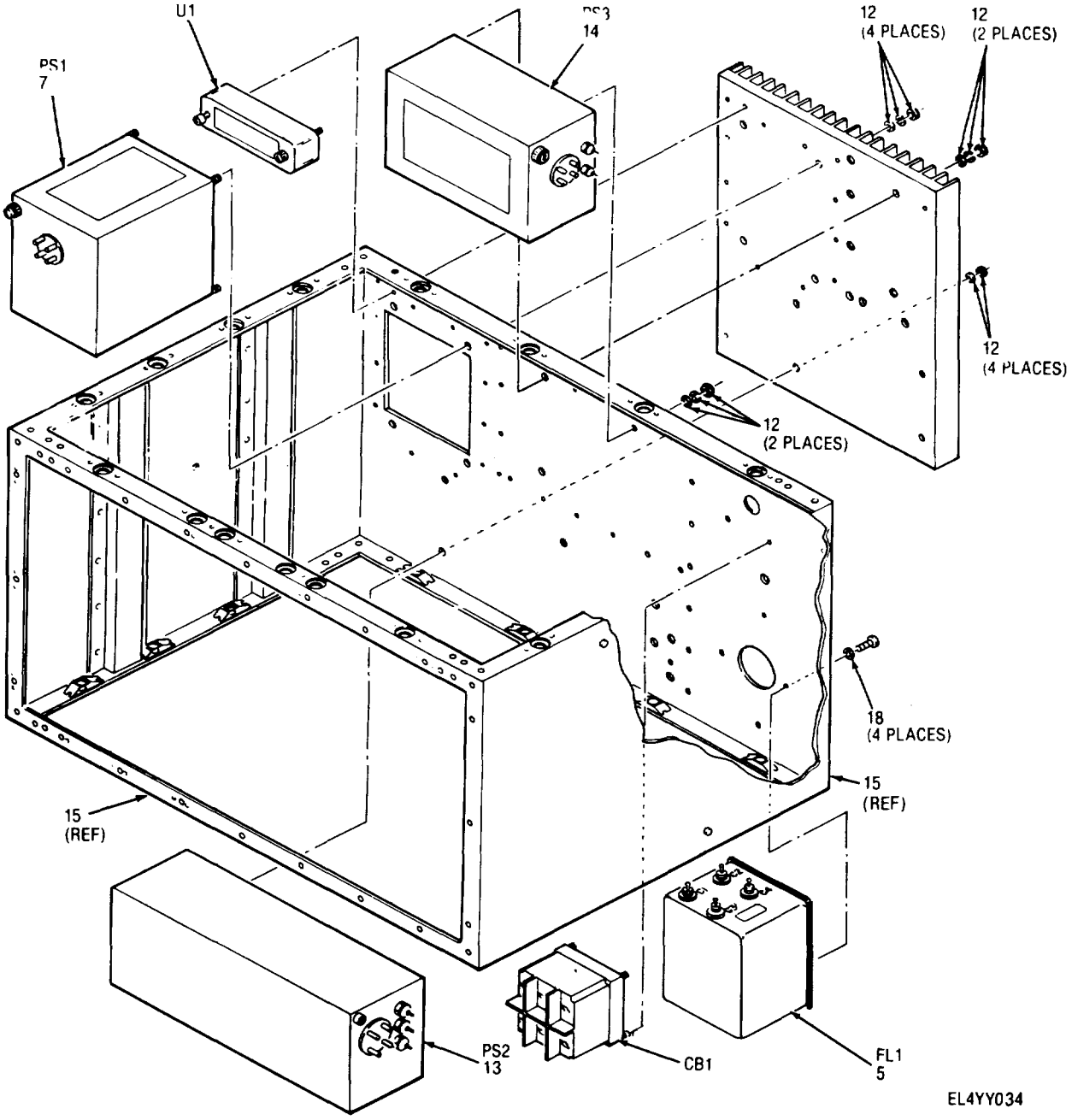


Figure 5-3. Control-interface unit, exploded view (Sheet 2 of 2)

Legend for fig-5-3.

1. Quarter-turn fastener (16 places)
2. Top access cover
3. Quarter-turn fastener (4 places)
4. Circuit card inner cover
5. Filter assembly A1FL1
6. Screw, 6-32 x 0.500; no. 6 washer (4 Places)
7. Power supply A1PS1
8. Screw lock assembly (4 Places)
9. Receptacle connector P1
10. Receptacle connector P2
11. Circuit card assembly rack 1A2
12. Nut, 10-32; No. 10 lockwasher, No. 10 flat washer (12 places)
13. Power supply A1PS2
14. Power supply A1PS3
15 Electrical equipment housing 1A1
16. Screw, 8-32 x 5/8; No. 8 washer (20 places)
17. Bottom access cover
18. Screw, 6-32 x 0.500; No. 6 washer (4 places)

5-11. Power Supply Al PS2 Adjustment

a. Tools and Test Equipment Required The following tools and test equipment are required for adjusting power supply AIPS2.

Test equipment	*Common name*
Multimeter AN/USM-223	Multimeter
Tool Kit, Electronic Equipment TK-105/G	Tool kit

b. Test Setup. Set up the equipment as shown in figure 5-l.

c. Adjustment Procedure. The following procedure should be performed whenever power supply AI PS2 (13, fig. 5-3) is replaced, or when the power supply voltage is determined to be out of tolerance. Perform the procedure with the power supply installed in the control-interface unit.

WARNING

Be careful when 115 V ac is applied to the equipment. Serious injury or DEATH may result from contact with terminals carrying this voltage.

(1) On control-interface unit, set rear panel circuit breaker CB I to off (out).

(2) Remove bottom access cover (fig. 5-3).

(3) Connect three-phase power (115 V ac, 400 Hz) to control-interface unit via power cable assembly WI.

(4) Connect multimeter to measure + 15 V between power supply terminals AIPS2-7(+) and AIPS2-6.

(5) Set rear panel circuit breaker CB1 to on Cm).

(6) Set front panel POWER ON/OFF switch to ON.

(7) Set MODE SELECT switch to POWER OFF.

(8) Adjust power supply output voltage adjustment (ADJ POT) for + 15 iO0.l V.

(9) Set POWER ON/OFF switch to OFF.

(10)Remove multimeter from control-interface unit.

(11)Replace bottom access cover.

(12)Disconnect three-phase power cable W1 from control-interface unit.

5-12. Power Supply Al PS3 Adjustment

a. Tools and Test Equipment Required. The following tools and test equipment are required for adjusting power supply AIPS3.

Test equipment	Common name
Multimeter AN/USM-223	Multimeter
Tool Kit, Electronic Equipment TK-105/G	Tool kit

b. Test Setup. Set up the equipment as shown in figure 5-l.

c. Adjustment Procedure. The following procedure should be performed whenever power supply AI PS3 (14, fig. 5-3) is replaced, or when the power supply voltage is determined to be out of tolerance. Perform the procedure with the power supply installed in the control-interface unit.

WARNING

Be careful when 115 V ac is applied to the equipment. Serious injury or DEATH may result from contact with terminals carrying this voltage.

(1) On control-interface unit, set rear panel circuit breaker CB I to off (out).

(2) Remove top access cover (fig. 5-3).

(3) Connect three-phase power (115 V ac, 400 Hz) to control-interface unit via power cable assembly WI.

(4) Connect multimeter + 28 V between power supply terminals AIPS3-3(+) and AIPS3-4(-).

(5) Set rear panel circuit breaker CBI to on (m).

(6) Set front panel POWER ON/OFF switch to ON.

(7) Set MODE SELECT switch to UNIT TEST, DEC position.

(8) Adjust power supply output voltage adjustment (ADJ POT) for +28.0 O0.2 V.

(9) Set POWER ON/OFF switch to OFF.

(10) Remove multimeter from control-interface unit.

(I1) Replace top access cover.

(12) Disconnect three-phase power cable WI from control-interface unit.

5-13. Repair of Control-Interface Unit

a. General. Only the standard hand tools supplied with Tool Kit, Electronic Equipment TK-105/G are required to repair the control-interface unit. Disassemble the unit only to the extent necessary to make repairs. Disassembly and reassembly procedures are given in paragraphs 5-14 through 5-20.

b. Removal and Replacement of Chassis-Mounted Parts. Use standard shop practices when removing and replacing switches, lamp holders, connectors, and other chassis-mounted parts. Refer to figure 5-3 for parts locations. When disconnecting wiring, tag leads to aid in replacement. Refer to table 5-4 for wiring information.

5-14. Access Cover Removal and Replacement (fig. 5-3)

a. Removal. Remove top and bottom access covers as follows:

(1) Remove power from control-interface unit.

(2) Loosen 16, quarter-turn fasteners (1, fig. 5-3) on top access cover (2) and remove cover.

(3) Carefully invert the control-interface unit to gain access to bottom access cover.

(4) Loosen 16, quarter-tun fasteners (1) on bottom access cover (17) and remove cover.

(5) Return control-interface unit to the normal operating position.

b. Replacement. Replace both top and bottom access covers as follows:

(1) Place control-interface unit on flat surface and in the normal operating position.

(2) Secure top access cover (2) to control-interface unit by tightening 16, quarter-turn fasteners (1).

(3) Carefully invert the control-interface unit.

(4) Secure bottom access cover (17) to control-interface unit by tightening 16, quarter-turn fasteners (1).

5) Carefully invert the control-interface unit and place it in the normal operating position.

5-15. Circuit Card Removal and Replacement (fig. 5-3)

NOTE

Circuit card positions are numbered from front panel to rear panel of control-interface unit as Al through A12, respectively.

a. Removal Remove circuit cards as follows:

(1) Remove top access cover (para 5-14a).

(2) Loosen four quarter-turn fasteners (3, fig. 5-3)on inner cover (4). Remove inner cover (4) to gain access to circuit cards.

(3) Lift up on card extractors of each circuit card to be removed to release circuit card from locked position.

(4) Grasp circuit card firmly and remove by pulling straight up.

b. Replacement. Replace circuit card as follows:

(1) Line up circuit card in correct circuit card position with component side of circuit card facing toward front of control-interface unit.

(2) with card extractors raised in unlocked position lifted up) apply steady straight down pressure to seat circuit card in circuit card connector.

(3) Press down on card extractors until circuit card is locked in position and properly seated in circuit card connector.

(4) Replace inner cover (4) over circuit cards. Secure cover by tightening four quarter-turn fasteners (1).

(5) Replace top access cover (para 5-14b).

5-16. Filter Assembly A1FL1 Removal and Replacement (fig. 5-3)

a. Removal. Remove filter assembly AIFLI (5, fig. 5-3, sheet 2) as follows:

WARNING

Ensure all power is disconnected from equipment.

(1) Remove top and bottom access covers from control-interface unit (para 5-14a). Place control-interface unit on its right side.

(2) Locate filter assembly Al FLI (5) on rear panel of control-interface unit and tag wires connected to its four terminals (five wires).

(3) Unsolder wires tagged in step (2) from filter assembly AIFLI terminals C1, C2, C3 and C4 (fig. 5-4). Place wires carefully aside.

CAUTION

Hold filter assembly Al FLI securely to prevent damage to adjacent hardware while performing steps (4) and (5).

(4) Remove four Allen screws (18, fig. 5-3, sheet 2) and associated washers securing filter assembly AIFLI to rear panel.

(5) Remove filter assembly A1FL1I, being careful to clear rear panel.

NOTE

It may be necessary to move cable harness aside to provide additional clearance for removal of filter assembly A1FL1

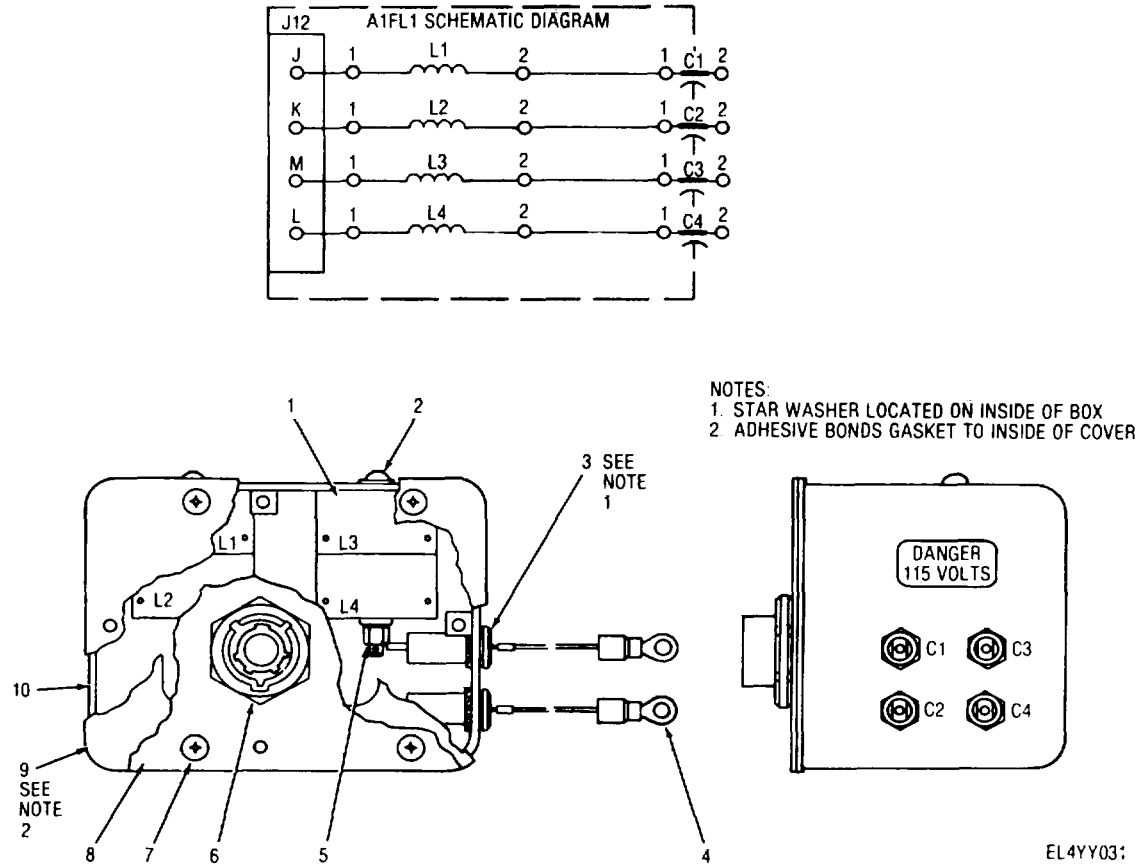
b. Replacement. Replace filter assembly AIFLI as follows:

(1) Position replacement filter assembly AIFLI on rear panel of control-interface unit. Secure in place with four Allen screws (18) and associated washers.

(2) Reconnect wires to AIFLI terminals C1, C2,. C3 and C4 (fig. 5-4). Remove tags from wires.

(3) Replace top and bottom access covers (para 5-14b).

5-17. Filter Assembly Al FL1 Repair Repair of filter assembly A1FL1(5, fig. 5-3, sheet 2) is performed by performing continuity checks and replacing defective parts. Refer to figure 5-4 for parts location.



1. Reactor, toroid, 500 mh (L1 through L4)
2. Screw, 8-32 x 2, No. 8 flat washer (2 places)
3. Capacitor, 0.01 of 600 V dc (C1 through C4)
4. Terminal, crimp (3 Places)
5. No. 8 Flatwasher, No.8 lockwasher, No. 8 nut (2 places)
6. Connector (J12)
7. Screw, 6-32 x 3/8 (4 places)
8. Cover
9. Gasket
10. Housing

Figure 5-4. Filter assembly A1FL1 parts location and schematic diagram.

5-18. Removal and Replacement of Power Supply A1PS1 (fig. 5-3)

a. Removal. Remove power supply AI PS2 (7, fig. 5-3, sheet 2) as follows:

WARNING

Ensure all power is disconnected from equipment.

(1) Remove top and bottom access covers from control-interface unit (para 5-14a). Place control-interface unit on its left side.

(2) Locate power supply AIPSI (7) on rear panel and tag wires connected to its four terminals (five wires).

(3) Unsolder wires tagged in step (2) from power supply A1PS1terminals and place carefully aside.

(4) Loosen four screw lock assemblies (8) securing connectors P1 (9) and P2 (10) to 115 and J16, respectively, on circuit card assembly rack 1A2 (11).

(5) Disconnect connectors Pi and P2 from J15 and J16, respectively, and set aside carefully.

CAUTION

Hold power supply AIPSI securely to prevent damage to adjacent hardware while performing steps (6) and (7).

(6) Remove four nuts (12) and associated washers securing power supply A1PS1 to rear panel of control-interface unit.

(7) Remove power supply A1PS1 being careful to clear rear panel.

b. Replacement. Replace power supply A IPSI as follows:

(1) Verify that base of power supply A1IPS1I (7) and mounting surface on rear panel are completely coated with silicone heat sink compound. Apply silicone heat sink compound (Dow Corning 340) as required to uncoated areas.

(2) Position replacement power supply A1PS1on mounting surface of rear panel. Secure in place with four nuts (12) and associated washers.

(3) Reconnect wires to four terminals of A1PS1

Remove tags from wires.

(4) Reconnect connectors P1 and P2 to J15 and J16, respectively, on circuit card assembly rack I A2.

(5) Secure connectors PI (9) and P2 (10) to J15 and J16, respectively, on circuit card assembly rack (11) by tightening four screw lock assemblies (8).

(6) Replace top and bottom access covers (para 5-14b).

5-19. Removal and Replacement of Power Supply AI PS2 (fig. 5-3)

a. Removal. Remove power supply A1PS2 (13, fig. 5-3, sheet 2) as follows:

WARNING

Ensure all power is disconnected from equipment.

(1) Remove top and bottom access covers from control-interface unit (para 5-14a). Place control-interface unit on its left side.

(2) Locate power supply A1PS2 (13) on rear panel and tag wires connected to its seven terminals (13 wires).

(3) Unsolder wires tagged in step (2) from power supply AI PS2 terminals and place carefully aside.

CAUTION

Hold power supply AIPS2 securely to prevent damage to adjacent hardware while performing steps (4) and (5).

(4) Remove four nuts (12) and associated washers securing power supply AIPS2 to rear panel of control-interface unit.

(5) Remove power supply AIPS2, being careful to clear rear panel.

b. Replacement. Replace power supply AIPS2 as follows:

(1) Verify that base of power supply A1PS2 (13) and mounting surface on rear panel are completely coated with silicone heat sink compound. Apply silicone heat sink compound (Dow Corning 340) as required to uncoated areas.

(2) Position replacement power supply AIPS2 on mounting surface on rear panel. Secure in place with four nuts (12) and associated washers.

(3) Reconnect wires to seven terminals of A1PS2. Remove tags from wires.

(4) Replace top and bottom access covers (para 5-14b).

5-20. Removal and Replacement of Power Supply A1PS3 (fig. 5-3)

a. Removal Remove power supply AIPS3 (14, fig. 5-3, sheet 2) as follows:

WARNING

Ensure all power is disconnected from equip ment.

(1) Remove top and bottom access covers from control-interface unit (para 5-14a). Place control-interface unit on its left side.

(2) Locate power supply Al PS3 (14) on rear panel and tag wires connected to its six terminals (nine wires).

(3) Unsolder wires tagged in step (2) from power supply AIPS3 terminals and place carefully aside.

CAUTION

Hold power supply AI P.S3 securely to prevent damage to adjacent hardware while performing steps (4) and (5).

(4) Remove four nuts (12) and associated washers securing power supply A1PS3 to rear panel of control-interface unit.

(5) Remove power supply A1PS3, being careful to clear rear panel.

b. Replacement. Replace power supply A IPS3 as follows:

(1) Verify that base of power supply A1PS3 (14) and mounting surface on rear panel are completely coated with silicone heat sink compound. Apply silicone heat sink compound (Dow Corning 340) as required to uncoated areas.

(2) Position replacement power supply A1PS3 on mounting surface on rear panel. Secure in place with four nuts (12) and associated washers.

(3) Reconnect wires to six terminals of AIPS3. Remove tags from wires.

(4) Replace top and bottom access covers (para 5-14b).

5-21. Removal and Replacement of Electrical Equipment Housing 1A1(fig. 5-3)

a. Removal. Remove electrical equipment housing 1A1 (15, fig. 5-3) as follows:

(1) Remove top and bottom access covers from control-interface unit (para 5-14a) Place control-interface unit in its normal operating position.

(2) Loosen four screw lock assemblies (8) securing connectors PI (9) and P2 (10) to J15 and J16, respectively, on circuit card assembly rack I A2 (11)

(3) Disconnect connectors PI and P2 from J 15 and J16, respectively, and set aside carefully.

(4) Loosen, but do not remove, four Allen screws (6) on right side support of electrical equipment housing IAI.

(5) Loosen, but do not remove, four nuts (I) securing power supply A I1'S 1 (7) to rear panel of control interface unit.

NOTE

It may be necessary to disconnect five wires on power supply AIPSI (para 5-18a) to perform step (6).

(6) Loosen power supply A1PS1 (7) sufficiently to gain access to the four Allen screws (6) on left side support of electrical equipment housing I AI Repeat step (5) as required.

(7) Loosen, hut do not remove, four Allen screws (6) on left side support of electrical equipment housing IAI.

(8) Place control-interface unit on its right side.

(9) Remove six Allen screws (12) and associated washers from end plate of electrical equipment housing IA].

(10)Place control-interface unit in normal operating position.

(11)Remove 20 screws (16) and associated washers from front panel (fig. 5-3).

(12)Grasp handles on front panel; pull straight back until circuit card assembly rack (11) separates and clears electrical equipment housing IA].

b. Replacement. Replace electrical equipment housing IA I as follows:

(1) Position replacement electrical equipment housing IAI (15) so that it mates with front panel of circuit card assembly rack I A2 (I 1).

(2) Secure electrical equipment housing IA I to front panel of circuit card assembly rack I A2 by tightening 20 screws (16) and associated washers.

(3) Place control-interface unit on its right side.

(4) Replace six Allen screws (12) and associated washers previously remolded from end plate of electrical equipment housing I A 1.

(5) Place control-interface unit in normal operating position.

(6) Tighten four Allen screws (6) and associated washers on left side support of electrical equipment housing 1A1.

(7) Secure power supply AI-SI (7) in place by tightening four nuts (12) If necessary, reconnect wires previously disconnected from A1PS1.

(8) Tighten four Allen screws (6) on right side support of electrical equipment housing I A].

(9) Reconnect connectors P 1 (9) and P2 (10) to JI 5 and J16, respectively, f)n circuit card assembly rack IA2 (I1).

(10)Secure connectors Pi and P2 to J15 and J16, respectively, by tightening four screw lock assemblies (8).

(11)Replace top and bottom access covers (para 5-14b).

5-22. Removal and Replacement of Circuit Card Assembly Rack 1A2 (fig 5-3)

a. Removal. Remove circuit card assembly rack 1A2 (11, fig. 5-3) as follows

(1) Remove top and bottom access covers from control-interface unit (para 8-14a). Place control-interface unit in its normal operating position.

(2) Loosen four .screw lock assemblies (8) securing connectors Pi (9) and P2 (10) to J15 and J16, respectively, on circuit card assembly rack I A2 (I1).

(3) Disconnect connectors PI and P2 from J15 and J16, respectively. and ,set aside carefully.

(4) Loosen, but do not remove, four Allen screws (6) on right side support of electrical equipment housing 1A1.

(5) Loosen, but do not remove, four nuts (12) securing power supply AI PSI (7) to rear panel of control interface unit.

NOTE

It may be necessary to disconnect five wires on power supply AIPSI (para 5-18a) to perform step (6).

(6) Loosen power supply AIPSI (7) sufficiently to gain access to the four Allen screws (6) on left side support of electrical equipment housing IA 1. Repeat step (5) as required.

(7) Loosen, but do not remove, four Allen screws (6) on left side support of electrical equipment housing IAI.

(8) Place control-interface unit on its right side.

(9) Remove six Allen screws (12) and associated washers from end plate of electrical equipment housing IAI.

(10)Place control-interface unit in normal operating position.

(11)Remove 20 screws (16) and associated washers from front panel (fig. 5-3).

(12)Grasp handles on front panel; pull straight back until circuit card assembly rack (11) separates and clears electrical equipment housing IAI.

b. Replacement. Replace circuit card assembly rack I A2 as follows:

(1) Position replacement electrical equipment housing IAI (15) so that it mates with front panel of circuit card assembly rack IA2 (11).

(2) Secure electrical equipment housing I AI to front panel of circuit card assembly rack I A2 by tightening 20 screws (16) and associated washers.

(3) Place control-interface unit on its right side.

(4) Replace six Allen screws (12) and associated washers previously removed from end plate of electrical equipment housing IAI.

(5) Place control-interface unit in normal operating position.

(6) Tighten four Allen screws (6) and associated washers on left side support of electrical equipment housing 1A1.

(7) Secure power supply AIPSI (7) in place by tightening four nuts (12). If necessary, reconnect wires previously disconnected from AIPSI .

(8) Tighten four Allen screws (6) on right side support of electrical equipment housing I A 1.

(9) Reconnect connectors P1 (9) andP2 (10) to15 and J16, respectively, on circuit card assembly rack IA2 (I1).

(10)Secure connectors P1 and P2 to 115 and J16, respectively, by tightening four screw lock assemblies (8).

(11)Replace top and bottom access covers (par 5-14b).

Section V. DIRECT SUPPORT TESTING PROCEDURES

5-23. General

This section contains testing and inspection procedures for use by direct support maintenance personnel to determine whether the performance of repaired equipment is satisfactory for return to users. Procedures for performing physical inspection, unit functional tests, and cable continuity checks are given. Follow the procedure steps in the order given and set all controls accurately when performing these procedures.

5-24. Tools and Test Equipment Required for Direct Support Testing

The tools and test equipment required for direct support maintenance are the same as those listed in paragraph 5-7.

5-25. Physical Tests and Inspection

a. Tools and Materials Required.

(1) Cleaning compound (Trichlorotrifluoroethane).
(2) Cleaning cloth.
(3) Detergent.
(4) Fine bristle brush.
(5) Fine sandpaper.
(6) Tool Kit, Electronics Equipment TK-105/G.

b. Procedure. Inspect the components of the test set group as described in table 5-3.

WARNING

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since TRICHLOROTRIFLUOROETHANE dissolves natural oils, prolonged contact with skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician imrnediately.

Table 5-3. Physical Inspection Procedure

Item to be inspected	Procedure	Standard
Interior and exterior surfaces.	Inspect interior and exterior surfaces for dust, dirt, grease or fungus. Clean all surfaces as required.	All surfaces free of dust, dirt, grease or fungus
Painted surfaces	Inspect interior and exterior surfaces for chipped paint or corrosion.	Painted surfaces free of chipped areas and all surfaces corrosion free.
Wiring and insulation.	Inspect internal wiring for breaks and frayed or damaged insulation.	No broken wiring and insulation undamaged.
Connectors or sockets.	Inspect connectors for broken pins or sockets and damaged threads.	Connector pins or sockets unbroken and treads undamaged
Cornponents and assemblies	Inspect components and assemblies for breakage completeness and indications of overheating.	All components and assemblies complete and undamaged.

5-26. DS Testing of Control-interface Unit Following repairs, functionally test the control-interface unit as described in paragraph 5-7 and table 5-1.

5-27. DS Testing of Digital Tester Following repairs, functionally test the digital tester as described in TM 11-6625-2591-13.

5-28. Cable Assembly Testing Cable assembly testing consists of making continuity checks to isolate a defective wire path or cable assembly.

a. Test Equipment and Materials. Multimeter AN/USM-223.

b. Test Connections and Conditions. None required.

c. Initial Test Equipment Settings. None required.

d. Procedure. Use Multimeter AN/USM-223 and wire lists given in tables 5-4 through 5-8 when performing cable assembly testing.

5-29. Circuit Card Go/No-Go Testing

a. General. The test procedures in the following subparagraphs are used as an aid in isolating faults in the control-interface unit to a particular circuit card, chassis mounted part, or to circuit card assembly rack I A2. These procedures will also provide positive identification of faulty circuit cards prior to returning them to the depot for repair. The procedures should also be helpful in cases where multiple faults exist in the unit.

b. Toots and Test Equipment Required. The tools and test equipment required for circuit card go/no-go testing are listed below.

Test equipment	Common name
Test Set, Electronic Systems TS-3796/- UKM-4	Control-interface unit
Test Set, Electronic Systems AN/UYM-7	Digital tester
Data recording-programmed magnetic cards as follows	
SM-A-942475	A1 program card
SM-A-942480-1	A2 program card no.1
SM-A-942480.2	A2 program card no 2
SM-A-942485-1	A3 program card no 1
SM-A-942485-2	A3 program card no.2
SM-A-942485-3	A3 program card no 3
SM-A-942485-4	A3 program card no.4
SM-A-942510	A5 program card
SM-A-942495-1	A6 program card no.1
SM-A-942495-2	A6 program card no 2
SM-A-942495-3	A6 program card no.3
SM-A-942520-1	A7 program card no 1
SM-A-942520-2	A7 program card no 2

c. Test Setup. Connect the equipment as shown in figure 5-i.

d. Preliminary Control Settings. Set the equipment controls as follows prior to testing the circuit cards:

Control	*Setting*
Control-interface unit:	
Power ON/OFF	OFF
Power circuit breaker	In (on)
MODE SELECT	POWER OFF
Digital tester:	
POWER	Down (off)
UUT POWER	Down (off)

NOTE

1. During the testing of circuit cards only the control-interface unit TEST ON and POWER ON indicators light.
2. The procedures in subparagraphs e through j below may be performed independently, as desired.

e. Panel Logic Circuit Card Assembly A1 Testing.

NOTE

The following procedure tests only the digital circuitry on circuit card Al. The analog (power fault detection) circuitry is checked in table 5-2, rnalfunction 4.

(1) Remove circuit card Al from the control-interface unit (Para 5-15a) and insert it in MODULE TEST connector J5.

(2) Set equipment controls as follows:

Control	*Setting*
Control-interface unit:	
MODE SELECT	MODULE TEST STE
POWER ON/OFF	ON
Digital tester:	
POWER	On (up)
UUT POWER	On (up)
TEST RATE PER SEC	200K
NUMBER OF TESTS	2M
DISPLAY	PASS/FAIL
PROBE THRESHOLD	IV

(3) Insert Al program card in digital tester card reader slot.

(4) Press digital tester PROGRAM ENTER switch down. Observe that red ERROR indicator goes out and white READY indicator lights.

(5) Press digital tester TEST switch. Verify that red TEST indicator lights during test. Repeat test and verify that green PASS indicator lights at end of second test.

(6) Set digital tester DISPLAY switch to PROBE.

(7) Monitor circuit card test connector pin AIJI-T (fig. 5-5) with digital tester PROBE and press TEST switch. Verify that probe flashes during test.

(8) Move probe to AlJ1-N and press TEST switch. Verify that probe flashes during test.

(9) Move probe to AIJI-P and press TEST switch. Verify that probe flashes during test.

(10)Remove program card, turn off equipment power, and disconnect test setup.

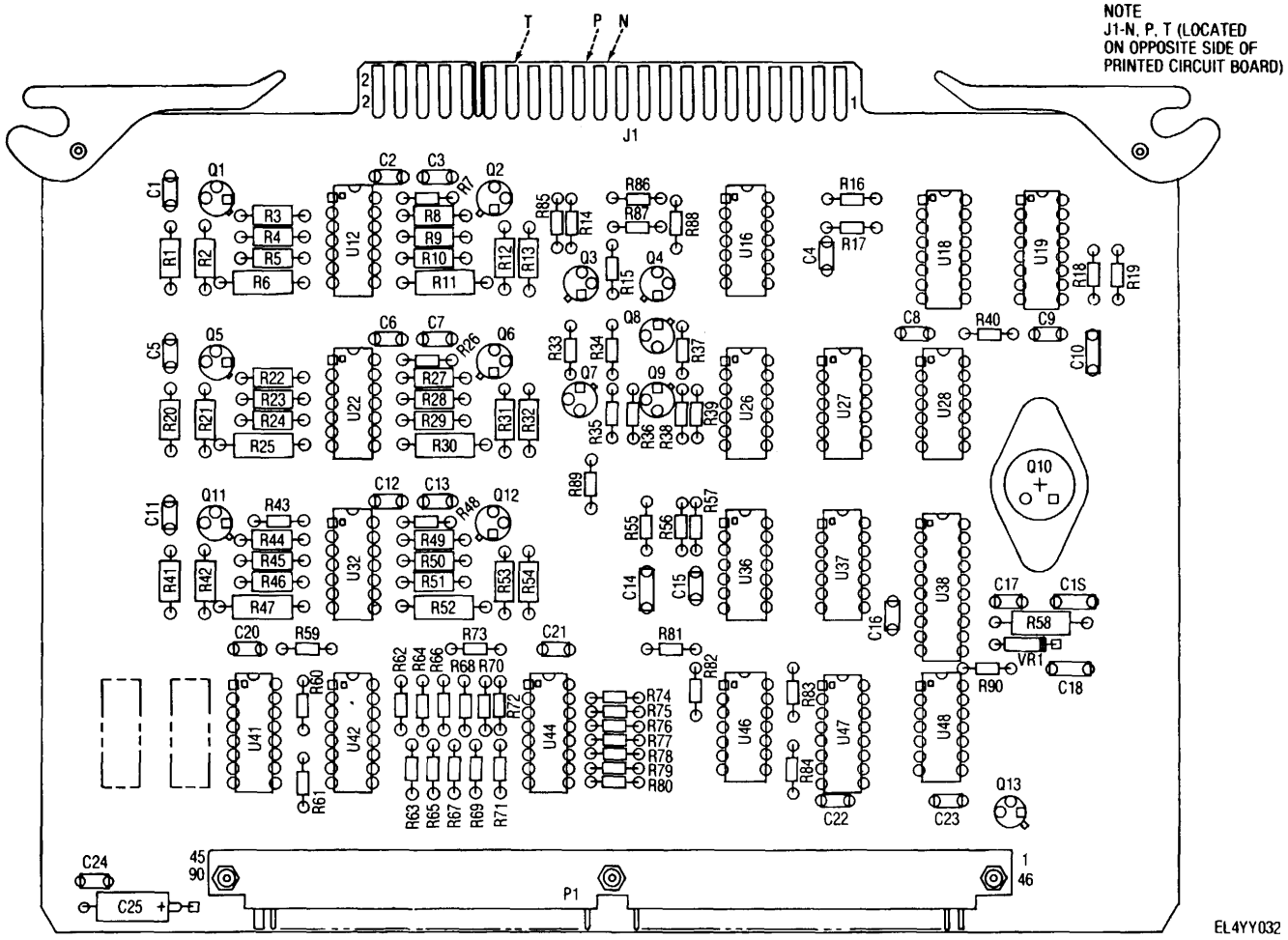


Figure 5-5. A1 test point locations. 5-18

f. STE Microprocessor Circuit Card,AssemblyA2 Testing.

(1) Remove circuit card A2 from control-interface unit (para 5-15a) and insert it in MODULE TEST connector J6. Install a known good A2 in control-interface unit para 5-15b).

(2) Set equipment controls as follows:

Control	*Setting*
Control-interface unit:	
MODE SELECT	MODULE TEST STE
POWER ON/OFF	ON
Digital tester:	
POWER	On (up)
UUT POWER	On (up)
TEST RATE PER SEC	2M
NUMBER OF TESTS	20M
DISPLAY	PASS/FAIL
PROBE THRESHOLD	2V

(3) Insert A2 program card No. I in digital tester card reader slot.

(4) Press digital tester PROGRAM ENTER switch down. Observe that red ERROR indicator goes out and white READY indicator lights.

(5) Press digital tester TEST switch. Verify that red TEST indicator lights during test. Repeat test and verify that green PASS indicator lights at end of second test. Observe that control-interface unit TEST NUMBER display increments to 00.3.

(6) Remove program card from digital tester card reader slot and insert A2 program card No. 2 in card reader slot.

(7) Set digital tester TEST RATE PER SEC switch to IM and NUMBER OF TESTS switch to IOM.

(8) Press digital tester TEST switch. Verify that red TEST indicator lights during test. Repeat test and verify that green PASS indicator lights at end of second test.

(9) Remove program card, turn off equipment power, and disconnect test setup.

g. RAM/ROM Circuit Card, Assembly A3 Testing.

(1) Remove circuit card A3 from control-interface unit (para 5-15a) and insert it in MODULE TEST connector J5.

(2) Set equipment controls as follows:

Control	*Setting*
Control-interface unit:	
MODE SELECT	MODULE TEST STE
POWER ON/OFF	ON
Digital tester:	
POWER	On (up)
UUT POWER	On (up)
TEST RATE PER SEC	400K
NUMBER OF TESTS	4M
DISPLAY	PASS/FAIL
PROBE THRESHOLD	2V

(3) Insert A3 program card No. I in digital tester card reader slot.

(4) Press digital tester PROGRAM ENTER switch down. Observe that red ERROR indicator goes out and white READY indicator lights.

(5) Press digital tester TEST switch. Verify that red TEST indicator fights during test. Repeat test and verify that green PASS indicator lights at end of second test.

(6) Remove program card from digital tester card reader slot and insert A3 program card No. 2 in slot.

(7) Set digital tester TEST RATE PER SEC switch to 200K and NUMBER OF TESTS switch to 2M.

(8) Repeat steps (4) and (5).

(9) Remove program card from digital tester card reader slot and insert A3 program card No. 3 in slot.

(10)Repeat steps (4) and (5).

(11)Remove program card from digital tester card reader slot and insert A3 program card No. 4 in slot.

(12)Repeat steps (4) and (5).

(13)Remove program card, turn off equipment power, and disconnect test setup.

h. Derived Timing No. 1 Circuit Card Assembly A4 Testing. Refer to table 5-1, steps 10 through 13, for testing derived timing No. 1 circuit card assembly.

i. Derived Timing No. 2 Circuit Card Assembly A5 Testing.

(1) Remove circuit card A5 from control-interface unit (para 5-15a) and insert it in MODULE TEST connector J5.

(2) Set equipment controls as follows:

Control	*Setting*
Control-interface unit:	
MODE SELECT	MODULE TEST STE
POWER ON/OFF	ON
Digital tester:	
POWER	On (up)
UUT POWER	on (Up)
TEST RATE PER SEC	IM
NUMBER OF TESTS	2M
DISPLAY	PASS/FAIL
PROBE THRESHOLD	2V

(3) Insert A5 program card in digital tester card reader slot.

(4) Press digital tester PROGRAM ENTER switch down. Observe that red ERROR indicator goes out and white READY indicator lights.

(5) Press digital tester TEST switch. Verify that red TEST indicator lights during test. Repeat test and verify that green PASS indicator lights at end of second test.

(6) Remove program card, turn off equipment, and disconnect test setup.

j. PIT and Test ROM Circuit Card Assembly, A6 Testing.

(1) Remove circuit card A6 from control-interface unit (para 5-15a) and insert it in MODULE TEST connector J5.

(2) Set equipment controls as follows:

Control	*Setting*
Control-interface unit:	
MODE SELECT	MODULE TEST STE
POWER ON/OFF	ON
Digital tester:	
POWER	On (up)
UUT POWER	On (up)
TEST RATE PER SEC	200K
NUMBER OF TESTS	2M
DISPLAY	PASS/FAIL
PROBE THRESHOLD	2V

(3) Insert A6 program card No. I in digital tester card reader slot.

(4) Press digital tester PROGRAM ENTER switch down. Observe that red ERROR indicator goes out and white READY indicator lights.

(5) Press digital tester TEST switch. Verify that red TEST indicator lights during test. Repeat test and verify that green PASS indicator lights at end of second test.

(6) Remove program card from digital tester card reader slot and insert A6 program card No. 2 in slot.

(7) Set digital tester TEST RATE PER SEC switch to 2M and NUMBER OF TESTS switch to 4M.

(8) Repeat steps (4) and (5).

(9) Set digital tester DISPLAY switch to PROBE.

(10)Monitor the following A6 integrated circuit pins (fig. 5-6) using digital tester probe. At each test point, press TEST switch and verify that at the termination of the test the proper count is displayed on digital tester display.

Test point	*Count*
U22-1	3154
U22-13	4162
U7-1	3
U7-2	11
U7-3	6

(11) Remove program card, turn off equipment power, and disconnect test setup.

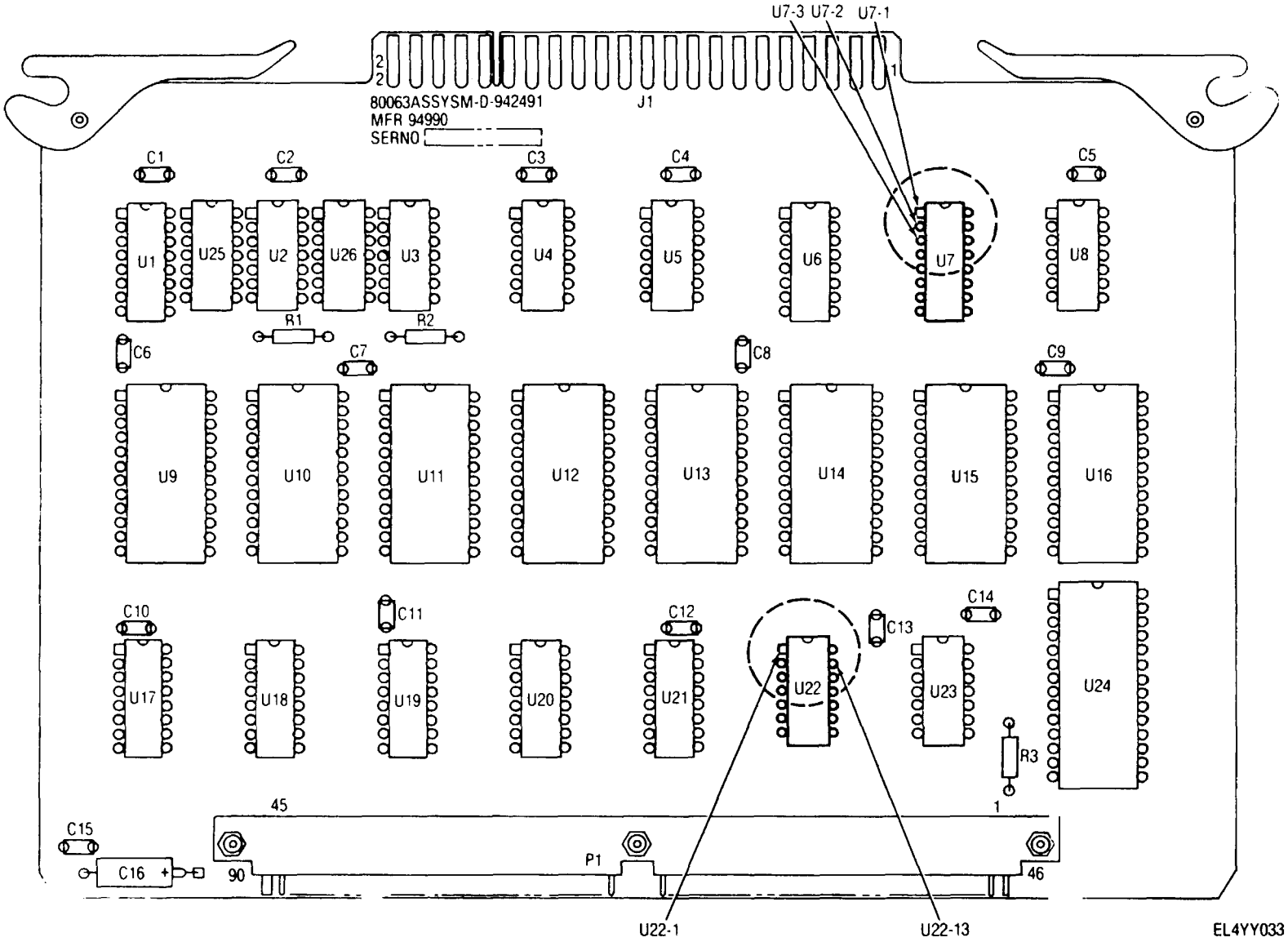


Figure 5-6 . A6 Test point locations . 5-21

k. Bus Switching Circuit Card Assemb6, A 7 Testing.

(1) Remove circuit card A7 from control-interface unit (para 5-15a) and insert it in MODULE TEST connector J5.

(2) Set equipment controls as follows:

Control	*Setting*
Control-interface unit:	
MODE SELECT	MODULE TEST STE
POWER	ON
Digital tester:	
POWER	On (up)
UUT POWER	On (up)
TEST RATE PER SEC	200K
NUMBER OF TESTS	2M
DISPLAY	PASS/FAIL
PROBE THRESHOLD	2V

(3) Insert A7 program card No. I in digital tester card reader slot.

(4) Press digital tester PROGRAM ENTER switch down. Observe that red ERROR indicator goes out and white READY indicator lights.

(5) Press digital tester TEST switch. Verify that red TEST indicator lights during test Repeat test and very that green PASS indicator lights at end of second test.

(6) Remove program card from digital tester card reader slot and insert A7 program card No. 2 in slot (7) Repeat steps (4) and (5).

(8) Remove program card, turn off equipment power, and disconnect test setup.

Section VI. WIRE LISTS

5-30. General

Wire lists for the control-interface unit and interconnect cables are contained in this section. These wire lists enable direct support maintenance personnel to perform the continuity and resistance checks or voltage measurements to isolate a defective wire path or cable assembly.

5-31. Arrangement of Wire Lists

The wire included in this section are listed below.

a. Test Set, Electronic Systems, TS-3796/UKM-4 (table 5-4)
b. Power Cable Assembly WI (table 5-5)
c. Special Purpose Cable Assembly W2 (table 5-6)
d. Special Purpose Cable Assembly W3 (table 5-7)
e. Special Purpose Cable Assembly W4 (table 5-8)
f. Connector Assembly 1A2A13 (table 5-9)

Table 5-4 . Test Set Electronic Systems TS-3796/UKM-4 Wire List

Wire No	From	To	Color	Size AWG	Remarks:	
	Circuit card rack					
1	P1-1	S2G-C	Yellow	22	+5V	
2	P1-13	S2G4	Yellow	22	+5V	
3	P1-17	S2G-5	Yellow	22	+5V	
4	S2G-5	S2G-6	Yellow	22	+5V	
5	P1-2	S2H-C	Orange	22	+12V/+15SV	
6	P1-14	S2H-4	Orange	22	+12V/+15V	
7	P1-18	S2H-5	Orange	22	+12V/+1SV	
8	S2H-5	S2H-6	Blue	22	+12V/+15V	
9	P1-3	S2JC	Blue	22	- 12V/- SV	
10	P1-15	S2J-4	Blue	22	-12V/-15V	
11	P1-19	S2J-5	Blue	22	-12VW-15V	
12	S2J-5	S2J-6	Blue	22	- 12V/- 15V	
13	P1-4	S2K-C	Green	22	-5V	
14	P1-16	S2K-4	Green	22	-5V	
15	S2K-4	S2K-6	Green	22	-5V	
16	P1-20	S2L-1	White	24	UT DET	
17	P1-21	S2L-2	White	24	UT ENC	
13	P1-22	S2L-3	White	24	OFF	
19	P1-23	S2L-4	White	24	MT ENC	
20	P1-25	S2L-5	White	24	+Supply Prn	
21	S2L-5	S2L-6	White	24	+Supp rw	
22	S2M-C	S2L1-C	Black	24	Ground	
23	S2L-C	ES	Black	24	Oad	
24	P1-26	S2M-	White	24	-Sup	Prw
25	S2M-5	S2M-4	White	24	-Supl mw	
26	P1-5	DS2-A	White	24	UNIT	TES ON
27	P1-7	D63-A	White	24	MOD TEST SHORT	
23	P1-9	DS4-A	White	24	MODTWON	
29	P1-l1	D6S-A	White	24	MODE 1N ERROR	
30	P1-12	D6-AWhe	24	T E	ST	

Table 5-4 . Test Set Electronic Systems TS-3796IUKM-4 Wire Continued

Wire No.	From	To	Color	Size AWG	Remarks
31	P1-6	DS2-B	White	24	SIGNAL RET
32	DS2-B	DS3-B	White	24	SIGNAL RET
33	DS3-B	DS4-B	White	24	SIGNAL RET
34	DS4-B	DS5-B	White	24	SIGNAL RET
35	DS5-B	DS6-B	White	24	SIGNAL RET
36	P2-1	DS7-1	White	24	A
37	P2-2	DS7-13	White	24	B
38	P2-3	DS7-10	White	24	C
39	P2-4	DS7-8	White	24	D
40	P2-5	DS7-7	White	24	E
41	P2-6	DS7-2	White	24	F
42	P2-7	DS7-11	White	24	G
43	P2-8	DS7-6	White	24	DP
44	P2-9	DS7-3	White	24	ANODE
45	DS7-3	DS7-9	White	24	ANODE
46	DS7-9	DS7-14	White	24	ANODE
47	P2-11	DS8-1	White	24	A
48	P2-12	DS8-13	White	24	B
49	P2-13	DS8-10	White	24	C
50	P2-14	DSS-8	White	24	D
51	P2-15	DS8-7	White	24	E
52	P2-16	DS8-2	White	24	F
53	P2-17	DS8-11	White	24	G
54	P2-18	DS8-6	White	24	DP
55	P2-19	DS8-3	White	24	ANODE
56	DS8-3	DS8-9	White	24	ANODE
57	DS8-9	DS8-14	White	24	ANODE
58	P2-21	DS9-1	White	24	A
59	P2-22	DS9-13	White	24	B
60	P2-23	DS9-10	White	24	C
61	P2-24	DS9-8	White	24	D
62	P2-25	DS9-7	White	24	E
63	P2-26	DS9-2	White	24	F
64	P2-27	DS9-11	White	24	G
65	P2-28	DS9-6	White	24	DP
66	P2-29	DS9-3	White	24	ANODE
67	DS9-3	DS9-9	White	24	ANODE
68	DS9-9	DS9-14	White	24	ANODE
69	J16-1	A2J11-D	Red	20	+28V
70	J16-2	J11-E	Black	20	GROUND
71	J11-A	E4	Black	20	GROUND
72	J11-B	E4	Black	20	GROUND
73	J11-C	E4	Black	20	GROUND
74	J11-F	E4	Black	20	GROUND
75	J11-G	E4	Black	20	GROUND
76	J16-4	S1-6	Gray	20	ØA
77	S1-6	DS1-A	Gray	20	ØA
78	DS1-A	M1-A	Gray	20	ØA
79	J16-A4	S1-2	Gray	16	NEUTRAL
80	S1-2	J11-1	Gray	16	NEUTRAL
81	S1-2	DS1-B	Gray	20	NEUTRAL
82	DS1-B	M1-B	Gray	20	NEUTRAL
83	J16-A1	S1-5	Gray	16	ØA
84	J16-A2	S1-8	Gray	16	ØB
85	J16-A3	S1-11	Gray	16	ØC
86	S1-6	S2A-C	Gray	22	ØA
87	S2A-C	S2B-C	Gray	22	ØA
88	S1-9	S2C-C	Gray	22	ØB
89	S2CC	S2D-C	Gray	22	ØB
90	S1-12	S2E-C	Gray	22	ØC
91	S2E-C	S2F-C	Gray	22	ØC
92	S2A-1	S2B-1	Gray	22	ØA
93	S2B-1	S2A-2	Gray	22	ØA
94	S2A-2	S2B-2	Gray	22	ØA

Table 5-4 . Test Set Electronic System TS-3 796IUKM-4 Wire - Continued

Wire No	*From*	*To*	*Color*	*Size AWG*	*Remarks*
95	S2B-2	J11-J	Gray	22	ØA
96	S2C-1	S2D-1	Gray	22	ØB
97	S2D-1	S2C-2	Gray	22	ØB
98	S2C-2	S2D-2	Gray	22	ØB
99	S2D-2	J11-K	Gray	22	ØB
100	S2E-1	S2F-1	Gray	22	ØC
101	S2F-1	S2E-2	Gray	22	ØC
102	S2E-2	S2F-2	Gray	22	ØC
103	S2F-2	J11-M	Gray	22	ØC
104	S2A-1	J16-3	Gray	22	ØA”
105	P1-8		White	20	SPARE
106	P1-10		White	20	SPARE
!07	P1-24		White	20	SPARE
108	P1-27		White	20	SPARE
109	P1-28		White	20	SPARE
110	P1-29		White	20	SPARE
111	P1-30		White	20	SPARE
112	P1-31		White	20	SPARE
113	P1-32		White	20	SPARE
114	P1-33		White	20	SPARE
115	P1-34		White	20	SPARE
116	P1-35		White	20	SPARE
117	P1-36		White	20	SPARE
118	P1-37		White	20	SPARE
119	P2-10		White	20	SPARE
120	P2-20		White	20	SPARE
121	P2-30		White	20	SPARE
122	P2-31		White	20	SPARE
123	P2-32		White	20	SPARE
124	P2-33		White	20	SPARE
125	P2-34		White	20	SPARE
126	P2-35		White	20	SPARE
127	P2-36		White	20	SPARE
128	P2-37		White	20	SPARE
129	P2-38		White	20	SPARE
130	P2-39		White	20	SPARE
131	P2-40		White	20	SPARE
132	P2-41		White	20	SPARE
133	P2-42		White	20	SPARE
134	P2-43		White	20	SPARE
135	P2-44		White	20	SPARE
136	P2-45		White	20	SPARE
137	P2-46		White	20	SPARE
138	P2-47		White	20	SPARE
139	P2-48		White	20	SPARE
140	P2-49		White	20	SPARE
141	P2-50		White	20	SPARE
	Electrical housing				
1	CB1-A2	P2-Al	Gray	16	ØA
2	CB1-B2	P2-A2	Gray	16	ØB
3	CB1-C2	P2-A3	Gray	16	ØC
4	P2-3	PS3-1	Gray	20	ØA"
5	P2-4	PS2-1	Gray	20	ØA’
6	PS2-1	PS1-1	Gray	20	ØA'
7	PS3-6	P2-1	Red	20	+28V
8	PS3-5	P2-2	Black	20	28V RET
9	PS1-3	P1-A3	Yellow	16	+5V
10	U1 RED	E2	Yellow	16	+5VPIGTAIL OF U1
11	PS1-4	E1	Red	16	GROUND
12	U1 BLACK	E3	Black	16	GROUND PIGTAIL OF U1
13	PS2-7	XU3-2	Orange	16	+15V
14	PS2-7	P1-A2	Orange	16	+15V
15	PS2-5	XU2-CASE	Blue	16	-15V

Table 5-4. Test Set Electronic Systems TS-3796/UKM-4 Wit List Continued

Wire No	From	To	Color	Size AWG	Remarks
16	PS2-5	P1-A1	Blue	16	-15V
17	PS2-6	E1	Black	16	GROUND
18	XU2-2	E1	Black	16	GROUND
19	XU3-CASE	E1	Black	16	GROUND
20	P1-A5	E1	Black	16	GROUND
21	P1-A6	E1	Black	16	GROUND
22	P1-A7	E1	Black	16	GROUND
23	P1-AS	E1	Black	16	GROUND
24	PS1-2	PS2-2	Gray	16	NEUTRAL
25	PS2-2	PS3-2	Gray	16	NEUTRAL
26	PS3-2	FL1C4-2	Gray	16	NEUTRAL
27	E2	PS1-3	Yellow	16	+5V
28	E3	E1	Black	16	GROUND
29	E2	P1-A4	Yellow	16	+5V
30	PS3-4	PS3-6	Red	20	SENSE
31	PS3-3	PS3-5	Black	20	SENSE
32	PS2-3	PS2-6	Black	20	SENSE
33	PS2-4	PS2-7	Orange	20	SENSE
34	P2-A5		White	16	SPARE
35	P2-5		White	16	SPARE
36	P2-6		White	20	SPARE
37	P2-7		White	20	SPARE
38	P2-8		White	20	SPARE
39	P2-9		White	20	SPARE
40	P2-10		White	20	SPARE
41	P2-11		White	20	SPARE
42	P2-12		White	20	SPARE

Table 5-5. Power Cable Assembly W1 Wire List

Wire No	From	To	Color	Size AWG	Remarks
1	W1P1-X	W12-J	Brown	16STRD	ØA
2	W1P1-Y	W1P-K	Red	16STRD	ØB
3	W1P1-Z	W1P2-M	Orange	16STRD	ØC
4	W1P1-NEUTRAL	W1P-L	Black	16STRD	NEUTRAL
5	SH1ELD OF CABLE	W1P2-E		20STRD	

Table 5-6. Special Purpose Cable Assembly W2 Wire List

Wire No	From	To	Color	Size AWG	Remarks
1	W2P1-A1	W2P-A1	BR/BL/GY	24	
2	W2P1-A2	W2P2-A2	BR/BL/V	24	
3	W2P1-A3	W2P2-A3	Y/G/Y	24	
4	W2P1-A4	W2P2-A4	Y/G/GY	24	
5	W2P1-A5	W2P2-A5	Y/BL/V	24	
6	W2P1-A6	W2P2-A6	BR/V/GY	24	
7	W2P1-BI	W2P2-B1	BK/O/Y	24	
8	W2P1-U	W2P2-B2	BK/O/BL	24	
9	W2P1-B3	W2P2-B3	BK/O/G	24	
10	W2P1-B4	W2P2-B4	BK/O/V	24	
11	W2P1-BS	W2P2-B5	BR/G/V	24	
12	W2P1-B6	W2P2-B6	BR/G/GY	24	
13	W2P1-C1	W2P2-C1	O/BL/GY	24	
14	W2P1-C2	W2P2-C2	BR/Y/V	24	
15	W2P1-C3	W2P2-C3	BK/Y/G	24	
16	W2P1-C4	W2P2-C4	BR/G/BL	24	
17	W2P1-C5	W2P2-C5	Y/BL/GY	24	
18	W2P1-C6	W2P2-C6	BK/Y/BL	24	
19	W2P1-DI	W2P2-D1	BK/O/GY	24	
20	W2P1-D2	W2P2-D2	W/O/G	24	
21	W2P1-D3	W2P2-D3	W/R/GY	24	
22	W2P1-D4	W2P2-D4	W/O/Y	24	

Table 5-6. Special Purpose Cable Assembly W2 Wire List-continued

Wire No	*From*	*To*	*Color*	*Size AWG*	*Remarks*
23	W2P1-D5	W2P2-D5	W/R/V	24	
24	W2P1-D6	W2P2-D6	W/R/BL	24	
25	W2P1-E1	W2P2-E1	R/O/Y	24	
26	W2P1-E2	W2P2-E2	BK/R/GY	24	
27	W2P1-E3	W2P2-E3	W/R/G	24	
28	W2P1-E4	W2P2-E4	R/O/G	24	
29	W2P1-E5	W2P2-E5	Y/G/BL	24	
30	W2P1-E6	W2P2-E6	BK/R/V	24	
31	W2P1-F1	W2P2-F1	W/O/V	24	
32	W2P1-F2	W2P2-F2	W/O/BL	24	
33	W2P1-F3	W2P2-F3	W/BR/Y	24	
34	W2P1-F4	W2P2-F4	W/BR/R	24	
35	W2P1-F5	W2P2-F5	W/BR/O	24	
36	W2P1-F6	W2P2-F6	W/BK/GY	24	
37	W2P1-G1	W2P2-G1	BK/Y/GY	24	
38	W2P1-G2	W2P2-G2	BK/Y/V	24	
39	W2P1-G3	W2P2-G3	W/O/GY	24	
40	W2P1-G4	W2P2-G4	O/BL/V	24	
41	W2P1-G5	W2P2-G5	W/BR/BL	24	
42	W2P1-G6	W2P2-G6	W/BR/G	24	
43	W2P1-H1	W2P2-H1	BK/R/BL	24	
44	W2P1-H2	W2P2-H2	R/O/BL	24	
45	W2P1-H3	W2P2-H3	BK/R/Y	24	
46	W2P1-H4	W2P2-H4	Y/BR/GY	24	
47	W2P1-H5	W2P2-H5	R/O/V	24	
48	W2P1-H6	W2P2-H6	BK/R/O	24	
49	W2P1-J1	W2P2-J1	BKVBR/GY	24	
50	W2P1-J2	W2P2-J2	V/R	24	
51	W2P1-J3	W2P2-J3	W/BKVV	24	
52	W2P1-J4	W2P2-J4	BL/V/GY	24	
53	W2P1-J5	W2P2-J5	GY/R	24	
54	W2P1-J6	W2P2-J6	BL/R	24	
55	W2P1-K1	W2P2-K1	O/V/GY	24	
56	W2P1-K2	W2P2-K2	BK/R/G	24	
57	W2P1-K3	W2P2-K3	W/BK/G	24	
58	W2P1-K4	W2P2-K4	W/BK/BL	24	
59	W2P1-K5	W2P2-K5	G/R	24	
60	W2P1-K6	W2P2-K6	Y	24	
61	W2P1-L1	W2P2-L1	W/BK	24	
62	W2P1-L2	W2P2-L2	W/BR	24	
63	W2P1-L3	W2P-L3	G/BK	24	
64	W2P1-L4	W2P2-L4	G	24	
65	W2P1-L5	W2P2-L5	BK/G/BL	24	
66	W2P1-L6	W2P2-L6	BL	24	
67	W2P1-M1	W2P2-M1	BK/G/GY	24	
68	W2P1-M2	W2P2-M2	O/G/GY	24	
69	W2P1-M3	W2P2-M3	W/G/Y	24	
70	W2P1-M4	W22-M4	W/BL/Y	24	
71	W2P1-M5	W2P-M5	W/BR/V	24	
72	W2P1-M6	W2P-M6	Y/V/GY	24	
73	W2P1-N1	W2P-N1	BR/G/Y	24	
74	W2P1-N2	W2P-N2	R/G/Y	24	
75	W2P1-N3	W2P2-N3	BR/O/GY	24	
76	W2P1-N4	W2P2-N4	W/BK/Y	24	
77	W2P1-N5	W2P2-N5	BKVBR/V	24	
78	W2P1-N6	W2P2-N6	R/O/GY	24	
79	W2P1-P1	W2P-P1	O/G/V	24	
80	W2P1-P	W2P2-P2	BR/Y/BL	24	
81	W2P1-P3	W2P2-P3	W/V/Y	24	
82	W2P1-P4	W2P-P4	W/BR/GY	24	
83	W2P1-P5	W2P2-P5	V	24	
84	W2P1-P6	W2P2-P6	GY	24	
85	W2P1-R1	W2P2-R1	BK/W	24	
86	W2P1-R2	W2P2-R2	Y/BK	24	

Table 5-6. Special Purpose Cable Assembly W2 Wire List Continued

Wire No	From	To	Color	Size AWG	Remarks
87	W2P1-R3	W2P2-R3	BR	24	
88	W2P1-R4	W2P2-R4	R	24	
89	W2P1-RS	W2P2-F5	0	24	
90	W2P1-R6	W2P2-R6	W/R	24	
91	W2P1-S1	W2P2-S1	W/BK/R	24	
92	W2P1-S2	W2P2-S2	B/O/V	24	
93	W2P1-S3	W2P2-S3	BK/BR/BL	24	
94	W2P1-S4	W2P2-S4	BK	24	
95	W2P1-S5	W2P2-S5	W	24	
96	W2P1-S6	W2P2-S6	W/BK/O	24	
97	W2P1-T1	W2P2-T1	O/G/BL	24	
98	W2P1-T2	W2P2-T2	W/Y/GY	24	
99	W2P1-T3	W2P2-T3	G/BL/V	24	
100	W2P1-T4	W2P2-T4	O/Y/GY	24	
101	W2P1-T5	W2P2-T5	BK/G/V	24	
102	W2P1-T6	W2P2-T6	W/O/R	24	
103	W2P1-U1	W2P2-U1	O/BK	24	
104	W2P1-U2	W2P2-U2	BR/BK	24	
105	W2P1-U3	W2P2-U3	W/O	24	
106	W2P1-U4	W2P2-U4	BK/BR/W	24	
107	W2P1-U5	W2P2-U5	R/BK	24	
108	W2P1-U6	W2P2-U6	Y/R	24	
109	W2P1-V1	W2P2-V1	BR/R	24	
110	W2P1-V2	W2P2-V2	O/R	24	
111	W2P1-V3	W2P2-V3	V/BK	24	
112	W2P1-V4	W2P2-V4	BK/R	24	
113	W2P1-V5	W2P2-V5	GY/BK	24	
114	W2P1-V6	W2P2-V6	BL/BK	24	
115	W2P1-W1	W2P2-W1	W/R/Y	24	
116	W2P1-W2	W2P2-W2	W/G/V	24	
117	W2P1-W3	W2P2-W3	W/G/GY	24	
118	W2P1-W4	W2P2-W4	W/G/BL	24	
119	W2P1-W5	W2P2-W5	W/BL/V	24	
120	W2P1-W6	W2P2-W6	BK/BL/V	24	
121	W2P1-X1	W2P2-X1	BR/O/BL	24	
122	W2P1-X2	W2P2-X2	BK/BR/G	24	
123	W2P1-X3	W2P2-X3	W/GY	24	
124	W2P1-X4	W2P2-X4	W/Y	24	
125	W2P1-X5	W2P2-X5	W/G	24	
126	W2P1-X6	W2P2-X6	W/BL	24	
127	W2P1-Y1	W2P2-Y1	R/Y/BL	24	
128	W2P1-Y2	W2P2-Y2	BR/O/G	24	
129	W2P1-Y3	W2P2-Y3	R/Y/V	24	
130	W2P1-Y4	W2P2-Y4	BR/Y/O	24	
131	W2P1-Y5	W2P2-Y5	BK/Y/BR	24	
132	W2P1-Y6	W2P2-Y6	W/V	24	
133	W2P1-Z1	W2P2-Z1	BR/R1GY	24	
134	W2P1-Z2	W2P2-Z2	BK/BR/O	24	
135	W2P1-Z3	W2P2-Z3	BK/BR/R	24	
136	W2P1-Z4	W2P2-Z4	W/V/GY	24	
137	W2P1-ZS	W2P2-Z5	W/BL/GY	24	
138	W2P1-Z6	W2P2-Z6	BKVBL/GY	24	
139	W2P1-a1	W2P2-a1	BK/V/GY	24	
140	W2P1-a2	W2P2-a2	BR/R/O	24	
141	W2P13	W2P2-a3	BR/R/V	24	
142	W2P14	W2P2-a4	BR/R/G	24	
143	W2P1-a5	W2P2-a5	BR/R/Y	24	
144	W2P1-e6	W2P2-a6	BR/R/BL	24	
145	W2P1-b1	W2P2-b1	R/Y/GY	24	
146	W2P1-b2	W2P2-b2	R/G/BL	24	
147	W2P1-b3	W2P2-b3	R/G/V	24	
148	W2P1-b4	W2P2-b4	G/V/GY	24	
149	W2P1-b5	W2P2-b5	R/G/GY	24	
150	W2P1-b6	W2P2-b6	R/BL/V	24	

Table 5-6. Special Purpose Cable Assembly- W2 Wire List-Continued

Wire No	From	To	Color	Size AWG	Remarks
151	W2P1-c1	W2P2-c1	R/BL/GY	24	
152	W2P1-c2	W2P2-c2	O/Y/V	24	
153	W2P1-c3	W2P2-c3	O/Y/BL	24	
154	W2P1-c4	W2P2-c4	O/Y/G	24	
155	W2P1 c5	W2P2-c5	R/V/GY	24	
156	W2P1-c6	W2P2-c6	BL/G/GY	24	

Table 5- 7. Special Purpose Cable Assembly W3 Wire List

Wire No	From	To	Color	Size AWG	Remarks
1	W3P1-A1	W3P2-1	W/BR/Y	24	
2	W3P1-A2	W3P2-A	W/BR/O	24	
3	W3P1-A3	W3P2-2	W/BR/G	24	
4	W3P1-A4	W3P2-B	W/BR/R	24	
5	W3P1-A7	W3P2-4	W/BR/V	24	
6	W3P1-A6	W3P2-C	W/BK/GY	24	
7	W3P1-B1	W3P2-5	W/BR/BL	24	
8	W3P1-AS	W3P2-D	W/BK/V	24	
9	W3P1-B3	W3P2-6	W/V	24	
10	W3P1-B2	W3P2-E	W/G	24	
11	W3P1-C1	W3P2-9	W/BL	24	
12	W3P1-B4	W3P2-F	W/Y	24	
13	W3P1-Q	W3P2-10	R	24	
14	W3P1-B6	W3P2-H	W/O	24	
15	W3P1-C5	W3P2-11	BK	24	
16	W3P1-B8	W3P2-J	W/R	24	
17	W3P1-C7	W3P2-12	V	24	
18	W3P1-C2	W3P2-K	W/BR	24	
19	W3P1-D1	W3P2-13	W	24	
20	W3P1-C4	W3P2-L	BR	24	
21	W3P1-D3	W3P2-14	0	24	
22	W3P1-C6	W3P2-M	GY	24	
23	W3P1-D5	W3P2-15	W/GY	24	
24	W3P1-CS	W3P2-N	W/BK	24	
25	W3P1-D7	W3P2-16	W/BK/BR	24	
26	W3P1-D2	W3P2-P	W/BK/G	24	
27	W3P1-E1	W3P2-17	Y	24	
28	W3P1-D4	W3P2-R	W/BK/Y	24	
29	W3P1-E3	W3P2-18	W/R/O	24	
30	W3P1-D6	W3P2-S	BL	24	
31	W3P1-E5	W3P2-19	W/R/BK	24	
32	W3P1-Dg	W3P2-T	G	24	
33	W3P1-E7	W3P2-20	W/RJY	24	
34	W3P1-E2	W3n-U	W/BR/GY	24	
35	W3P1-F1	W3P2-21	W/R/BL	24	
36	W3P1-E4	W3P2-V	W/R/GY	24	
37	W3P1-E6	W3P2-W	W/R/G	24	
38	W3P1-F8	W3P2-Z	W/R/V	24	
39	W3P1-AS	W3P2-3	W/BK/BL	24	
40	W3P1-B5	W3P2-7	W/O/V	24	
41	W3P1-B7	W32-8	W/O/BL	24	
42	W3P1-ES	W3P2-X	W/O/Y	24	
43	W3P1-F2	W3P2-Y	W/BK/O	24	
44	W3P1-F7	W3P2-22	W/O/G	24	

Table 5-8. Special Purpose Cable Assembly W4 Wire List

Wire No	From	To	Color	Size AWG	Remarks
1	1W4P1-B	1W4P-B	RED	20	
2	1W4P1-C	1W4P2C	ORANGE	20	
3	1W4P1-F	1W4P-F	BLUE	20	
4	1W4P1-G	1W4P2-G	VIOLET	20	

Table 5-8. Special Purpose Cable Assembly, W4 Wire List-Continued

Wire No	From	To	Color	Size AWG	Remarks
5	1W4P1-D	1W4P2-D	YELLOW	20	
6	1W4P1-E	1W4P2-E	GREEN	20	
7	1W4P11-	1W4P2-J	BROWN	16	
8	1W4P1-K	1W4P2-K	RED	16	
9	1W4P1-M	1W4P2-M	BLACK	16	
10	1W4P1-L	1W4P2-L	ORANGE	16	
11	1W4P1-A	Shield of Cab1e	BLACK	20	
12	1W4P1-H	1W4P2-H	BROWN	20	

Table 5-9. Connector Assembly IA 2A13 Wire List

Wire No	From	To	Color	Size AWG	Remarks
	XA2-29	XA3-52	Blue	30	AO
	XA6-7	XA7-38	Blue	30	
	XA3-52	XA6-7	Blue	30	
	XA2-30	XA3-7	Blue	30	A1
	XA6-6	XA7-37	Blue	30	
	XA3-7	XA6-6	Blue	30	
	XA2-35	XA3-51	Blue	30	A2
	XA6-5	XA7-36	Blue	30	
	XA3-51	XA6-5	Blue	30	
	XA2-32	XA3-6	Blue	20	A3
	XA6-22	XA7-35	Blue	30	
	XA3-6	XA6-22	Blue	30	
	XA2-31	XA3-50	Blue	30	A4
	XA6-23	XA7-34	Blue	30	
	XA3-50	XA6-23	Blue	30	
	XA2-33	XA3-5	Blue	30	A5
	XA6-30	XA7-33	Blue	30	
	XA3-5	XA6-30	Blue	30	
	XA2-34	XA3-4	Blue	30	A6
	XA6-31	XA7-32	Blue	30	
	XA3-4	XA6-31	Blue	30	
	XA2-36	XA3-49	Blue	30	A7
	XA6-79	XA7-31	Blue	30	
	XA3-49	XA6-79	Blue	30	
	XA2-86	XA3-83	Blue	30	A8
	XA6-24	XA7-26	Blue	30	
	XA3-83	XA6-24	Blue	30	
	XA2-84	XA3-39	Blue	30	A9
	XA6-9	XA7-25	Blue	30	
	XA3-39	XA6-9	Blue	30	
	XA2-82	XA3-84	Blue	30	A10
	XA6-52	XA7-24	Blue	30	
	XA3-84	XA6-52	Blue	30	
	XA2-81	XA3-40	Blue	30	A11
	XA6-1 I	XA7-23	Blue	30	
	XA3-40	XA6- 11	Blue	30	
	XA2-83	XA3-85	Blue	30	A12
	XA6-78	XA7-22	Blue	30	
	XA3-85	XA6-78	Blue	30	
	XA2-85	XA3-41	Blue	30	A13
	XA3-41	XA7-21	Blue	30	
	XA2-80	XA3-86	Blue	30	A14
	XA6-77	XA7-20	Blue	30	
	X3-86	XA6-77	Blue	30	
	XA2-79	XA3-42	Blue	30	A15
	XA6-32	XA7-19	Blue	30	A5
	XA3-42	XA6-32	Blue	30	
	XAI-8	XA2-25	Blue	30	SYSRES
	XA2-28	XA6-8	Blue	30	IRQ
	XA2-49	XA6-59	Blue	30	A6 RESET
	XA2-18	XA3-12	Blue	30	61

Table 5-9. Connector Assembly 1A2A 13 Wire List-Continued

Wire No	From	To	Color	Size AWG	Remarks
	XA6-25	XA7-14	Blue	30	D0
	XA3-12	XA6-25	Blue	30	D0
	XA1-60	XA2-19	Blue	30	D1
	XA3-13	XA6-26	Blue	30	D1
	XA2-19	XA3-13	Blue	30	D1
	XA6-26	XA7-13	Blue	30	D1
	XA1-56	XA2-20	Blue	30	D2
	XA3-14	XA6-27	Blue	30	D2
	XA2-20	XA3-14	Blue	30	D2
	XA6-27	XA7-12	Blue	30	D2
	XA1-5	XA2-21	Blue	30	D3
	XA3-11	XA6-50	Blue	30	D3
	XA2-21	XA3-11	Blue	30	D3
	XA6-50	XA7-11	Blue	30	D3
	XA1-50	XA2-14	Blue	30	D4
	XA3-27	XA6-60	Blue	30	D4
	XA2-14	XA3-27	Blue	30	D4
	XA6-60	XA7-10	Blue	30	D4
	XA149	XA2-59	Blue	30	D5
	XA3-26	XA6-16	Blue	30	D5
	XA2-59	XA3-26	Blue	30	D5
	XA6-16	XA7-9	Blue	30	D5
	XA1-3	XA2-15	Blue	30	D6
	XA3-25	XA6-61	Blue	30	D6
	XA2-15	XA3-25	Blue	30	D6
	XA6-61	XA7-8	Blue	30	D6
	XA1-4	XA2-16	Blue	30	D7
	XA3-24	XA6-17	Blue	30	D7
	XA2-16	XA3-24	Blue	30	D7
	XA6-17	XA7-7	Blue	30	D7
	XA1-11	XA2-5	Blue	30	R/W
	XA3-53	XA7-85	Blue	30	R/W
	XA2-5	XA3-53	Blue	30	R/W
	XA6-14	XA7-84	Blue	30	R/W
	XA2-13	XA6-4	Blue	30	R/W
	XA1-7	XA2-17	Blue	30	Ø2
	XA3-8	XA6-3	Blue	30	Ø2
	XA2-17	XA3-8	Blue	30	Ø2
	XA6-3	XA7-83	Blue	30	Ø2
	XA2-10	XA3-9	Blue	30	VUA
	XA3-9	XA6-33	Blue	30	
	XA2-22	XA7-86	Blue	30	BA
	XA2-23	XA3-28	Blue	30	BA
	XA2-42	XA6-34	Blue	30	HCA0
	XA6-34	J10-N5	Blue	30	HCA0
	XA2-40	XA6-81	Blue	30	HCA1
	XA6-81	J10-N6	Blue	30	HCA1
	XA2-38	XA6-35	Blue	30	HCA2
	XA6-35	J11O-P	Blue	30	HCA2
	XA2-37	XA6-82	Blue	30	HCA3
	XA6-82	J1O-P2	Blue	30	HCA3
	XA2-41	XA6-28	Blue	30	HCA4
	XA6-28	J1O-P3	Blue	30	HCA4
	XA2-8	J1O-A2	Blue	30	HC STRT
	XA2-27	J1O-AL	Blue	30	HCLRNMI
	XA2-53	XA6-15	Blue	30	LTCH1
	XA1-9	XA2-58	Blue	30	LTCH2
	XA2-58	XA6-14	Blue	30	LTCH2
	XA2-12	XA6-13	Blue	30	LTCH3
	XA1-10	XA2-51	Blue	30	LTCH4
	XA2-51	XA6-76	Blue	30	LTCH4
	XA2-3	J2-21	Blue	30	UP1HLT
	J4-76	J6-76	Blue	30	UP1HLT
	J2-21	J4-76	Blue	30	UP1HLT

Table 5-9. Connector Assembly 1A2A13 Wire List-Continued

Wire No	From	To	Color	Size AWG	Remarks
	XA2-7	XA4-22	Blue	30	SYSCKEN
	XA2-6	J3-40	Blue	30	DATA
	XA2-24	XAS-4	Blue	30	STEUPCK
	XA3-37	XA6-62	Blue	30	3XXX
	XAI-51	XA6-51	Blue	30	DEC/ENC
	XAI-83	XA6-18	Blue	30	DSPOI
	XAI-40	XA6-19	Blue	30	DSP02
	XAI-41	XA6-20	Blue	30	DSP03
	XAI-42	XA6-21	Blue	30	DSP04
	XAI-37	XA6-39	Blue	30	DSP05
	XAI-80	XA6-40	Blue	30	DSP06
	XAI-81	XA641	Blue	30	DSP07
	XAI-36	XA642	Blue	30	DSP08
	XAI-29	XA6-84	Blue	30	DSP09
	XAI-70	XA6-83	Blue	30	DSP10
	XAI-71	XA6-86	Blue	30	DSP11
	XAI-72	XA6-38	Blue	30	DSP12
	XA6-85	XA7-79	Blue	30	SUTVUA
	XA5-35	XA7-41	Blue	30	UP1Ø2
	12-64	J4-57	Blue	30	UP1Ø2
	XA7-41	12-64	Blue	30	UP1Ø2
	J4-57	16-17	Blue	30	UP1Ø2
	XA4-3	XA4-35	Blue	30	PROCTSTCK
	XA5-38	J2-16	Blue	30	PROCTSTCK
	XA4-35	XA5-38	Blue	30	PROCTSTCK
	XA4-23	XA5-34	Blue	30	REF250KHZ
	XA5-34	j10-L4	Blue	30	REF250KHZ
	XA4-14	XA5-24	Blue	30	MUXDUPIQ2
	XA5-24	17-H7	Blue	30	MUXDUPIQ2
	XA5-21	12-58	Blue	30	SUTRESET
	J2-54	J2-57	Blue	30	SUTRESET
	J4-13	J6-25	Blue	30	SUTRESET
	XAI-75	XA5-21	Blue	30	SUTRESET
	12-58	12-54	Blue	30	SUTRESET
	12-57	14-13	Blue	30	SUTRESET
	XAI-75	J7-H8	Blue	30	SUTRSET
	XA4-38	XA5-20	Blue	30	AN/UIYM-7 RESET
	XA5-20	J10-L3	Blue	30	AN/UYM-7 RESET
	XA4-7	J2-35	Blue	30	SYS TST CK
	XA5-37	XA5-26	Blue	30	BITE UP2 ENABLE
	XAI-67	XA5-29	Blue	30	STETIM FAULT
	XAI-6	13-42	Blue	30	DATA CK SENSE
	XAI-14	110-Y3	Blue	30	2 WAY BUS
	XAI-23	J13-11	Blue	30	MODE ERROR
	XAI-20	113-5	Blue	30	UTON
	XAI-24	113-9	Blue	30	MT ON
	XAI-25	J13-7	Blue	30	SHORT
	XAI-17	XAI-18	Blue	30	OFF
	XAI-18	113-22	Blue	30	OFF
	XAI-22	J13-23	Blue	30	MT ENC
	XAI-16	113-21	Blue	30	UT ENC
	XAI-15	113-20	Blue	30	UT DEC
	XAI-38	J14-21	Blue	30	ao
	XAI-39	114-22	Blue	30	bo
	XAI-82	11423	Blue	30	co
	XAI-32	J14-24	Blue	30	do
	XAI-74	J14-25	Blue	30	eo
	XAI-33	J14-26	Blue	30	fo
	XAI-31	114-27	Blue	30	go
	XAI-19	J14-28	Blue	30	dpo
	XAI-34	114-11	Blue	30	a1
	XAI-79	114-12	Blue	30	b1
	XAI-77	J1413	Blue	30	c1
	XAI-76	J14-14	Blue	30	d1

Table 5-9. Connector Assembly 1A2A13 Wire List-Continued

Wire No	*From*	*To*	*Color*	*Size AWG*	*Remarks*
	XA1-30	J14-15	Blue	30	e1 -
	XA1-35	J14-16	Blue	30	f1
	XA1-78	J14-17	Blue	30	g1
	XA6-61	J14-1	Blue	30	a2
	XA1-62	J14-2	Blue	30	b2
	XA1-63	J14-3	Blue	30	c2
	XA1-64	J14-4	Blue	30	d2
	XA1-65	J14-5	Blue	30	e2
	XA1-21	J14-6	Blue	30	f2
	XA1-66	J14-7	Blue	30	g2
	J10-Z3	J10-U4	Blue	30	+SUPPLY PROG
	J1O-U4	J13-25	Blue	30	+SUPPLY PROG
	J1O-a1	J10-a2	Blue	30	-SUPPLY PROG
	J10-a2	J13-26	Blue	30	-SUPPLY PROG
	J1-3	J3-3	Blue	30	UYM MOD 1
	J5-3	J10-A3	Blue	30	UYM MOD 1
	J3-3	J5-3	Blue	30	UYM MOD 1
	J1-4	J3-4	Blue	30	UYM MOD 2
	J5-4	J10-A4	Blue	30	UYM MOD 2
	J3-4	J5-4	Blue	30	UYM MOD 2
	J1-5	J3-5	Blue	30	UYM MOD 3
	J5-5	J10-A5	Blue	30	UYM MOD 3
	J3-5	J5-5	Blue	30	UYM MOD 3
	J1-6	J3-6	Blue	30	UYM MOD 4
	J5-6	J10-A6	Blue	30	UYM MOD 4
	J3-6	J5-6	Blue	30	UYM MOD 4
	J1-7	J3-7	Blue	30	UYM MOD 5
	J5-7	J10-Bl	Blue	30	UYM MOD 5
	J3-7	J5-7	Blue	30	UYM MOD 5
	J1-8	J3-8	Blue	30	UYM MOD 6
	J5-8	J10-B2	Blue	30	UYM MOD 6
	J3-8	J5-8	Blue	30	UYM MOD 6
	J1-9	J2-20	Blue	30	UYM MOD 7
	J3-9	J4-11	Blue	30	UYM MOD 7
	J5-9	J6-29	Blue	30	UYM MOD 7
	J2-20	J3-9	Blue	30	UYM MOD 7
	34-11	J5-9	Blue	30	UYM MOD 7
	J6-29	110-B3	Blue	30	UYM MOD 7
	J1-10	J2-83	Blue	30	UJYM MOD 8
	J3-10	J4-10	Blue	30	UYM MOD 8
	J5-10	J6-30	Blue	30	UYM MOD 8
	J2-83	J3-10	Blue	30	UYM MOD 8
	J4-10	J5-10	Blue	30	UYM MOD 8
	J6-30	J10-B4	Blue	30	UYM MOD 8
	J1-11	J2-60	Blue	30	UYM MOD 9
	J3-11	J4-14	Blue	30	UYM MOD 9
	J5-11	J6-35	Blue	30	UYM MOD 9
	J2-60	J3-11	Blue	30	UYM MOD 9
	J4-14	J5-11	Blue	30	UYM MOD 9
	J6-35	J1O-B5	Blue	30	UYM MOD 9
	J1-12	J2-61	Blue	30	UYM MOD 10
	J3-12	J4-54	Blue	30	UYM MOD 10
	J5-12	J6-32	Blue	30	UYM MOD 10
	J2-61	J3-12	Blue	30	UYM MOD 10
	J4-54	J5-12	Blue	30	UJYM MOD 10
	J6-32	J10-B6	Blue	30	U-YM MOD 10
	J1-13	12-S6	Blue	30	UYM MOD 11
	J3-13	J4-42	Blue	30	UYM MOD 11
	JS-13	J6-31	Blue	30	UYM MOD 11
	J2-86	J3-13	Blue	30	UYM MOD 11
	J442	J5-13	Blue	30	UYM MOD 11
	J6-31	J10-C1	Blue	30	UYM MOD 11
	J1-14	J2-23	Blue	30	UYM MOD 12
	J3-14	J4-85	Blue	30	UYMMOD 12

Table 5-9. Connector Assembly 1A2A13 Wire List-Continued

Wire No	From	To	Color	Size AWG	Remarks
	J5-14	J6-33	Blue	30	UYM MOD 12
	J2-23	J3-14	Blue	30	UYM MOD 12
	J4-85	JS-14	Blue	30	UYM MOD 12
	J6-35	J10-C2	Blue	30	UYM MOD 12
	Jl-15	J2-40	Blue	30	UYM MOD 13
	J3-15	J4-78	Blue	30	UYM MOD 13
	-5-15	J6-34	Blue	30	UYM MOD 13
	J2-40	J3-15	Blue	30	UYM MOD 13
	J4-78	J5-15	Blue	30	UYM MOD 13
	J6-34	J10c3	Blue	30	UYM MOD 13
	J1-16	J2-24	Blue	30	UYM MOD 14
	J3-16	J4-77	Blue	30	UYM MOD 14
	J5-16	J6-36	Blue	30	UYM MOD 14
	12-24	J3-16	Blue	30	UYM MOD 14
	J4-77	J5-16	Blue	30	UYM MOD 14
	J6-36	J10C4	Blue	30	UYM MOD 14
	J1-17	J2-78	Blue	30	UYM MOD 15
	J3-17	14-83	Blue	30	UYM MOD 15
	J5-17	16-86	Blue	30	UYM MOD 15
	J2-78	J3-17	Blue	30	UYM MOD 15
	J4-83	J5-17	Blue	30	UYM MOD 15
	J6-86	J10-C5	Blue	30	UYM MOD 15
	J1-18	J2-33	Blue	30	UYM MOD 16
	J3-18	J4-86	Blue	30	UYM MOD 16
	J5-18	J6-84	Blue	30	UYM MOD 16
	J2-33	J3-18	Blue	30	UYM MOD 16
	J4-86	J5-18	Blue	30	UYM MOD 16
	J6-84	J10-C6	Blue	30	UYM MOD 16
	J1-19	J2-25	Blue	30	UYM MOD 17
	J3-19	J4-80	Blue	30	UYM MOD 17
	J5-19	J6-82	Blue	30	UYM MOD 17
	J2-25	J3-19	Blue	30	UYM MOD 17
	J4-80	J5-19	Blue	30	UYM MOD 17
	J6-82	JIO-DI	Blue	30	UYM MOD 17
	J1-20	J2-31	Blue	30	UYM MOD 18
	J3-20	J4-37	Blue	30	UYM MOD 18
	15-20	J6-81	Blue	30	UYM MOD 18
	J2-31	J3-20	Blue	30	UYM MOD 18
	J4-37	J5-20	Blue	30	UYM MOD 18
	J6-81	J10-D2	Blue	30	UYM MOD 18
	J1-21	J2-32	Blue	30	UYM MOD 19
	J3-21	J4-79	Blue	30	UYM MOD 19
	J5-21	J6-83	Blue	30	UYM MOD 19
	J2-32	J3-21	Blue	30	UYM MOD 19
	J4-79	J5-21	Blue	30	UYM MOD 19
	J6-83	J10-D3	Blue	30	UYM MOD 19
	J1-22	J2-85	Blue	30	UYM MOD 20
	J3-22	J4-73	Blue	30	UYM MOD 20
	J5-22	J6-85	Blue	30	UYM MOD 20
	J2-85	J3-22	Blue	30	UYM MOD 20
	J4-73	J5-22	Blue	30	UYM MOD 20
	J6-85	J10-D4	Blue	30	IYYM MOD 20
	J1-23	J2-84	Blue	30	UYM MOD 21
	J3-23	J4-41	Blue	30	UYM MOD 21
	J5-23	J6-80	Blue	30	UYM MOD 21
	J2-84	J3-23	Blue	30	UYM MOD 21
	J4-41	J5-23	Blue	30	UYM MOD 21
	J6-80	J10-D5	Blue	30	UYM MOD 21
	J1-24	J2-76	Blue	30	UYM MOD 22
	J3-24	J4-40	Rue	30	UYM MOD 22
	J5-24	J6-79	Blue	30	UYM MOD 22
	J2-76	J3-24	Blue	30	UYM MOD 22
	J4-40	J5-24	Blue	30	UYMMOD 22
	J6-79	J10-D6	Blue	30	UYM MOD 22

Table 5-9. Connector Assembly 1A2A13 Wire List-Continued

Wire No	From	To	Color	Size AWG	Remarks
	J1-25	J2-79	Blue	30	UYM MOD 23
	J3-25	J4-72	Blue	30	UYM MOD 23
	J5-25	J6-75	Blue	30	UYM MOD 23
	J2-79	J3-25	Blue	30	UYM MOD 23
	J4-72	J5-25	Blue	30	UYM MOD 23
	16-75	J10-E1	Blue	30	UYM MOD 23
	Jl-26	J2-34	Blue	30	UYM MOD 24
	J3-26	J4-71	Blue	30	UYM MOD 24
	J5-26	J6-3	Blue	30	UYM MOD 24
	J2-34	J3-26	Blue	30	UYM MOD 24
	J4-71	J5-26	Blue	30	UYM MOD 24
	J6-3	J10-E2	Blue	30	UYM MOD 24
	Jl-27	J2-E2	Blue	30	UYM MOD 25
	J3-27	J4-56	Blue	30	UYM MOD 25
	J5-27	J6-50	Blue	30	UYM MOD 25
	J2-73	J3-27	Blue	30	UYM MOD 25
	J4-56	J5-27	Blue	30	UYM MOD 25
	J6-50	J10-E3	Blue	30	UYM MOD 25
	Jl-28	J2-17	Blue	30	UYM MOD 26
	J3-28	J4-55	Blue	30	UYM MOD 26
	J5-28	K6-54	Blue	30	UYM MOD 26
	J2-17	J3-28	Blue	30	UYM MOD 26
	J4-55	J5-28	Blue	30	UYM MOD 26
	J6-54	J10-E4	Blue	30	UYM MOD 26
	Jl-29	J2-62	Blue	30	UYM MOD 27
	J3-29	J4-6	Blue	30	UYM MOD 27
	J5-29	J6-49	Blue	30	UYM MOD 27
	J2-62	J3-29	Blue	30	UYM MOD 27
	J4-6	J5-29	Blue	30	UYM MOD 27
	J6-49	J10-E5	Blue	30	UYM MOD 27
	Jl-30	J2-75	Blue	30	UYM MOD 28
	J3-30	J4-7	Blue	30	UYM MOD 28
	J5-30	J6-53	Blue	30	UYM MOD 28
	J2-75	J3-30	Blue	30	UYM MOD 28
	J4-7	J5-30	Blue	30	UYM MOD 28
	J6-53	J10-E6	Blue	30	UYM MOD 28
	Jl-31	J2-36	Blue	30	UYM MOD 29
	J3-31	J4-8	Blue	30	UYM MOD 29
	J5-31	J6-4	Blue	30	UYM MOD 29
	J2-36	J3-31	Blue	30	UYM MOD 29
	J4-8	J5-31	Blue	30	UYM MOD 29
	J6-4	JIO-FI	Blue	30	UYM MOD 29
	Jl-33	J2-38	Blue	30	UYM MOD 30
	J3-33	J4-9	Blue	30	UYM MOD 30
	J5-33	J6-7	Blue	30	UYM MOD 30
	J2-38	J3-33	Blue	30	UYM MOD 30
	J4-9	J5-33	Blue	30	UYM MOD 30
	K6-7	J10-F2	Blue	30	UYM MOD 30
	Jl-34	J2-39	Blue	30	UYM MOD 31
	J3-34	J448	Blue	30	UYM MOD 31
	15-34	J6-61	Blue	30	UYM MOD 31
	J2-39	J3-34	Blue	30	UYM MOD 31
	J448	J5-34	Blue	30	UYM MOD 31
	J6-61	J10-F3	Blue	30	UYM MOD 31
	Jl-35	J2-41	Blue	30	UYM MOD 32
	J3-35	J449	Blue	30	UYM MOD 32
	J5-35	J6-56	Blue	30	UYM MOD 32
	J241	J3-35	Blue	30	UYM MOD 32
	J449	J5-35	Blue	30	UYM MOD 32
	J6-56	J1O-F4	Blue	30	UYM MOD 32
	JI-36	J2-82	Blue	30	UYM MOD 33
	J3-36	J4-3	Blue	30	UYM MOD 33
	J5-36	J6-57	Blue	30	UYM MOD 33
	J2-82	J3-36	Blue	30	UYM MOD 33

Table 5-9. Connector Assembly 1A2A13 Wire List-Continued

Wire No	*From*	*To*	*Color*	*Size AWG*	*Remarks*
	J4-3	J5-36	Blue	30	UYM MOD 33
	K6-57	J10-F5	Blue	30	UYM MOD 33
	J1-37	J2-22	Blue	30	UYM MOD 34
	J3-37	J4-50	Blue	30	UYM MOD 34
	J5-37	K6-58	Blue	30	UYM MOD 34
	J2-22	J3-37	Blue	30	UYM MOD 34
	J4-50	J5-37	Blue	30	UYM MOD 34
	J6-58	J10-F6	Blue	30	UYM MOD 34
	J1-38	J2-29	Blue	30	UYM MOD 35
	J3-38	J4-5	Blue	30	UYM MOD 35
	J5-38	J6-52	Blue	30	UYM MOD 35
	J2-29	J3-38	Blue	30	UYM MOD 35
	J4-5	J5-38	Blue	30	UYM MOD 35
	J6-52	J10-G1	Blue	30	UYM MOD 35
	J1-39	J2-30	Blue	30	UYM MOD 36
	J3-39	J4-51	Blue	30	UYM MOD 36
	J5-39	K6-51	Blue	30	UYM MOD 36
	J2-30	J3-39	Blue	30	UYM MOD 36
	J4-51	J5-39	Blue	30	UYM MOD 36
	J6-51	J10-G2	Blue	30	UYM MOD 36
	A2-6	J1-40	Blue	30	UYM MOD 37
	J2-28	J3-40	Blue	30	UYM MOD 37
	J4-4	J5-40	Blue	30	UYM MOD 37
	J1-40	J2-28	Blue	30	UYM MOD 37
	J3-40	J4-4	Blue	30	UYM MOD 37
	J5-40	J10-G3	Blue	30	UYM MOD 37
	J1-41	J2-63	Blue	30	UYM MOD 38
	J5-41	J4-53	Blue	30	UYM MOD 38
	15-41	J10-G4	Blue	30	UYM MOD 38
	J2-63	J3-41	Blue	30	UYM MOD 38
	J4-53	J5-41	Blue	30	UYM MOD 38
	J4-74	J5-42	Blue	30	UYM MOD 39
	J3-42	J2-9	Blue	30	UYM MOD 39
	J2-9	J24	Blue	30	UYM MOD 39
	J3-42	J474	Blue	30	UYM MOD 39
	J5-42	J10-G5	Blue	30	UYM MOD 39
	J1-48	12-53	Blue	30	UYM MOD 40
	J3-48	J4-15	Blue	30	UYM MOD 40
	J5-48	J10-06	Blue	30	UYM MOD 40
	J2-53	13-48	Blue	30	UYM MOD 40
	J4-15	J548	Blue	30	UYM MOD 40
	J1-49	J2-10	Blue	30	UYM MOD 41
	J3-49	J4-60	Blue	30	UYM MOD 41
	J5-49	JIG-HI	Blue	30	UYM MOD 41
	J2-10	J3-49	Blue	30	UYM MOD 41
	J4-60	J549	Blue	30	UYM MOD 41
	J1-50	J249	Blue	30	UYM MOD 42
	J3-50	J4-16	Blue	30	UYM MOD 42
	J5-50	J10-H2	Blue	30	UYM MOD 42
	J2-49	J3-50	Blue	30	UYM MOD 42
	J4-16	J5-50	Blue	30	UYM MOD 42
	J1-51	J2-19	Blue	30	UYM MOD 43
	J3-51	J4-61	Blue	30	UYM MOD 43
	J5-51	J10-H3	Blue	30	UYM MOD 43
	J2-19	J3-51	Blue	30	UYM MOD 43
	J4-61	J5-51	Blue	30	UYM MOD 43
	J1-52	J3-52	Blue	30	UYM MOD 44
	J3-52	J4-17	Blue	30	UYM MOD 44
	J5-52	J10-H4	Blue	30	UYM MOD 44
	J2-26	J3-52	Blue	30	UYM MOD 44
	J4-17	J5-52	Blue	30	UYM MOD 44
	J1-53	J2-51	Blue	30	UYM MOD 45
	J3-53	J4-62	Blue	30	UYM MOD 45
	J5-53	J6-8	Blue	30	UYM MOD 45

Table 5-9. Connector Assembly 1A2A13 Wire List-Continued

Wire No	*From*	*To*	*Color*	*Size AWG*	*Remarks*
	J2-51	J3-53	Blue	30	UYM MOD 45
	J4-62	J5-53	Blue	30	UYM MOD 45
	J6,-8	J10-H5	Blue	30	UYM MOD 45
	J1-54	J2-52	Blue	30	UYM MOD 46
	J3-54	J4-18	Blue	30	UYM MOD 46
	J5-54	J10-H6	Blue	30	UYM MOD 46
	J2-52	J3-54	Blue	30	UYM MOD 46
	J4-18	J5-54	Blue	30	UYM MOD 46
	Jl-55	J2-50	Blue	30	UYM MOD 47
	J3-55	J4-19	Blue	30	UYM MOD 47
	J5-55	J10-1I	Blue	30	UYM MOD 47
	12-50	J3-55	Blue	30	UYM MOD 47
	J4-19	J5-55	Blue	30	UYM MOD 47
	Jl-56	J2-11	Blue	30	UYM MOD 48
	J3-56	J4-59	Blue	30	UYM MOD 48
	J5-56	J6-13	Blue	30	UYM MOD 48
	J2-11	J3-56	Blue	30	UYM MOD 48
	J4-59	J5-56	Blue	30	UYM MOD 48
	J6-13	J10-J2	Blue	30	UYM MOD 48
	Jl-57	J2-3	Blue	30	UYM MOD 49
	J3-57	J4-38	Blue	30	UYM MOD 49
	J2-3	J3-57	Blue	30	UYM MOD 49
	J4-38	J6-9	Blue	30	UYM MOD 49
	J6-9	J10-J3	Blue	30	UYM MOD 49
	J2-3	J2-56	Blue	30	UYM MOD 49
	Jl-58	J3-58	Blue	30	UYM MOD 50
	J4-67	J5-58	Blue	30	UYM MOD 50
	Jl-58	J2-37	Blue	30	UYM MOD 50
	J3-58	J4-67	Blue	30	UYM MOD 50
	J5-58	J10-J4	Blue	30	UYM MOD 50
	Jl-59	J3-59	Blue	30	UYM MOD 51
	J4-23	J5-59	Blue	30	UYM MOD 51
	J3-59	J4-23	Blue	30	UYM MOD 51
	J5-59	J10-J5	Blue	30	UYM MOD 51
	Jl-59	J2-72	Blue	30	UYM MOD 51
	J1-60	J3-60	Blue	30	UYM MOD 52
	J4-22	J5-60	Blue	30	UYM MOD 52
	13-60	34-22	Blue	30	UYM MOD 52
	J5-60	J10-J6	Blue	30	UYM MOD 52
	Jl-61	J3-61	Blue	30	UYM MOD 53
	J4-21	J5-61	Blue	30	UYM MOD 53
	J3-61	J4-21	Blue	30	UYM MOD 53
	J5-61	J10-KI	Blue	30	UYM MOD 53
	J1-62	J3-62	Blue	30	UYM MOD 54
	J5-62	J10-K2	Blue	30	UYM MOD 54
	J3-62	J5-62	Blue	30	UYM MOD 54
	J3-62	J4-20	Blue	30	UYM MOD 54
	J1-63	J2-13	Blue	30	UYM MOD 55
	J3-63	J5-63	Blue	30	UYM MOD 55
	J2-13	J3-63	Blue	30	UYM MOD 55
	J5-63	310-K3	Blue	30	UYM MOD 55
	J1 64	J2-15	Blue	30	UYM MOD 56
	J3-64	J5-64	Blue	30	UYM MOD 56
	J2-15	J3-64	Blue	30	UYM MOD 56
	J5-64	J10-K4	Blue	30	UYM MOD 56
	J1-65	J2-14	Blue	30	UYM MOD 57
	J3-65	J5-65	Blue	30	UYM MOD 57
	J2-14	J3-65	Blue	30	UYM MOD 57
	J5-65	110-K5	Blue	30	UYM MOD 57
	J1-66	J2-12	Blue	30	UYM MOD 58
	J3-66	J5-66	Blue	30	UYM MOD 58
	J2-12	J3-66	Blue	30	UYM MOD 58
	J5-66	JIO-K6	Blue	30	UYM MOD 58
	J1-67	J2-8	Blue	30	UYM MOD 59

Table 5-9. Connector Assembly, 1A2A13 Wire List-Continued

Wire No	From	To	Color	Size AWG	Remarks
	J3-67	J5-67	Blue	30	UYM MOD 59
	J2-8	J3-67	Blue	30	UYM MOD 59
	J5-67	J10-L1	Blue	30	UYM MOD 59
	J1-69	J2-7	Blue	30	UYM MOD 60
	J3-69	J5-69	Blue	30	UYM MOD 60
	J2-7	J3-69	Blue	30	UYM MOD 60
	J5-69	J10-L2	Blue	30	UYM MOD 60
	J1-70	J2-6	Blue	30	UYM MOD 61
	J3-70	J5-70	Blue	30	UYM MOD 61
	J2-6	J3-70	Blue	30	UYM MOD 61
	J5-70	J10-L5	Blue	30	UYM MOD 61
	J1-71	J2-5	Blue	30	UYM MOD 62
	J3-71	J5-71	Blue	30	UYM MOD 62
	J2-5	J3-71	Blue	30	UYM MOD 62
	J5-71	J10-L6	Blue	30	UYM MOD 62
	J1-72	J3-72	Blue	30	UYM MOD 63
	J4-66	J6-42	Blue	30	UYM MOD 63
	15-72	J10-MI	Blue	30	UYM MOD 63
	J3-72	J4-66	Blue	30	UYM MOD 63
	J3-72	J5-72	Blue	30	UYM MOD 63
	J1-73	J3-73	Blue	30	UYM MOD 64
	J4-65	J6-40	Blue	30	UYM MOD 64
	J3-73	J10-M2	Blue	30	UYM MOD 64
	J3-73	J4-65	Blue	30	UYM MOD 64
	J1-74	J3-74	Blue	30	UYM MOD 65
	J4-64	J6-33	Blue	30	UYM MOD 65
	J5-74	J10-M3	Blue	30	UYM MOD 65
	13-74	J4-64	Blue	30	UYM MOD 65
	J3-74	15-74	Blue	30	UYM MOD 65
	J1-75	J3-75	Blue	30	UYM MOD 66
	J4-25	J6-37	Blue	30	UYM MOD 66
	J5-75	J10-M4	Blue	30	UYM MOD 66
	J3-75	J4-25	Blue	30	UYM MOD 66
	J3-75	J5-75	Blue	30	UYM MOD 66
	Jl-76	J3-76	Blue	30	UYM MOD 67
	J4-63	J6-41	Blue	30	UYM MOD 67
	J5-76	J10-M5	Blue	30	UYM MOD 67
	J3-76	J4-63	Blue	30	UYM MOD 67
	J3-76	J5-76	Blue	30	UYM MOD 67
	J1-77	J3-77	Blue	30	UYM MOD 68
	J4-58	J6-39	Blue	30	UYM MOD 68
	J5-77	310-M6	Blue	30	UYM MOD 68
	J3-77	J4-58	Blue	30	UYM MOD 68
	J3-77	J5-77	Blue	30	UYM MOD 68
	J1-78	J3-78	Blue	30	UYM MOD 69
	J5-78	J10-N1	Blue	30	UYM MOD 69
	J3-78	J4-27	Blue	30	UYM MOD 69
	J3-78	J5-78	Blue	30	UYM MOD 69
	J1-79	J3-79	Blue	30	UYM MOD 70
	J5-79	J10-N2	Blue	30	UYM MOD 70
	J3-79	J4-28	Blue	30	UYM MOD 70
	J3-79	J5-79	Blue	30	UYM MOD 70
	J1-80	J3-80	Blue	30	UYM MOD 71
	J5-80	JI0-N3	Blue	30	UYM MOD 71
	J3-80	J4-29	Blue	30	UYM MOD 71
	J3-80	J5-80	Blue	30	UYM MOD 71
	J1-81	J3-81	Blue	30	UYM MOD 72
	J5-81	J10-N4	Blue	30	LTYM MOD 72
	J3-81	J4-30	Blue	30	UYM MOD 72
	J3-81	J5-81	Blue	30	UYM MOD 72
	J1-82	J3-82	Blue	30	UYM MOD 73
	J5-82	J10-P4	Blue	30	UYM MOD 73
	J3-82	J4-34	Blue	30	UYM MOD 73
	J3-82	J5-82	Blue	30	UYM MOD 73

Table 5-9. Connector Assembly IA2A13 Wire List-Continued

Wire No	From	To	Color	Size AWG	Remarks
	J1-83	J3-83	Blue	30	UYM MOD 74
	J5-83	J1O-P5	Blue	30	UYM MOD 74
	J3-83	J4-33	Blue	30	UYM MOD 74
	J3-83	J5-83	Blue	30	UYM MOD 74
	J1-84	J3-84	Blue	30	UYM MOD 75
	J5-84	J10-P6	Blue	30	UYM MOD 75
	J3-84	J4-31	Blue	30	UYM MOD 75
	J3-84	J5-84	Blue	30	UYM MOD 75
	J1-85	J3-85	Blue	30	UYM MOD 76
	J5-85	JIO-RI	Blue	30	UYM MOD 76
	J3-85	J4-35	Blue	30	UYM MOD 76
	J3-85	J5-85	Blue	30	UYM MOD 76
	J1-86	J3-86	Blue	30	UYM MOD 77
	J5-86	J10-R2	Blue	30	UYM MOD 77
	J3-86	J5-86	Blue	30	UYM MOD 77
	J1-32	J3-32	Blue	30	UYM MOD 79
	J5-32	J10-R4	Blue	30	UYM MOD 79
	J3-32	J5-32	Blue	30	UYM MOD 79
	XA3-54	XA5-9	Blue	30	20 MHZ
	XA5-30	XA5-31	Blue	30	AS TST I
	XA5-11	XA5-12	Blue	30	AS TST 2
	XA5-49	XA5-50	Blue	30	AS RESET
	XA5-50	XA5-51	Blue	30	AS RESET
	XA1-69	XA2-4	Blue	30	TST DEC
	XA2-39	XA6-29	Blue	30	HCA5
	XA6-29	J10-RS	Blue	30	HCA5
	XA1-58	XA4-4	Blue	30	LMP TST
	XA7-80	J2-59	Blue	30	MBA
	J2-67	J4-52	Blue	30	MBA
	J2-59	J2-67	Blue	30	MBA
	J4-52	16-23	Blue	30	MBA
	XA6-75	XA7-78	Blue	30	BA MUPEN
	XA7-40	J2-11	Blue	30	MR/W
	XA7-39	J2-3	Blue	30	MVMA
	XA7-81	J4-82	Blue	30	MVUA
	XA7-59	J2-20	Blue	30	MAO
	XA7-60	J2-83	Blue	30	MAI
	XA7-61	J2-60	Blue	30	MA2
	XA7-62	J2-61	Blue	30	MA3
	XA7-30	J2-86	Blue	30	MA4
	XA7-29	J2-23	Blue	30	MA5
	XA7-28	J2-40	Blue	30	MA6
	XA7-27	J2-24	Blue	30	MA7
	XA7-53	J2-78	Blue	30	MA8
	XA7-54	J2-33	Blue	30	MA9
	XA7-55	J2-25	Blue	30	MAIO
	XA7-56	J2-31	Blue	30	MAII
	XA7-18	J2-32	Blue	30	MA12
	XA7-17	J2-85	Blue	30	MA13
	XA7-16	J2-84	Blue	30	MA14
	XA7-15	J2-76	Blue	30	MA15
	XA7-49	J2-5	Blue	30	MDO
	J4-75	J6-18	Blue	30	MDO
	J2-5	J4-75	Blue	30	MDO
	XA7-50	J2-6	Blue	30	MDI
	J4-84	J6-19	Blue	30	MDI
	J2-6	J4-84	Blue	30	MDI
	XA7-51	J2-7	Blue	30	MD2
	J4-87	J6-20	Blue	30	MD2
	J2-7	J4-87	Blue	30	MD2
	XA7-52	J2-8	Blue	30	MD3
	J4-39	J6-21	Blue	30	MD3
	J2-8	J4-39	Blue	30	MD3
	XA7-6	J2-12	Blue	30	MD4

Table 5-9. Connector Assembly 1A2A13 Wire List-Continued

Wire No	From	To	Color	Size AWG	Remarks
	J4-36	J6-14	Blue	30	MD4
	J2-12	J4-36	Blue	30	MD4
	XA7-5	J2-14	Blue	30	MD5
	J4-26	J6-59	Blue	30	MD5
	J2-14	J426	Blue	30	MD5
	XA7-4	J2-15	Blue	30	MD6
	14-69	J6-15	Blue	30	MD6
	J2-15	J4-69	Blue	30	MD6
	XA7-3	J2-13	Blue	30	MD7
	J4-70	J6-16	Blue	30	MD7
	J2-13	J470	Blue	30	MD7
	XA2-52	XA7-77	Blue	30	MUPEN
	XA1-59	XA5-33	Blue	30	STE BITE
	XA6-58	XA7-82	Blue	30	VUA VMA
	XA2-57	XA6-80	Blue	30	TSTROMEN
	XA2-75	XA6-54	Blue	30	P1T02
	XA4-49	J13-12	Blue	30	TSTON
	XA5-80	J4-81	Blue	30	DEC MOD UP CK
	J4-81	J6-24	Blue	30	DEC MOD UP CK
	J7.A1	J11-R6	Blue	30	MOD TST 1
	J17-A2	J1o-s1	Blue	30	MOD TST 2
	17-A3	J1O-S2	Blue	30	MOD TST 3
	J7-A4	J10-S3	Blue	30	MOD TST 4
	J7-A7	J1O-S4	Blue	30	MOD TST 5
	J7-A6	J10-S5	Blue	30	MOD TST 6
	J7-Bl	J10-S6	Blue	30	MOD TST 7
	17-A8	J1O-T1	Blue	30	MOD TST 8
	7-B3	J10-T2	Blue	30	MOD TST 9
	J7-B2	J10-T3	Blue	30	MOD TST 10
	7C1	J10-T4	Blue	30	MOD TST 11
	J7-B4	J10-T5	Blue	30	MOD TST 12
	J- - C3	J10-T6	Blue	30	MOD TST 13
	17-86	J1O-U1	Blue	30	MOD TST 14
	J7C5	J1-U2	Blue	30	MOD TST 15
	17-B	JO-U3	Blue	30	MOD TST 16
	J7-C7	J10-U4	Blue	30	MOD TST 17
	J7C2	J10-U5	Blue	30	MOD TST 18
	J7-D1	J10-U6	Blue	30	MOD TST 19
	-C4	J1O-V1	Blue	30	MOD TST 20
	J7-D3	J10-V2	Blue	30	MOD TST 21
	J7-C6	J10-V3	Blue	30	MOD TST 22
	17-DS	J10-V4	Blue	30	MOD TST 23
	7-s	11iVS	Blue	30	MOD TST 24
	17-D7	J10V6	Blue	30	MOD TST 25
	J7-D2	J10-W1	Blue	30	MOD TST 26
	17-E11	J10-W2	Blue	30	MOD TST 27
	J7-D4	J10-W3	Blue	30	MOD TST 28
	17-E3	J10-W4	Blue	30	MOD TST 29
	7-D6	J10-W5	Blue	30	MOD TST 30
	37-ES	J10-W6	Blue	30	MOD TST 31
	17-D1	J10-X1	Blue	30	MOD TST 32
	n-E7	J10-X2	Blue	30	MOD TST 33
	17-E2	J10-X3	Blue	30	MOD TST 34
	17-F1	J10X4	Blue	30	MOD TST 35
	7-E4	J10-X5	Blue	30	MOD TST 36
	17-E6	J10-X6	Blue	30	MOD TST 37
	17-F1	J10-C6	Blue	30	MOD TST 38
	XA3-57	W-5	Yellow	24	GROUND
	XA3-73	W-3	Yellow	24	+5V DC
	W-4	W-6	Black	16	GROUND
	W-5	W-7	Black	16	GROUND
	W-7	J5-57	Yellow	24	GROUND
	XA1-14	J10-c1	Yellow	24	UYM-7, +SVDC
	J10-c1	J10-c2	Yellow	24	UYM-7, +SVDC

Table 5-9. Connector Assembly 1A2A13 Wire List-Continued

Wire No	*From*	*To*	*Color*	*Size AWG*	*Remarks*
	J10-c2	J13-1	Yellow	24	UYM-7, +5 VDC
	XA1-43	J13-6	Yellow	24	+5 VDC
	XA1-43	J14-9	Yellow	24	+5 VDC
	XA1-43	J14-19	Yellow	24	+5 VDC
	XA1-43	J14-20	Yellow	24	+5 VDC
	J13-13	J1-43	Yellow	24	ENC MOD, +5 VDC
	J1-43	J1-88	Yellow	24	ENC MOD, +5 VDC
	J1-88	J2-43	Yellow	24	ENC MOD, +5 VDC
	J2-43	J2-88	Yellow	24	ENC MOD, +5 VDC
	J13-17	J343	Yellow	24	DEC MOD, +5 VDC
	J343	J3-88	Yellow	24	DEC MOD, +5 VDC
	J3-88	J4-43	Yellow	24	DEC MOD, +5 VDC
	J443	J4-88	Yellow	24	DEC MOD, +5 VDC
	J4-88	J5-43	Yellow	24	DEC MOD, +5 VDC
	J5-43	J5-88	Yellow	24	DEC MOD, +5 VDC
	J5-88	J643	Yellow	24	DEC MOD, +5 VDC
	J643	J6-88	Yellow	24	DEC MOD, +5 VDC
	J6-88	J5-73	Yellow	24	DEC MOD, +5 VDC
	J10-b4	J13-2	Yellow	24	UYM-7, +12/+15 VDC
	XA1-85	J13-14	Yellow	24	ENC MOD, +12VDC
	XA1-85	J1-2	Yellow	24	ENC MOD, +12VDC
	J1-2	J1-47	Yellow	24	ENC MOD, +12VDC
	J1-47	J2-2	Yellow	24	ENC MOD, +12VDC
	J2-2	J2-47	Yellow	24	ENC MOD, +12VDC
	XA1-86	J13-18	Yellow	24	DEC MOD, +15VDC
	XA1-86	J3-2	Yellow	24	DEC MOD, +15VDC
	J3-2	J347	Yellow	24	DEC MOD, +15VDC
	J347	J4-2	Yellow	24	DEC MOD, +15VDC
	J4-2	J4-47	Yellow	24	DEC MOD, +15VDC
	J447	J5-2	Yellow	24	DEC MOD, +15VDC
	J5-2	J5-47	Yellow	24	DEC MOD, +15VDC
	J5-47	J6-2	Yellow	24	DEC MOD, +15VDC
	J6-2	J6-47	Yellow	24	DEC MOD, +15VDC
	J10-b5	J13-3	Yellow	24	UYM-7, -12/-15 VDC
	J13-3	XA1-52	Yellow	24	UYM-7, - 12/-15 VDC
	XA1-52	XA1-53	Yellow	24	UYM-7, - 12/-15 VDC
	J13-15	J1-37	Yellow	24	ENC MOD, - 12 VDC
	J1-87	J2-42	Yellow	24	ENC MOD, - 12 VDC
	J242	J2-87	Yellow	24	ENC MOD, - 12 VDC
	J2-87	XA1-28	Yellow	24	ENC MOD, - 12 VDC
	XA1-26	J3-1	Yellow	24	DEC MOD, -15 VDC
	J3-1	J3-46	Yellow	24	DEC MOD, -15 VDC
	J3346	J4-1	Yellow	24	DEC MOD, - 15 VDC
	J4-1	J4-46	Yellow	24	DEC MOD, - 15 VDC
	J4-46	J5-1	Yellow	24	DEC MOD, -15 VDC
	J5-1	J546	Yellow	24	DEC MOD, -1 5 VDC
	J5-46	J6-1	Yellow	24	DEC MOD, -15 VDC
	J6-1	J6-46	Yellow	24	DEC MOD, - 15 VDC

Table 5-9. Connector Assembly, 1A2A13 Wire List-Continued

Wire No	*From*	*To*	*Color*	*Size AWG*	*Remarks*
	J6-46	J13-19	Yellow	24	DEC MOD, -15 VDC VDC
	XA1-54	XAI-55	Yellow	24	-5 VDC
	XA1-55	J13-4	Yellow	24	-5 VDC
	XAI-27	J1-11	Yellow	24	ENC MOD, -5 VDC
	J1-1	J146	Yellow	24	ENC MOD, -5 VDC
	Jl-46	J2-1	Yellow	24	ENC MOD, -5 VDC
	12-1	J246	Yellow	24	ENC MOD, -5 VDC
	J2-46	J13-16	Yellow	24	ENC MOD, -5 VDC
	W5	J10-c3	Yellow	24	GROUND
	W5	J10-c4	Yellow	24	GROUND
	W5	J10-c5	Yellow	24	GROUND
	W5	J10-c6	Yellow	24	GROUND
	W5	J2-77	Yellow	24	GROUND
	W5	J2-65	Yellow	24	GROUND
	J15-A8	W5	Black	16	GROUND
	J15-A7	W5	Black	16	GROUND
	J15-A6	W4	Black	16	GROUND
	J15-A5	W4	Black	16	GROUND
	J15-A4	W3	Yellow	16	+5 VDC
	J15-A3	W3	Yellow	16	+5 VDC
	J15-A2	W2	Orange	16	+5 VDC
	J15-A1	W1	Blue	16	-15 VDC
	J10-c6	J31043	Yellow	24	GROUND
	J10-a3	J10-&4	Yellow	24	GROUND
	J10-a4	J10-z	Yellow	24	GROUND
	J10-Z1	J10-z	Yellow	24	GROUND
	J10-Z5	J10-Z6	Yellow	24	GROUND
	XA4-41	J7-H1	Blue	30	250 KHZ REF
	XA4-86	J7-H2	Blue	30	LOOP 2 MONITOR

APPENDIX A
REFERENCES

DA Pam 310-4	Index of Technical Publications: Technical Manuals, Technical Bulletins, Supply Manuals (Types 7, 8, and 9), Supply Bulletins, and Lubrication Orders.
DA Pam 310-7	US Army Equipment Index of Modification Work Orders.
SB 38-100	Preservation, Packaging, Packing and Marking Materials, Supplies and Equipment Used by the Army.
TB 43-0118	Field Instructions for Painting and Preserving Electronics Command Equipment Including Camouflage Pattern Painting of Electrical Equipment Shelters.
TB 385-4	Safety Precautions for Maintenance of Electrical/Electronic Equipment.
TM 11-5840-361-12	Operator's Organizational Maintenance Manual Receiving Set, Radar Data AN/-TRQ2B (NSN 5840-01-077-5723).
TM 11-5841-287-12	Operator's Organizational Maintenance Manual Transmitting Set, Radar Data AN/-AKT-18B (NSN 5841-01-070-4408).
TM 11-6625-654-14	Operator's, Organizational, Direct Support, and General Support Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools List) for Multimeter AN/USM-223.
TM 11-6625-2658-14	Operator's, Organizational, Direct Support, and General Support Maintenance Manual for Oscilloscope AN/USM-281C (NSN 6625-00-106-9622).
TM 11-6625-2951-13	Operator's, Organizational, and Direct Support Maintenance Manual Test Set, Electronic System AN/UYM-7 (NSN 6625-01-016-1866).
TM 38-750	The Army Maintenance Management System (TAMMS).
TM 750-244-2	Procedures for Destruction of Electronics Materiel to Prevent Enemy Use (Electronics Command).

APPENDIX B
COMPONENTS OF END ITEM LIST

Section I. INTRODUCTION

B-1. Scope

This appendix lists integral components of and basic issue items for the AN/UKM-5 to help you inventory items required for safe and efficient operation.

B-2. General

This Components of End Item List is divided into the following sections:

a. Section II. Integral Components of the End Item. Not applicable. These items, when assemblied, comprise the AN/UKM-S and must accompany it whenever it is transferred or turned in. The illustrations will help you identify these items.

b. Section Ill. Basic Issue Items. Not applicable. These are the minimum essential items required to place the AN/UKM-5 in operation, to operate it, and to perform emergency repairs. Although shipped separately packed they must accompany the AN/UKM-5 during operation and whenever it is transferred between accountable officers. The illustrations will assist you with hard-to-identify items. This manual is your authority to requisition replacement BH, based on TOE/MTOE authorization of the end item.

B-3. Explanation of Columns

a. Illustration. This column is divided as follows:

(1) *Figure number.* Indicates the figure number of the illustration on which the item is shown.

(2) *Item number.* The number used to identify item called out in the illustration.

b. National Stock Number. Indicates the National stock number assigned to the item and which will be used for requisitioning.

c. Description. Indicates the Federal item name and, if required, a minimum description to identify the item. The part number indicates the primary number used by the manufacturer, which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items. Following the part number, the Federal Supply Code for Manufacturers (FSCM) is shown in parentheses.

d. Location. The physical location of each item listed is given in this column. The lists are designed to inventory all items in one area of the major item before moving on to an adjacent area.

e. Usable on Code. Not applicable. "USABLE ON" codes are included to help you identify which component items are used on the different models. Identification of the codes used in these lists are:

Code Used on

f: Quantity Required (Qty Reqd). This column lists the quantity of each item required for a complete major item.

g. Quantity. This column is left blank for use during an inventory. Under the Rcvd column, list the quantity you actually receive on your major item. The Date columns are for your use when you inventory the major item.

SECTION II INTEGRAL COMPONENTS OF END ITEM

(1) ILLUSTRATION (A) FIG. NO	(1) ILLUSTRATION (B) ITEM NO	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION PART NUMBER	(3) DESCRIPTION (FSCM)	(4) LOCATION	(5) USABLE ON CODE	(6) QTY REQD	(7) QUANTITY RCVD	(7) QUANTITY DATE
1-1			LOGIC PROBE, DETACHABLE 361538-011	(05869)					
1-1			ADAPTER, SELF TEST	(05869)			1		
1-1		5995-01-044-2085	CORD, POWER, AC, DETACHABLE 5052-952	(05869)			1		
1-1			PROGRAM CARD, SELF-TEST #1	(05869)			1		
1-1			PROGRAM CARD, SELF-TEST #2	(05869)			1		
1-1			PROGRAM CARD, SELF-TEST #3	(05869)			1		
1-1			PROGRAM CARD, SELF-TEST #4	(05869)			1		
1-1			PROGRAM CARD, SELF-TEST #5	(05869)		1			
1-1			PROGRAM CARD, SELF-TEST #6	(05869)		1			
1-1			KEYS, DUPLICATE, PROGRAM	(05869)		1			

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SECTION III INTEGRAL COMPONENTS OF END ITEM

(1) ILLUSTRATION (A) FIG. NO	(1) ILLUSTRATION (B) ITEM NO	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION PART NUMBER (FSCM)	(4) LOCATION	(5) USABLE ON CODE	(6) QTY REQD	(7) QUANTITY RCVD	(7) QUANTITY DATE
			TM 11-6625-2937-13 AN/UKM-5 TEST SET GROUP			1		

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APPENDIX D
MAINTENANCE ALLOCATION

Section I. INTRODUCTION

D-1. General

This appendix provides a summary of the maintenance operations for Test Set Electronic Systems AN/UKM-5 and Adapter, Test MX-I 0062/U. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

D-2. Maintenance Function

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. Test. To verify serviceability and to detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

d. Adjust. To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

e. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Install. The act of emplacing, seating, or fixing into position an item, part, module (component or assembly) in a manner to allow the proper functioning of the equipment or system.

h. Replace. The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

i. Repair. The application of maintenance services (inspect, test, service, adjust, align, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. Overhaul. That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours, miles, etc.) considered in classifying Army equipments/components.

D-3. Column Entries

a. Column 1, Group Number. Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies, and modules with the next higher assembly.

b. Column 2, Component/Assembly. Column 2 contains the noun names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Functions. Column 3 lists the functions to be performed on the item listed in column 2. When items are listed without maintenance functions, it is solely for purpose of having the group numbers in the MAC and RPSTL coincide.

d. Column 4, Maintenance Category. Column 4 specifies, by the listing of a "work time" figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate "work time" figures will be shown for each category. The number of task-hours specified by the "work time" figure represents the average time required to restore an item (assembly, subassembly, component, module, end item or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. Sub-

columns of column 4 are as follows:

C - Operator/Crew
0 - Organizational
F - Direct Support
H - General Support
D - Depot

e. Column 5, Tools and Equipment. Column 5 specifies by code, those common tool sets (not individual tools) and special tools, test, and support equipment required to perform the designated function.

f. Column 6, Remarks. Column 6 contains an alphabetic code which leads to the remark in section IV, Remarks, which is pertinent to the item opposite the particular code.

D-4. Tool and Test Equipment Requirements (Sect. III)

a. Tool or Test Equipment Reference Code. The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool or test equipment for the maintenance functions.

b. Maintenance Category. The codes in this column indicate the maintenance category allocated the tool or test equipment.

c. Nomenclature. This column lists the noun name and nomenclature of the tools and test equipment required to perform the maintenance functions.

d. National/NATO Stock Number. This column lists the National/NATO stock number of the specific tool or test equipment.

e. Tool Number. This column lists the manufacturer's part number of the tool followed by the Federal Supply Code for manufacturers (5-digit) in parentheses.

D-5. Remarks (Sect. IV)

a. Reference Code. This code refers to the appropriate item in section II, column 6.

b. Remarks. This column provides the required explanatory information necessary to clarify items appearing in section II.

(Next printed page is D-3)

SECTION II MAINTENANCE ALLOCATION CHART

FOR

ELECTRONICS TEST SET AN/UKM-5

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQUIPMENT	(6) REMARKS
00	TEST SET, ELECTRONIC SYSTEMS AN/UKM-S	INSPECT		0.5					
		TEST		0.2					A
		REPLACE		0.1					
		REPAIR			O.5				H
		OVERHAUL					16	1-9	
01	TEST SET, ELECTRONIC SYSTEMS AN/UKM-4	TEST	0.2						A
		REPLACE		0.1					
		REPAIR		0.2				10	I
		REPAIR			0.5				
		REPAIR					1.0	7,9	
		OVERHAUL					8	1-9	
0101	CASE, TEST SET CY-7767/UKM-4	INSPECT		0.1					
		REPLACE		0.2				9	
		REPAIR					0.5		J
0102	TEST SET, ELECTRONIC SYSTEMS TS-3796/UKM-4	TEST			0.2				A
		REPLACE			0.2				
		REPAIR			0.5				B
		REPAIR					1.0		E
010201	CIRCUIT CARD ASSY PANEL LOGIC lA2Al	TEST			0.2				G
		TEST					0.2	1,5,8	K
		REPLACE			0.2				
		REPAIR					1.0	4,6,9	
010202	CIRCUIT CARD ASSY MICRO PROCESSOR lA2A2	TEST			0.2				G
		TEST				0.2	7		F
		REPLACE			0.2				
		REPAIR				1.0	6,7,9		
010203	CIRCUIT CARD ASSY RAM/ROM IA2A3	TEST			0.2				G
		TEST					0.2	7	K
		REPLACE			0.2				
		REPAIR					1.0	6,7,9	
010204	CIRCUIT CARD ASSY DEPRIVED TIMING NO. 1 lA2A4	TEST			0.2				G
		TEST					0.2	1,2,5	F
		REPLACE			0.2				
		REPAIR					1.0	1,2,4, 5,6,9	
010205	CIRCUIT CARD ASSY DERIVED TIMING NO. 2 1AZAS	TEST			0.2				G
		TEST					0.2	7	K
		REPLACE			0.2				
		REPAIR					1.0	6,7,9	
010206	CIRCUIT CARD ASSY P.I.T & TEST ROM IA2A6	TEST			0.2				G
		TEST					0.2	7	K
		REPLACE			0.2				
		REPAIR					1.0	6,7,9	
010207	FILTER ASSY ELECTRICAL, IAIFLI	TEST			0.3			3	
		REPLACE			0.5			9	
		REPAIR			1.0			9	
010208	CIRCUIT CARD ASSY BUS SWITCHING, 1A2A7	TEST			0.2				G
		TEST					0.2	7	K
		REPLACE			0.2				
		REPAIR					1.0	6,7,9	

SECTION 11 MAINTENANCE ALLOCATION CHART FOR ELECTRONICS SYSTEMS TEST SET AN/UKM-5

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQUIPMENT	(6) REMARKS
0103	EXTENDER CARD	INSPECT		0.1					
		REPLACE		0.1					
		REPAIR					0.5	6, 9	
0104	EXTENDER CARD	INSPECT		0.1					
		REPLACE		0.1					
		REPAIR					0.5	6, 9	
0105	EXTLNDER CARD	INSPECT		0.1					
		REPLACE		0.1					
		REPAIR					0.5	6, 9	
0106	CABLE, 1W1	INSPECT		0.1					
		REPLACE		0.1					
		REPAIR			1.0			3, 9	
0107	CABLE 1W2	INSPECT		0.1					
		REPLACE		0.1					
		REPAIR			1.0			3, 9	
0108	CABLE, 1W3	INSPECT		0.1					
		REPLACE		0.1					
		REPAIR			1.0			3, 9	
0109	CABLE, 1W4	INSPECT		0.1					
		REPLACE		0.1					
		REPAIR			1.0			3, 9	
0110	CONNECTOR ASSY 1A2A13	TEST		0.2					
		REPLACE			1.0			9	
		REPAIR					1.0	3, 9	
02	TEST SET, ELECTRONIC SYSTEMS AN/UYM-7	TEST			0.2			7	
		REPLACE		0.2					
		REPAIR			0.5			C, D	

SECTION It MAINTENANCE ALLOCATION CHART
FOR

TEST ADAPTER 14X-10062/U

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQUIPMENT	(6) REMARKS
00	TEST ADAPTER MX-10062/U	REPLACE REPARR					0.1 1.0	 1, 2	A

SECTION III TOOL AND TEST EQUIPMENT REQUIREMENTS FOR

ELECTRONICS SYSTEMS TEST SET AN/UKM-5

(1) TOOL OR TEST EQUIPMENT REF CODE	(2) MAINTENANCE LEVEL	(3) NOMENCLATURE	(4) NATIONAL/NATO STOCK NUMBER	(5) TOOL NUMBER
1	D	DIGITAL VOLTMETER AN/GSM-64B	6625-00-022-7894	
2	D	ELECTRONIC COUNTER AN/USM-207A	6625-00-911-6368	
3	D, F	MULTIMETER AN/USM-223	6625-00-999-7465	
4	D	OSCILLOSCOPE AN/USM- 281C	6625-00-106-9622	
5	D	FUNCTION GENERATOR SG-747/U INCL. SWEEP.OFFSET PLUG-IN PL-1178/U	6625-00-118-6736 6625-00-104-2648	
6	D	REPAIR KIT, PRINTED WIRING BOARD MK-772/U	5999-00-757-7042	
7	D, F	TEST SET ELECTRONIC SYSTEMS AN/UKM-5	6625-01-073-9858	
8	D	POWER SUPPLY PP-3940/G	6130-00-985-8136	
9	D, F	TOOL KIT ELECTRONIC EQUIPMENT TK-105/G	5180-00-610-8177	
10	0	TOOL KIT ELECTRICAL EQUIPMENT TK-101/G	5180-00-064-5178	

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SECTION III TOOL AND TEST EQUIPMENT REQUIREMENTS
FOR

TEST ADAPTER MX-10062/U

(1) TOOL OR TEST EQUIPMENT REF CODE	(2) MAINTENANCE LEVEL	(3) NOMENCLATURE	(4) NATIONAL/NATO STOCK NUMBER	(5) TOOL NUMBER
1	D	MULTIMETER AN/USM-223	6625-00-999-7465	
2 D		TOOL KIT ELECTRONIC EQUIPMENT TK-105/G	5180-00-610-8177	

SECTION IV REMARKS
ELECTRONICS SYSTEMS TEST SET AN/UKM-5

REFERENCE CODE	REMARKS
A	BITE SELF TEST.
B	INTERMEDIATE SUPPORT REPAIR CONSISTS OF REPLACING MODULES IN THE CARD CAGE 1A2, THE FILTER ASSEMBLY lAIFL1, OR THE DISCARDABLE POWER SUPPLIES lAIPS1, 1A1P52, lAIPS3.
C	FOR MAINTENANCE OF AN/UYM7 SEE MAC IN TM 11-6625-2951-13.
D	REPAIR CONSISTS OF MODULE REPLACEMENT, FRONT AND REAR PANEL PART REPLACEMENT, AND WIRING HARNESS (CABLE) REPAIR.
E	REPAIR INCLUDES REPAIR OF CARD CAGE 1A2.
F	TEST USING A KNOWN GOOD AN/UYM-7 AND AN/UKM-4.
G	TEST AT NEXT HIGHER ASSEMBLY.
H	REPAIR LOWER LEVEL ASSEMBLIES AN/UKM-4 AND AN/UKM-7.
I	REPAIR IS ACCOMPLISHED BY REPAIRING THE TS-3796/UKM-4, REPAIRING THE TEST SET CASE CY-7767/UKM-4, OR REPLACING FUSES AND KNOBS.
I	REPLACE HANDLES AND FASTENERS.
K	TEST USING AN AN/UKM-7 AND AN AN/UKM-4 AS A MECHANICAL INTERFACE. A7 SHOULD BE REMOVED FROM THE TS-3796 CARD CAGE.

SECTION IV REMARKS

TEST ADAPTER MX-10062/U

REFERENCE CODE	REMARKS
A	USED AT DEPOT WITH AN/UKM-5 BUT NOT PART OF AN/UKM-5.

APPENDIX E
EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

E-1.Scope
This appendix lists expendable supplies and materials you will need to operate and maintain the Test Set Group. These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

E-2. Explanation of Columns
a. Column 1-Item number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use cleaning compound, item 5, App. D").
b. Column 2-Level. This column identifies the lowest level of maintenance that requires the listed item.
C-Operator/Crew
O-Organizational Maintenance/Aviation Unit Maintenance
F--Direct Support Maintenance/Aviation Intermediate Maintenance
H--General Support Maintenance
c. Column 3-National Stock Number. This is the National stock number assigned to the item; use it to request or requisition the item.
d Column 4-Description. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Federal Supply Code for Manufacturer (FSCM) in parentheses followed by a part number.
e Column 5-Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

(Next printed page is E-2)

SECTION II EXPENDABLE SUPPUES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION PART NUMBER AND CAGE	(5) UNIT OF MEAS
1	C	6505-00-105-0000	ALCOHOL, DENATURED, UA 00408	CN
2	C	8020-00-245-4509	BRUSH, CAMEL'S HAIR, 11B391, SIZE 1	PK
3	C		CLSANING TISSUE	PK
4	C	8305-00-205-3496	CLOTH, COTTON, LINT-FREE CCC-440	PK
5	F		COMPOUND, BEAT SINK, DC-340 (71984)	TB
6	F		ENAMEL, BLACK, PER MIL-P-14072	CN
7	F		PRIMER, COLOR Y, PER MNIL--14072	CN
8	F	5350-00-235-0124	SANDPAPER	PK
9	F	3439-00-824-0856	SOLDER, SNSOWRAP 30.0-32 (81349)	LB
10	F	3439-00-194-9727	SOLDER (81349)	LB
11	F		SOLDER BRAND, CAT #40-S-5, SIZE 3 (34605)	PK
12	C	8850-00-105-3048	TRICHLOROTRIFLUOROETHANE FREON TF	CN

GLOSSARY

A

Accumulator	The MPU contains two 8-bit accumulators that are used to hold operands and results from an arithmetic logic unit (ALU).
Address Bus	Provides 16-bit address information (AO-A15) which is used by the address decoder to access memory.
ALU	Arithmetic logic unit. Logic functions and arithmetic are performed in this part of the MPU.
Analog test adapter	Test Adapter MX-10062/U. The test adapter is basically a breakout box that is used at depot maintenance to gain access to module connector pins of an analog circuit card under test.

B

BA	Bus available. Normally in the low state (BA). When activated, it goes to the high state (BA), indicating the MPU has stopped and that the address bus is available
Bit	Binary digit. A binary digit may be a 0 (zero) or a I (one).
BITE	Built in test equipment. That portion of the equipment used to check for proper operation.
BUS	A signal path or group of paths or signal lines.
BYTE	A binary word that is eight-bits long.

C

Cable W1	Cable assembly, power, electrical W1. Cable WI is a four-wire cable assembly approximately 72 inches long.
Cable W2	Cable assembly, special purpose, electrical W2. Cable W2 is a 156-wire cable assembly approximately 36 inches long.
Cable W3	Cable assembly, special purpose, electrical W3. Cable W3 is a 44-wire cable assembly approximately 48 inches long.
Cable W4	Cable assembly, special purpose, electrical W4. Cable W4 is a 10-wire cable assembly approximately 48 inches long.
CCR	Condition code register. This 8-bit register indicates the results of an arithmetic logic unit operation (negative, zero, overflow, carry, etc).
Circuit card assembly rack 1A2	Comprised of a front panel and circuit card rack. The circuit card rack contains seven circuit cards necessary to the operation of the control-interface unit.
Control bus.	Three pins are used for the control bus It provides control signals 02, R/W and VMA (VUA).
Control-interface unit	Test Set, Electronic Systems TS-3796/UKM-4.

D

Data bus	Eight pins are used for the data bus. It provides data (DO-D7) transfer to and from memory.
Data link tester	Test Set, Electronic Systems AN/UKM-4.
Data word	A byte, or pattern of eight bits, that represents a binary number rather than an in struction.
DEC	Decoder, Video KY-871/TKQ2B.
DEC module test	Power is applied to the module test connector for decoder standard logic card or microprocessor card test.
DEC unit test	Power is applied to the unit test power connector for decoder unit testing.
Digital tester	Test Set, Electronic Systems AN/UYM-7.

E

Electrical equipment housing 1A1	Contains three power supplies, an input power line filter assembly and a circuit breaker.
ENC	Encoder, Video KY-865/AKT-18B.
ENC module test	Power is applied to the module test connector for encoder standard logic card or microprocessor card test.

ENC unit test	Power is applied to the unit test power connector for encoder unit test.
Extender card No 1	Extender, card for encoder (SM-D-942431-1). Used to extend an analog circuit card in an encoder.
Extender card No. 2	Extender, card for control-interface unit (SM-D-942431-2). Used to extend an analog circuit card in a control-interface unit.
Extender card No. 3	Extender, card for decoder (SM-D-942431-3). Used to extend an analog circuit card in a decoder.
	F
Front panel	Front panel and circuit card rack are part of circuit card assembly rack 1 A2. The front panel contains controls and indicators including the mode select switch and the mode/power indicators.
	G
Gate	A circuit that produces an output that is dependent on the logical input of two or more binary digits.
	H
Hardware	All of the mechanical and electronic components necessary for proper operation of the MPU.
	I
Index register	A 16-bit register used to hold a memory address The contents of the register is used under program control as a counter or to modify the address of the next instruction to be executed.
Instruction word	A byte, or pattern of eight bits, that represents a command or operand rather than a binary number.
$\overline{\text{IRQ}}$	Interrupt request. This input signal requests that an interrupt sequence be generated within the MPU. The MPU waits until it completes the current instruction that is being executed before it recognizes the request.
	L
Look-up tables	Data constants stored with program of instructions in ROM's.
LSB	Least significant bit. LSB is referred to as bit 0.
	M
Memory	The memory is a storage device in which a sequence of instructions and data is stored. It is divided into a series of locations and each location stores one byte. To enable these bytes to be retrieved, each location is allocated an address which does not change.
Module test circuit rack	Provides connections for encoder, decoder and control-interface unit, microprocessor and standard logic cards to control interface unit.
Module test connector	Provides interface, between control-interface unit and microprocessor or standard logic cards.
MPU	Microprocessor unit. Responds to inputs and produces outputs in a manner determined by a sequence of instructions which are stored in ROM.
MSB	Most significant bit. MSB is referred to as bit 7.
	N
$\overline{\text{NMI}}$	Non-maskable interrupt. A negative-going edge on this input requests that a NMI sequence be generated within the MPU. However, the MPU completes the current instruction that is being executed before it recognizes the NMI signal.
	P
Port	An input or output path for transferring data or information.
PIT	Programmable interval timer. Sets a limit on the amount of time that a test can run.
Program	Any sequence of instructions which is self-contained and a complete solution to a particular problem is called a program.
Program card	Each program card is a plastic card with a magnetic stripe containing the test pro-

	gram for a particular printed circuit card.
Program counter	A 16-bit register which holds a memory address. This register holds the address of the next instruction to be executed in the program.
PLL	Phase-locked loop. This circuit consists primarily of a phase detector, a loop filter and a voltage-controlled oscillator (VCO). It synchronizes the VCO with the phase of the reference signal.
	R
RAM	Random access memory. Under program control information can be read from or written into this memory device. It is often used as scratchpad memory, and holds results and variable data.
Read signal	This signal allows data to be read from memory.
RES	Reset. This input signal is used to reset and start the MPU from a power-down condition, resulting from a power failure or an initial start-up of the MPU. When this line is low the information in the registers is lost.
R/W	Read/Write. This output signal informs peripherals and memory devices when the MPU is in a read (high) or write (low) state. The normal standby state of this signal is read (high). When the MPU is halted, it is in the logical one state
ROM	Read only memory. The program of instructions for the microprocessor is normally held in a ROM. Information is normally fixed in the ROM and can only be read.
	S
Scratchpad memory	Any RAM used as a temporary, fast-access store for interim results and variable data.
Stack	A section of RAM is allocated as the stack. The stack is a last-in, first-out memory (LIFO) in which successive bytes can be stacked one after the other.
Stack pointer	A 16-bit register which holds a memory address. This register holds the address of the next vacant location in the stack.
STE	Special test equipment. STE refers to the control-interface unit and identifies several of its circuit card assemblies.
STE module test	Power is applied to the module test connector for control-interface unit microprocessor or standard logic card test.
	T
Test number display	Provides three-digit display of particular program card test being run. Also provides fault location information when control-interface unit BITE test is being run.
Test set case	Case, Test Set CY-7767/UKM-4. The test set case is 31 inches high, 28 inches wide and 24 inches in depth.
Test set group	Test Set, Electronic Systems AN/UKM-5.
	U
Unit test power connector	Provides interface, between encoder or decoder and control interface unit.
	V
VCO	Voltage-controlled oscillator. The dc voltage applied to the VCO produces an output signal whose frequency is determined by the voltage input from the loop filter. It is synchronized with the phase of the reference signal.
VMA (VUA)	Valid memory address. This signal indicates to peripheral devices that there is a valid address on the address bus. Valid user address (VUA) has the same meaning.
	W
Word	A set of binary digits which are operated on collectively and which form one number. A word may represent a binary number (data word) or an instruction.
Write signal	This allows data to be written into memory.

INDEX

By Order of the Secretary of the Army:

EDWARD C. MEYER
General, United States Army
Chief of Staff

Official:

J. C. PENNIGTON
Major General United States Army
The Adjutant General

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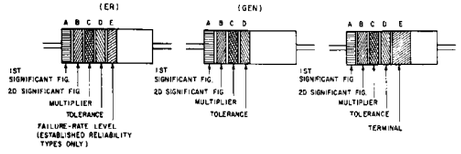


COLOR CODE MARKING FOR COMPOSITION TYPE RESISTORS.

COLOR-CODE MARKING FOR FILM-TYPE RESISTORS.

TABLE I
COLOR CODE FOR COMPOSITION TYPE AND FILM TYPE RESISTORS.

BAND A		BAND B		BAND C		BAND D		BAND E		
COLOR	FIRST SIGNIFICANT FIGURE	COLOR	SECOND SIGNIFICANT FIGURE	COLOR	MULTIPLIER	COLOR	RESISTANCE TOLERANCE (PERCENT)	COLOR	FAILURE RATE LEVEL	TERM.
BLACK	0	BLACK	0	BLACK	1			BROWN	M=1.0	
BROWN	1	BROWN	1	BROWN	10			RED	P=0.1	
RED	2	RED	2	RED	100			ORANGE	R=0.01	
ORANGE	3	ORANGE	3	ORANGE	1,000			YELLOW	S=0.001	
YELLOW	4	YELLOW	4	YELLOW	10,000	SILVER	±10 (COMP. TYPE ONLY)	WHITE		SOLDERABLE
GREEN	5	GREEN	5	GREEN	100,000	GOLD	±5			
BLUE	6	BLUE	6	BLUE	1,000,000	RED	±2 (NOT APPLICABLE TO ESTABLISHED RELIABILITY)			
PURPLE (VIOLET)	7	PURPLE (VIOLET)	7							
GRAY	8	GRAY	8	SILVER	0.01					
WHITE	9	WHITE	9	GOLD	0.1					

BAND A — THE FIRST SIGNIFICANT FIGURE OF THE RESISTANCE VALUE (BANDS A THRU D SHALL BE OF EQUAL WIDTH)

BAND B — THE SECOND SIGNIFICANT FIGURE OF THE RESISTANCE VALUE.

BAND C — THE MULTIPLIER (THE MULTIPLIER IS THE FACTOR BY WHICH THE TWO SIGNIFICANT FIGURES ARE MULTIPLIED TO YIELD THE NOMINAL RESISTANCE VALUE.)

BAND D — THE RESISTANCE TOLERANCE.

BAND E — WHEN USED ON COMPOSITION RESISTORS, BAND E INDICATES ESTABLISHED RELIABILITY FAILURE-RATE LEVEL (PERCENT FAILURE PER 1,000 HOURS). ON FILM RESISTORS, THIS BAND SHALL BE APPROXIMATELY 1-1/2 TIMES THE WIDTH OF OTHER BANDS, AND INDICATES TYPE OF TERMINAL.

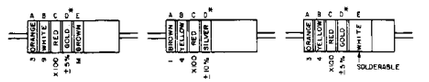
RESISTANCES IDENTIFIED BY NUMBERS AND LETTERS (THESE ARE NOT COLOR CODED)

SOME RESISTORS ARE IDENTIFIED BY THREE OR FOUR DIGIT ALPHA NUMERIC DESIGNATORS. THE LETTER R IS USED IN PLACE OF A DECIMAL POINT WHEN FRACTIONAL VALUES OF AN OHM ARE EXPRESSED. FOR EXAMPLE:

2R7 = 2.7 OHMS 10R0 = 10.0 OHMS

FOR WIRE-WOUND-TYPE RESISTORS COLOR CODING IS NOT USED. IDENTIFICATION MARKING IS SPECIFIED IN EACH OF THE APPLICABLE SPECIFICATIONS.

EXAMPLES OF COLOR CODING



NOMINAL RESISTANCE 3,900 OHMS
RESISTANCE TOLERANCE ±5%
FAILURE RATE LEVEL M

NOMINAL RESISTANCE 1,400 OHMS
RESISTANCE TOLERANCE ±10%

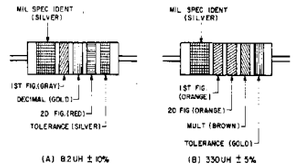
NOMINAL RESISTANCE 3,400 OHMS
RESISTANCE TOLERANCE ±5%
TERMINAL SOLDERABLE

COMPOSITION-TYPE RESISTORS

FILM-TYPE RESISTORS

* IF BAND D IS OMITTED, THE RESISTOR TOLERANCE IS ±20% AND THE RESISTOR IS NOT MIL-STD.

A. COLOR CODE MARKING FOR MILITARY STANDARD RESISTORS.



(A) 8.2UH ±10%

(B) 330UH ±5%

COLOR CODING FOR TUBULAR ENCAPSULATED R.F. CHOKES. AT A, AN EXAMPLE OF THE CODING FOR AN 8.2 UH CHOKE IS GIVEN. AT B, THE COLOR BANDS FOR A 330 UH INDUCTOR ARE ILLUSTRATED.

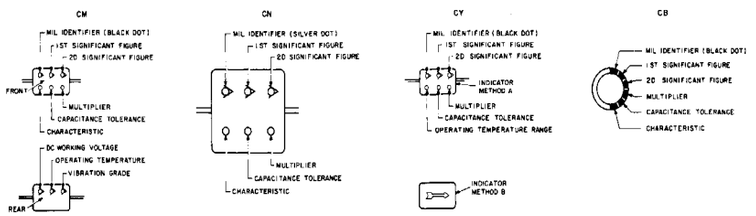
TABLE 2
COLOR CODING FOR TUBULAR ENCAPSULATED R.F. CHOKES.

COLOR	SIGNIFICANT FIGURE	MULTIPLIER	INDUCTANCE TOLERANCE (PERCENT)
BLACK	0	1	
BROWN	1	10	1
RED	2	100	2
ORANGE	3	1,000	3
YELLOW	4		
GREEN	5		
BLUE	6		
VIOLET	7		
GRAY	8		
WHITE	9		
NONE			20
SILVER			10
GOLD	DECIMAL POINT		5

MULTIPLIER IS THE FACTOR BY WHICH THE TWO COLOR FIGURES ARE MULTIPLIED TO OBTAIN THE INDUCTANCE VALUE OF THE CHOKE COIL.

B. COLOR CODE MARKING FOR MILITARY STANDARD INDUCTORS.

CAPACITORS, FIXED, VARIOUS-DIELECTRICS, STYLES CM, CN, CY, AND CB.

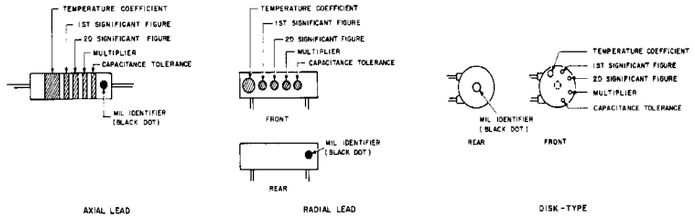


MICA-DIELECTRIC

PAPER-DIELECTRIC

GLASS-DIELECTRIC, GLASS CASE

MICA, BUTTON TYPE



AXIAL LEAD

RADIAL LEAD

DISK-TYPE

C. COLOR CODE MARKING FOR MILITARY STANDARD CAPACITORS.

TABLE 3 — FOR USE WITH STYLES CM, CN, CY AND CB.

COLOR	MIL ID	1ST SIG FIG.	2D SIG FIG.	MULTIPLIER	CAPACITANCE TOLERANCE			CHARACTERISTIC			DC WORKING VOLTAGE	OPERATING TEMP RANGE	VIBRATION GRADE
					CM	CN	CY	CB	CN	CB	CM	CY, CB	CM
BLACK	CM, CY, CB	0	0	1			±20%	±20%		A		-55°C to +70°C	10-55 Hz
BROWN		1	1	10					B	E	B		
RED		2	2	100	±2%		±2%	±2%	C			-55°C to +85°C	
ORANGE		3	3	1,000		±30%			D		D	300	
YELLOW		4	4	10,000					E			-55°C to +125°C	10-2,000 Hz
GREEN		5	5		±5%				F			500	
BLUE		6	6									-55°C to +150°C	
PURPLE (VIOLET)		7	7										
GRAY		8	8										
WHITE		9	9										
GOLD				0.1			±5%	±5%					
SILVER	CN			0.01	±10%	±30%	±10%	±10%					

TABLE 4 — TEMPERATURE COMPENSATING, STYLE CC.

COLOR	TEMPERATURE COEFFICIENT*	1ST SIG FIG.	2D SIG FIG.	MULTIPLIER†	CAPACITANCE TOLERANCE		MIL ID
					CAPACITANCES OVER 10 UUF	CAPACITANCES 10 UUF OR LESS	
BLACK	0	0	0	1		±2.0 UUF	CC
BROWN	-30	1	1	10	±1%		
RED	-80	2	2	100	±2%	±0.25 UUF	
ORANGE	-150	3	3	1,000			
YELLOW	-220	4	4				
GREEN	-330	5	5		±5%	±0.5 UUF	
BLUE	-470	6	6				
PURPLE (VIOLET)	-750	7	7				
GRAY		8	8	0.01*			
WHITE		9	9	0.1*	±10%		
GOLD	+100			0.1		±1.0 UUF	
SILVER				0.01			

1. THE MULTIPLIER IS THE NUMBER BY WHICH THE TWO SIGNIFICANT (SIG) FIGURES ARE MULTIPLIED TO OBTAIN THE CAPACITANCE IN UUF.
2. LETTERS INDICATE THE CHARACTERISTICS DESIGNATED IN APPLICABLE SPECIFICATIONS: MIL-C-5, MIL-C-25D, MIL-C-11272B, AND MIL-C-10950C RESPECTIVELY.
3. LETTERS INDICATE THE TEMPERATURE RANGE AND VOLTAGE-TEMPERATURE LIMITS DESIGNATED IN MIL-C-11015D.
4. TEMPERATURE COEFFICIENT IN PARTS PER MILLION PER DEGREE CENTIGRADE.

* OPTIONAL CODING WHERE METALLIC PIGMENTS ARE UNDESIRABLE.

Figure FO-1. Color code markings for MIL-STD resistors and capacitors.

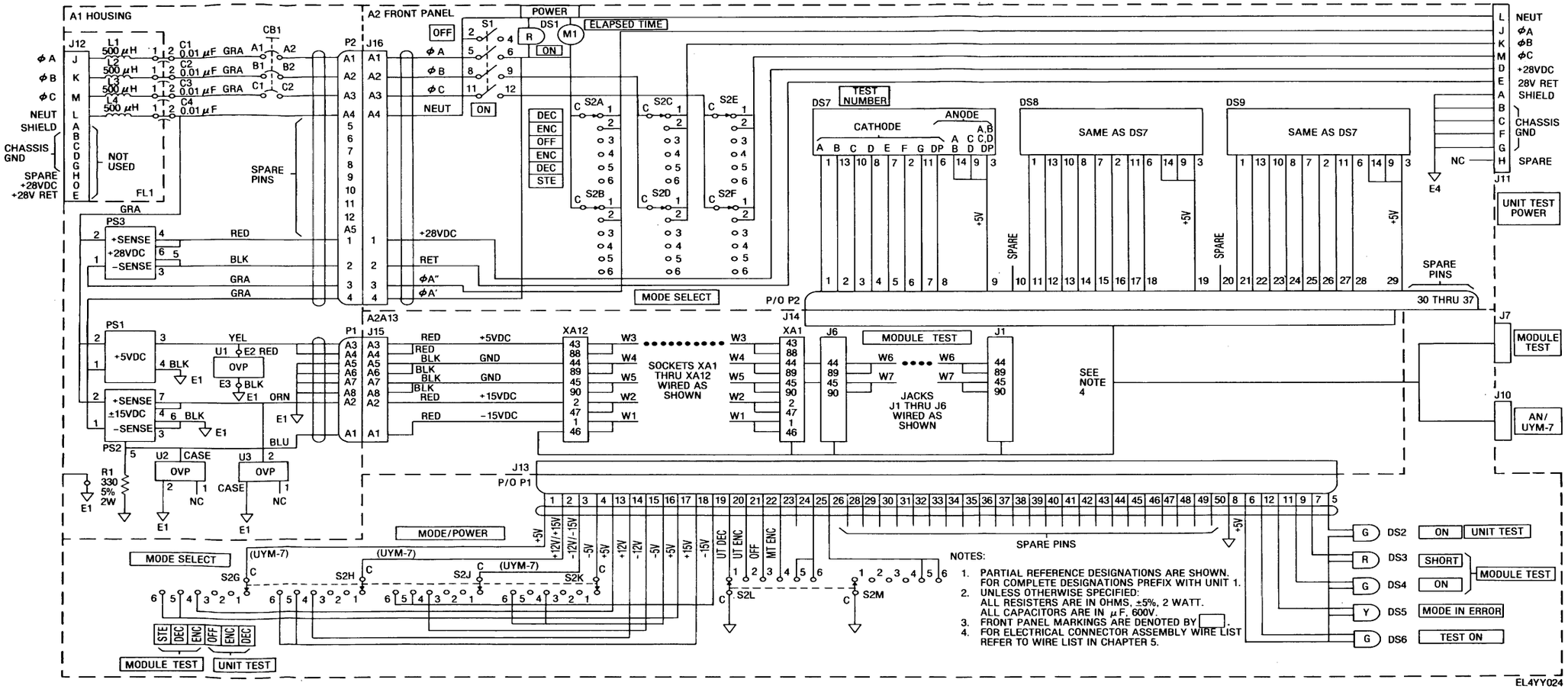


Figure FO-2. Control-interface unit schematic diagram.

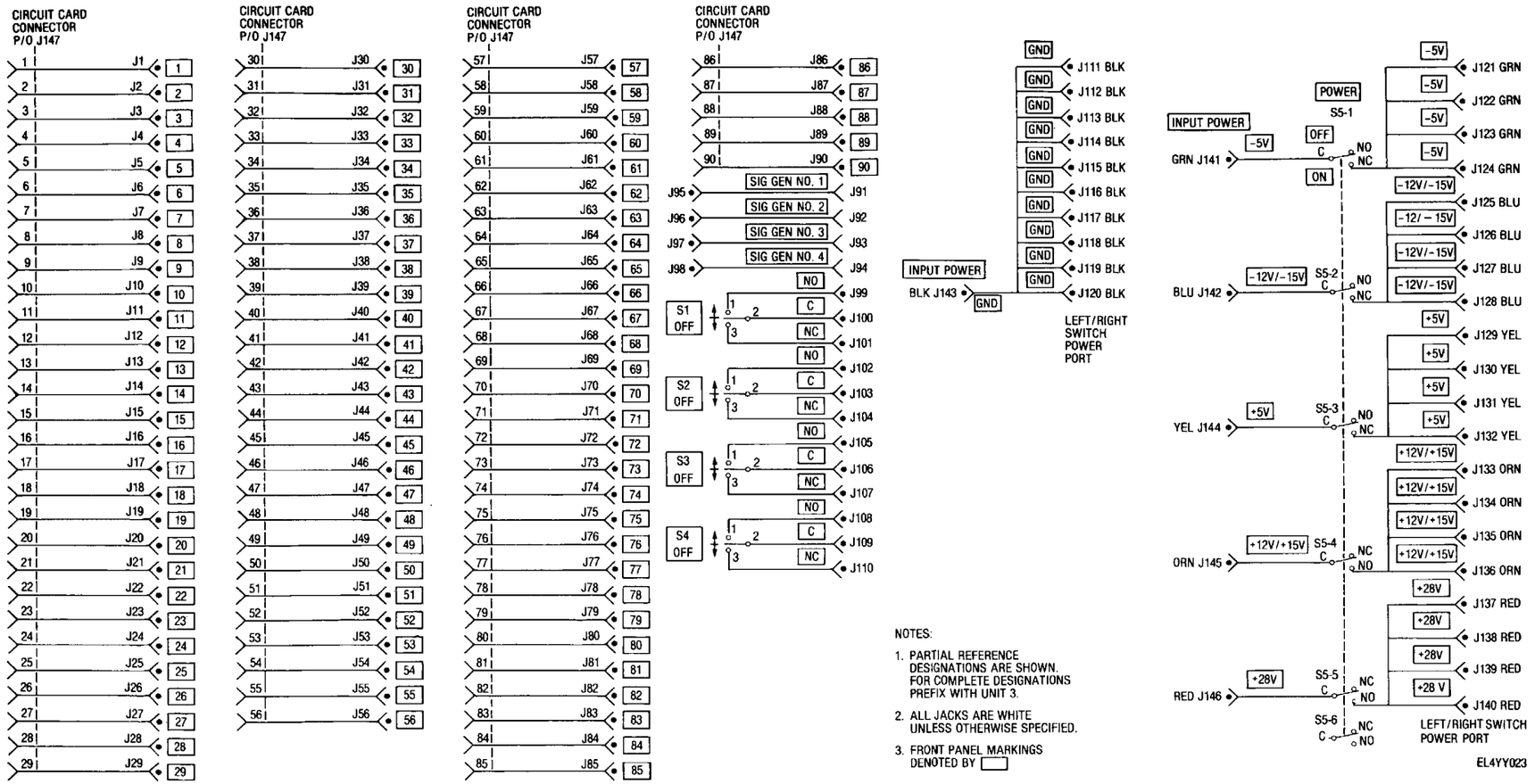


Figure FO-3. Analog test adapter schematic diagram.

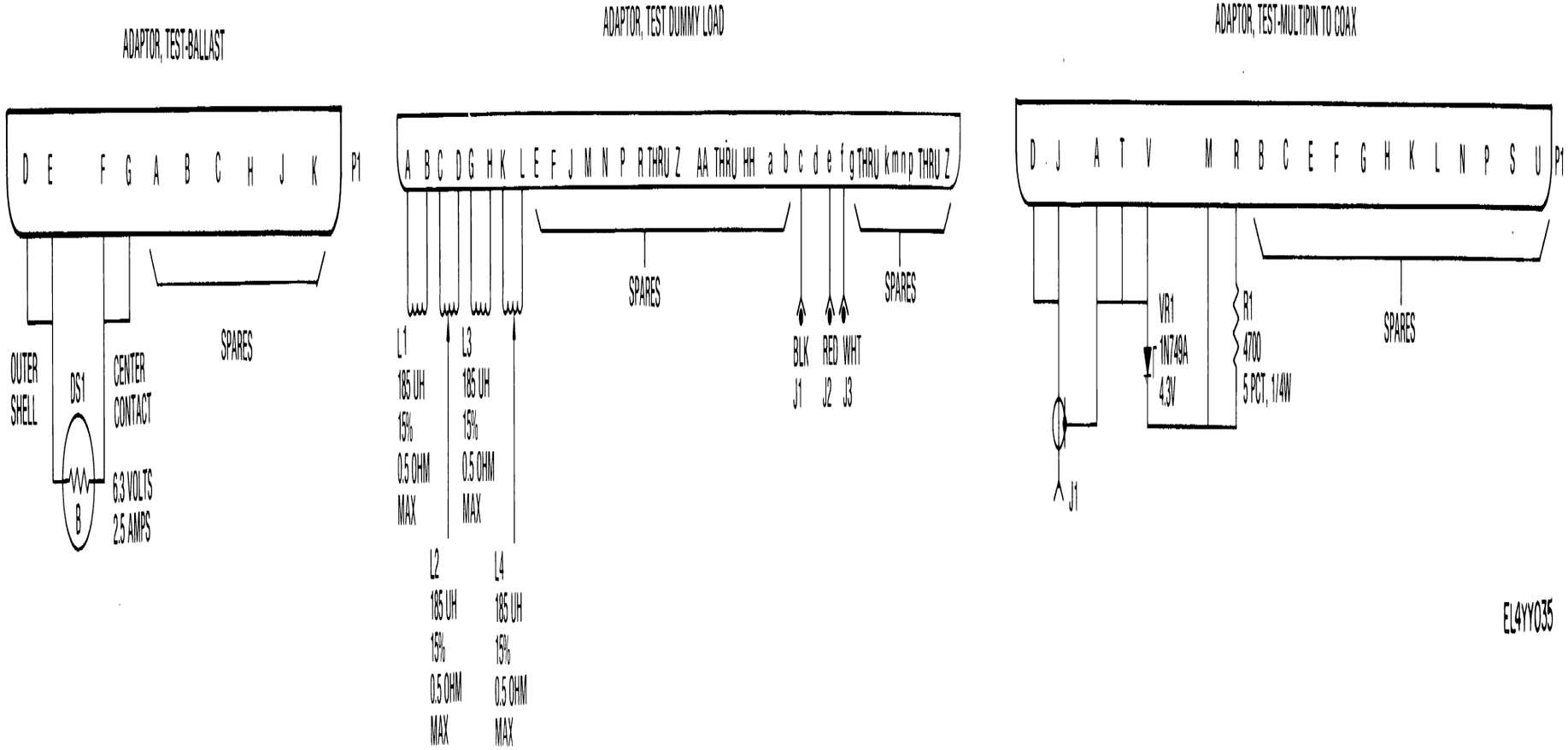


Figure FO-4. Test adapters schematic diagram.

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