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DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
SPECIFICATION

INTERFACE UNIT, MALSR REMOTE CONTROL

1. SCOPE

1.1 SCOPE. - This specification sets forth the requirements for the procurement of a Medium Intensity Approach Lighting System With Runway Alignment Indicator Lights (MALSR) Remote Radio Control Interface Unit (RRCIU) and includes detailed test procedures in compliance with FAA-STD-005e. The interface unit shall function to convert DC and AC control signals into AC line voltages.

2. APPLICABLE DOCUMENTS

2 1 FAA documents. - The following documents or revisions issued at the date for invitation of bids or proposal request form a part of this specification.

2.1.1 FAA drawings.

a. AE-D-1457-1	RRCIU PCB Assembly Reference (with Parts List)
b. AE-D-1457-20	RRCIU Cabinet Assembly (with Parts List)
c. AE-D-1457-21	RRCIU Cabinet Assembly
d. AE-D-1457-29	Door Schematic Decal
e. AE-D-1457-30	RRCIU Electrical Schematic

2.1.2 FAA specifications

a. FAA-G- 2100f, Electronic Equipment, General Requirements. .

2 2 Military and Federal documents. - The following military and federal documents, the issue effective on the date of proposal request or invitation of bids, form a part of this specification.

2.2.1 Military standards.

a. MIL-STD-129N, Marking for Shipment and Storage.

b. MIL-STD-461D(1), Electromagnetic Emission and Susceptibility Requirements for the Control of Electromagnetic Interference.

c. MIL-STD-810E(3), Environmental Test Methods.

d. MIL-STD-2073-lB, DOD Material Procedures Development and Application of Packaging Requirements.

2.2.2 Military specifications

a. MIL-C-5541 E, Chemical Conversion Coatings on Aluminum and Aluminum Alloys.

b. MIL-A-8625F, Anodic Coatings for Aluminum and Aluminum Alloys

c. MIL-P-55 11 OF Printed Wiring Boards, Rigid, General Specification for

2.2.3 Military Handbooks

a. MIL-HDBK-454(1), General Requirements for Electronic Equipment.

2.3 Other publications. - The following publications, the issue effective on the date of proposal request or invitation of bids, form a part of this specification.

2.3.1 American National Standards Institute (ANSI) Publication

a. C37.90a-1974, IEEE Guide for Surge Withstand Capability (SWC) Tests.

b. ANSI/ISO/ASQC-Q-9003-1994, Quality System-Model for Quality Assurance in Final Inspection and Test.

2.3.2 National Fire Protection Association (NFPA) Publications

a. NFPA No. 70, National Electrical Code.

2.4 Precedence. - When a conflict exists between the requirements of this specification and its referenced documents, this specification shall take precedence. When conflict exists between the requirements of the contract and this specification or its referenced documents, the contract shall take precedence.

(Copies of this specification and other applicable FAA documents pertaining to the specifications may be obtained from the Contracting Officer in the Federal Aviation Administration issuing the invitation for bids or request for proposals. Request for material should identify the particular document or specification required, cite the invitation for bids, request for proposal and/or contract, or other use of the material requested.)

(Information on obtaining copies of military documents may be obtained from the Defense Automated Printing Service, Building 4/D, 700 Robbins Avenue, Philadelphia, PA 1911 l-5094. Web site: http://dodssp.daps.mil/main.htm

(Information on obtaining copies of Federal specifications and standards may be obtained from General Services Administration office in Washington, DC ; Atlanta, Auburn, Washington, Boston, Chicago, Denver, Fort Worth, Kansas City, Los Angeles, New York, Seattle, and San Francisco.)

(Information on obtaining NEMA publications may be provided by the National Electrical Manufacturers Association, 2 101 L Street, NM, Washington, DC 20037)

(Information on obtaining ANSI standards will be provided by the American National Standards Institute, 70 East 45th Street, New York, New York. Web site: http://www.ansi.org)

(Copies of the National Electric Code may be obtained from the National Fire Protection Association, Battery March Park, Quincy, Massachusetts, 02269. Web site: http://www.nfpa.org)

3 . REQUIREMENTS

3.1 Equipment to be furnished by the contractor - Each RRCIU will be delivered with appropriate site spare parts and assembled as described by DRAWINGS AE-D-1457-20, AE-D-1457-21, AE-D-1457-30. Additionally, each interface unit assembly shall meet the requirements as specified herein.

3.1.1 Equipment furnished by the Government - The Government will provide a Technical Instruction Book in accordance with FAA-D-2494b.

3.1.1. 1 Instruction Book - The government will reproduce and prepare instruction books and furnish to the contractor for shipment with equipment. Two instruction books will be issued with each piece of equipment.

3.2 General Definitions

3.2.1 Ground-ground (G/G) receiver decoder. – A radio frequency receiver decoder, usually controlled from the air traffic control tower, that decodes signals and operates the visual aids system.

3.2.2 Air-around (A/G) receiver – A radio frequency receiver, controlled by the transmitter of an approaching aircraft, which operates the visual aids system..

3.3. General functional requirements. – Each interface unit receives control signals from the G/G and/or the A/G units. An internal 12OVac to 24Vdc power supply provides DC control voltage to the G/G unit. By selection of a control function in the G/G unit, a G/G relay contact closes providing 24V to energize the coil of the appropriate relay in the RRCIU. The DC signal is routed through steering diodes to perform the necessary control function (see paragraph 3.9.3). The A/G unit sends a line voltage (12OVac) to TB 1 input pins for the different light intensities of the approach lighting system. All outputs of the interface unit will be at line potential (nominal 12OVac). Refer to figure 1 below.

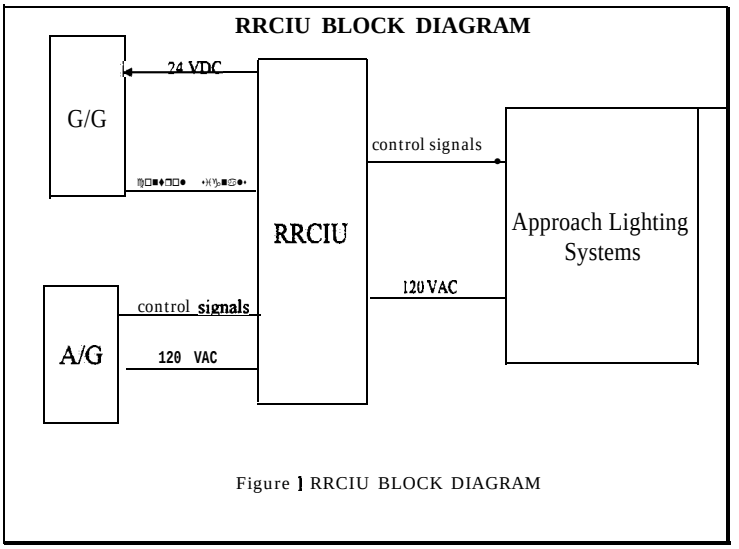


Figure 1 RRCIU BLOCK DIAGRAM

3.4 Material and parts. - All materials and parts will be as specified in the drawing package. Requests for parts deviation may be submitted to the program office, but operational and environmental testing to establish equality of parts shall be at the manufacturer expense.

3.5 Workmanshin and soldering. - Workmanship shall be in accordance with FAA-G-2 1 00f, 3.3.4. Soldering shall be in accordance with FAA-G-21 00f, 3.2.2.1.1

3.6 Equipment assembly design. - Equipment assembly design shall meet standard practices of the National Electric Code. Drawings AE-D- 1457-20 and AE-D- 1457-2 1 are guides for the assembly of the equipment. Good electrical wiring practices shall be followed in the final assembly layout.

3.6.1 Transient suppression. - The equipment shall withstand repeated transients superimposed on the interface power input of a maximum duration of 50 milliseconds and reaching a peak voltage of 20% above the normal line potential (12OVac). In addition, the equipment shall withstand a transient characterized by a 10 x 20 microsecond surge of 5,000 amperes with a secondary power follow up curve of 1 0kv/microsecond minimum. The equipment will automatically restart after the interruption from either type of transient.

3.7 Environmental conditions. - The interface unit shall be designed for outdoor use under the following environmental conditions.

3.7.1 Sand and dust. - Exposure to windblown sand and dust particles as may be encountered in arid regions.

3.7.2 Salt spray. - Exposure to salt laden atmosphere.

3.7.3 Rain.- Exposure to windblown rain.

3.7.4 Temperature. - The operating and storage temperature range of the equipment shall be from -55 degrees C (-67 degrees F) to +70 degrees C (158 degrees F).

3.7.5 Solar Radiation (Sunshine). - Exposure to sunshine with ambient temperatures as specified in 3.7.4.

3.7.6 Humidity. - 5 to 100% relative humidity. At temperature above 40 degrees F, the relative humidity shall be based upon a dew point of 40 degrees F.

3.8 Substitution of parts. - All parts and materials specifically noted on Drawings AE-D-1457-1 and AE-D-1457-20 shall be considered “standard”. Any deviation from these parts shall be considered “nonstandard” and require Government approval.

3.8.1 Circuit Card and components. - The contractor shall furnish the populated circuit card installed in its final configuration as shown on Drawing AE-D-1457- 1.

3.9 Cabinet and mounting plane.

3.9.1 Cabinet and mounting plane. – The cabinet shall be aluminum, outdoor, rainproof, and non-ventilated. Aluminum enclosures shall be treated or anodized in accordance with FAA-G-2100f, 3.3.1.2.6.2. All components enclosed in the cabinet will operate before and after the environmental testing as described in paragraph 4.2. Mounting plane for the components shall be made of aluminum. The structural metal shall not fatigue or

distort under the bending moments normally experienced during installation and shipment. The cabinet shall be hinged on the left side, facing the cabinet, with one continuous hinge. The cabinet design shall include a locking arrangement, sufficient clearance for external wiring and maintenance, no knockouts or conduit hubs, provide exterior bolt mounting, and interior mounting studs for the back plane that will not protrude through the cabinet walls.

3.9.2 Power circuitry. - The contractor shall provide a 24Vdc power supply to provide control signaling. The power supply shall be rated for continuous operation, operating tolerance 24Vdc+-0.5Vdc and maintain voltage tolerances for up to a two ampere burden. (Disan Corporation electronics model OEM24N1 .O-2 or equal.)

3.9.3 Control circuitry. - The control circuitry will be designed to operate from control inputs from either the G/G or A/G units. Inputs from the G/G unit will consist of the following:

a. Ground-to-Ground enable (tower control)
b. Air-to-Ground enable (aircraft control)
c. Low intensity MALSR
d. Medium intensity MALSR
e. High intensity MALSR
f. Off MALSR
g. Flashers "off'
h. Flashers "on"

The 24Vdc power supply will provide signaling potential through the contacts in the G/G control to latch or reset the control input relays in accordance with 3.9.3(a) through (h). Inputs from the A/G unit will be at line potential (120Vac) to indicate low, medium, and high intensity of the MALSR system. The A/G control will be slave to the G/G unit through a latching relay. The outputs shall operate the following:

1. Low intensity – MALSR
2. Medium intensity – MALSR
3. High intensity – MALSR
4. Sequenced flashers

In addition to the four outputs there are two terminals (dry contacts) which provide a connection to the A/G relay so that the RMS can sense the status of the unit. The electrical schematic diagram is as shown on Drawing AE-D-1457-30. Air-to-Ground for low intensity, line voltage will only be present on (1) Low intensity and (4) Sequenced Flashers. For medium intensity, line voltage will be present on (1) Low intensity, (2) Medium intensity and (4) Sequenced flashers. For high intensity, line voltage will be present on (1) Low intensity, (2) Medium intensity, (3) High intensity and (4) Sequenced Flashers. System off condition will have no line potential on any of the control outputs.

The electrical schematic diagram is as shown on Drawing AE-D-1457-30. Ground-to-Ground control for low intensity, line voltage will only be present on (1). For medium intensity, line voltage will be present on (1) and (2). For high intensity, line voltage will be present on (1), (2) and (3). For flashers, line voltage will be on (4). System off condition will have no line potential on any of the control outputs.

3.9.4 Lightning arrestor. - Lightning arrestor (s) shall to be installed on the power inputs to the interface unit and control input leads from the A/G unit. The arrestor (s) shall be located as close as possible to the entrance into the unit and electrically following the interface pin blocks TB1 and TB2, drawing AE-D-1457-21. In addition, surge protector(s) shall be installed on all input and output leads to meet the requirements as stated in 3.6.1. The lightning arrestor (s) and the surge protector(s) have been included in the layout drawing.

3.9.5 Wiring diagram nlate. - An elementary wiring diagram plate shall be bonded to the back of the access door of the interface unit. The diagram shall be in accordance with Drawing AE-D-1457-29.

3.10 Painting. - Aluminum surfaces shall be anodized in accordance with MIL-A-8625.

3.11 Wiring and Cabling.

3.11.1 Solid and stranded wire. - Stranded wire shall be used for all connections. Solid wire is not permitted. All wire shall be copper.

3.11.2 Wire size. - All wire within the RRCIU shall be stranded copper to 16 AWG.

3.11.3 Wire terminations. - Wires terminating at screw terminals shall have crimped lugs with no more than one wire per lug. Plastic sleeving shall be slipped over the end of the wire lugs and insulation to reduce flexing of the wire. The insulated sleeve shall be marked with the destination of the individual wire (i.e. TB3-1 etc).

3.11.4 Cabling. - Cabling shall be in conformance to FAA-G-2100f, 3.3.1.3.4.26.1 through 3.3.1.3.4.27

3.11.5 Color coding. - All color coding of insulated wiring shall be in accordance with the National Electric Code and FAA-G-2 1 00f, 3.3.1.3.4.26.11.

3.12 Assembly and marking. - All components shall be properly assembled and marked. Each electrical component shall be marked in agreement with the wiring diagram in legible characters and in close proximity to the components. Markings shall be in accordance with FAA-G-2100f, 3.3.3.2.1 through 3.3.3.2.2.10

3.13 Nameplates. - The nameplate shall be located, labeled and attached in accordance with the FAA-G-2100f 3.3.3.

3.14 Electromagnetic Interface. The equipment shall meet the following requirements of MIL-STD-461D (see paragraph 4.4).

3.14.1 Conducted Emissions. Conducted emission interference level on the input power lead of the equipment shall not exceed the limits of CE102.

3.14.2 Radiated Emissions. Radiated emission interference levels shall not exceed the limits of RE102 except that the frequency range tested shall be 2 MHz to 10 GHz. The RE 102 limit shall be in accordance with Figure RE 102-3 of MIL-STD-46 1 D for Navy Fixed and AF ground application.

3.15 Reliability The RRCIU equipment shall, through actual performance data, demonstration or reliability prediction, exhibit the reliability specified herein. The RRCIU equipment shall have a Mean Time Between Failure (MTBF) of not less than 2 190 hours, and shall have a Mean Time To Repair (MTTR) and restore the system back to its operational condition, of not more than 30 minutes.

4 VERIFICATION.

4.1 Quality Control. - Quality control shall be in accordance with ANSI/ASQC-Q-9003- 1994, QUALITY System-Model for Quality Assurance in Final Inspection and Test. The first production unit will be classified as the production model, and all testing and inspections referred to in paragraphs 4.2 through 4.3.1.3 shall be performed. All tests and inspections included under 4.3 through 4.3.1.3 shall be performed on each production unit. All discrepancies discovered by the testing will be logged and repaired prior to packaging and shipment of the unit. A list of discrepancies recorded by unit serial number will be submitted monthly to the program office.

4.2 Environmental Tests

4.2.1 Test Procedures. - An operational test shall be performed on the interface unit after the environmental test in accordance with 4.3.1.1. All test data will be forwarded to the contracting officer upon completion of the tests.

4.2.1.1 Sand and Dust. - The sand and dust test shall be performed in accordance with Procedures I and II, Method 5 10.3 of MIL-STD-8 1 OE. Air velocity shall be 1750 feet per minute for the blowing dust (small particle) test procedure. Air velocity shall be 3500 feet per minute for the blowing sand test.

4.2.1.2 Salt spray. - The salt spray test shall be performed in accordance with Procedure I, Method 509.3 of MIL-STD-81OE for a minimum of 168 hours. Any salt accumulation as a result of the test may be removed with ordinary tap water.

4.2.1.3 Rain. - The rain test shall be conducted in accordance with Procedure I, Method 506.3, of MIL-STD-810E. A rainfall rate of 4.0 inches per hour and a wind velocity of 40 miles per hour shall be applied.

4.2.1.4 Temnerature Test. - High and low temperature testing shall be conducted on the first unit of production. The high temperature test shall be in accordance with Procedure II, Method 501.3 of MIL-STD-8 1 OE, climatic category Hot (Al) except that the maximum temperature shall be +70 degrees C. The low temperature test shall be in accordance with Procedure II, Method 502.3 of MIL-STD-8 1 OE, climatic category Severe Cold (C3) with an extreme low temperature of -55 degrees C.

4.2.1.5 Humidity Test. - The humidity test shall be conducted in accordance with Procedure II, Method 507.3 of MIL-STD-810E except that a total of three complete cycles will be compared (72 hours) with a maximum humidity level of 100 percent. The maximum temperature shall be t-70 degrees C.

4.2.1.6 Solar Radiation (Sunshine) Test. - The Solar Radiation test shall be conducted in accordance with Procedure II, Method 505.3 of MIL-STD-8 1 OE. The temperature condition will be Hot-Dry per MIL-STD-8 1 OE Table 505.3-I at 49 degrees C.

4.2.1.7 Electromagnetic Interface. The equipment shall meet the following requirements of MIL-STD-461D.

4.2.1.8 Conducted Emissions. Conducted emission interference level on the input power lead of the equipment shall not exceed the limits of CE102.

4.2.1.9 Radiated Emissions. Radiated emission interference levels shall not exceed the limits of RE102 except that the frequency range tested shall be 2 MHz to 10 GHz. The RE102 limit shall be in accordance with Figure RE102-3 of MIL-STD-461D for Navy Fixed and AF ground application

4.2.2 Visual inspection. - All interface units shall be visually inspected for conformance with this specification.

4.3 Production unit testing. - Satisfactory performance of the production unit will be indicated when the test series manual 4.3.1.1-4.3-l. 1.2. or test fixture 4.3.1.2-4.3.1.2.2 are performed in the sequence listed and the indicated measurements obtained.

4.3.1 Test definitions. - This interface unit shall convert 24Vdc signals at TB1 to line voltage at TB2. This state remains until it receives the next input at TB1 from the G/G. This is accomplished by the steering diode matrix and relays K1 through K10, reference Drawing AE-D-1457-30. In addition, the interface unit will convert the line voltage signals on TB1 from the A/G to line voltage outputs at TB2 with the A/G enabled from the G/G unit. The following conditions and definitions apply to this test procedure.

Momentary. - This term is used in this specification to describe input signal simulation from the G/G controller. The duration of the connection is not critical but will be greater than ½ second and less than 2 seconds.

Line voltage. - This term is used in this specification to describe the AC input voltage (120 Vac) as measured between TB2 pin 2 and 1. The no load voltage corresponding to zero volts may vary between 0 and 10 volts depending upon the meter used.

Electrical Continuity – Continuity is the process of flow of current or difference in voltage between two points in a conducting device.

AC voltage. - AC voltage measurements are RMS voltages.

4.3.1.1 Manual Test Procedures.- The contractor shall test each printed-circuit board to verify correct components, component installation, component operation, and printed-circuit conductive pattern. To test the printed circuit board, a voltmeter, a test jumper, 24 volt power supply, and a 120 volt source is needed. Attach the 24 volt power source to TB3-1 (Return) and TB3-2 (V1) and a 120 volt source to TB2-11(Neutral) and TB2-12(L120V).(Reference Drawing AE-D-1457-30)

Locate the test jumper J1 and review locations of G/G, A/G, low, medium, high, off, flasher off (Fl0), and flasher on (FL1).

Care must be taken when measuring the voltages as some are nominally 24 Vdc while others are 120 Vac. The point of reference for DC measurements is TB3-1 while the reference for the 120 Vac measurements is TB2-2 or TB2-11. TB2 pins 8/9 are dry contacts and must be measured with an ohmmeter.

4.3.1.2 Manual TEST SET-UP

1. Ensure 24 Vdc power supply is attached at TB3- 1 which is return negative and TB3-2 (V1) which is positive.

2. Apply a 120 Vac source to +120 Vac to TB2-11 and neutral to TB2-12.

3. Make sure RRCIU outputs are off by executing the following procedure:

   a. Place RRCIU in G/G mode by momentarily placing the test jumper on J1 G/G.
   b. Turn flashers off by momentarily placing test jumper on J1 FLO.
   c. Turn intensity off by momentarily placing test jumper on J1 OFF.

4. Remove all jumper wires on J1 .

4.3.1.3 G/G Mode

1. Place RRCIU in G/G mode (with lights and flashers off) by momentarily placing the test jumper on J1 G/G, then OFF, then FLO.

Verify the system is in G/G mode by measuring the resistance between TB2-8 and TB2-9. It should be an open circuit. Connect one lead of voltmeter to TB2-2 (neutral) for 120 Vac, and verify the following conditions:

TB	Pin	Signal Name	Exnected Value	
TB2	3	MALSLO	0	Vac
TB2	4	MALSMED	0	Vac
TB2	5	MALSHI	0	Vac
TB2	7	FL	0	Vac

2. Place RRCIU in low intensity mode with flashers off by momentarily placing test jumper on J1 LOW.

Connect one lead of the voltmeter to TB2-2 (Neutral) for 120 Vac, and verify the following conditions.

TB	Pin	Signal Name	Expected Value	
TB2	3	MALSLO	120	Vac
TB2	4	MALSMED	0	Vac
TB2	5	MALSHI	0	Vac
TB2	7	FL	0	Vac

3 Place RRCIU in medium intensity mode with flashers off by momentarily placing test jumper on J1 MED.

Connect one lead of the voltmeter to TB2-2 (Neutral) for 120 Vac, and verify the following conditions.

TB	Pin	Signal Name	Exnected Value	
TB2	3	MALSLO	120	Vac
TB2	4	MALSMED	120	Vac
TB2	5	MALSHI	0	Vac
TB2	7	FL	0	Vac

4 Place RRCIU in high intensity mode with flashers off by momentarily placing test jumper on J1 HI.

Connect one lead of the voltmeter to TB2-2 (Neutral) for 120 Vac, and verify the following conditions.

TB	Pin	Signal Name	Expected Value	
TB2	3	MALSLO	120	Vac
TB2	4	MALSMED	120	Vac
TB2	5	MALSHI	120	Vac
TB2	7	FL	0	Vac

5. Place RRCIU in high intensity mode with flashers on by momentarily placing test jumper on J1 FL1.

Connect one lead of the voltmeter to TB2-2 (Neutral) for 120 Vac, and verify the following conditions.

TB	Pin	Signal Name	Expected Value	
TB2	3	MALSLO	120	Vac
TB2	4	MALSMED	120	Vac
TB2	5	MALSHI	120	Vac
TB2	7	FL	120	Vac

6. Place RRCIU in high intensity mode with flashers off by momentarily placing test jumper on J1 FLO.

Connect one lead of voltmeter to TB2-2 (Neutral) for 120 Vac, and verify the following conditions.

TB	Pin	Signal Name	Expected Value	
TB2	3	MALSLO	120	Vac
TB2	4	MALSMED	120	Vac
TB2	5	MALSHI	120	Vac
TB2	7	FL	0	Vac

7. Turn RRCIU outputs off by momentarily placing the test jumper on J1 OFF.

Connect one lead of the voltmeter to TB2-2 (Neutral) for 120 Vac, and verify the following conditions.

TB	Pin	Signal Name	Expected Value
TB2	3	MALSLO	0 Vac
TB2	4	MALSMED	0 Vac
TB2	5	MALSHI	0 Vac
TB2	7	FL	0 Vac

4.3.1.4 RMS CONTACT CHECKOUT

1. Place RRCIU in G/G mode by momentarily placing test jumper on J1 G/G. Check for contact open (no continuity, infinity)

Measure the continuity between TB2-8 (RMS 1) and TB2-9 (RMS2) and record. (open)

2. Place RRCIU in A/G mode by momentarily placing test jumper on J1 A/G. Check for contact closure (continuity, less than 100 ohms)

Measure the continuity between TB2-8 and TB2-9 and record. (close)

4.3.1.5 A/G MODE

1. Place RRCIU in A/G mode by momentarily placing test jumper on J1 A/G.

Verify the system is in A/G mode by measuring the resistance between TB2-8 and TB2-9. It should be less than 100 ohms. Connect one lead of the voltmeter to TB2-2 (neutral) for 120 Vac, and verify the following conditions:

TB	Pin	Signal Name	Expected Value
TB2	3	MALSLO	0 Vac
TB2	4	MALSMED	0 Vac
TB2	5	MALSHI	0 Vac
TB2	7	FL	0 Vac

2. Place RRCIU in low intensity with flashers on by connecting a wire between TB2-1 (L 120V) and TB 1- 1 O(LOCONT).

Connect one lead of the voltmeter to TB2-2 (neutral) for 120 Vac, and verify the following conditions:

TB	Pin	Signal Name	Exnected Value	
TB2	3	MALSLO	120	Vac
TB2	4	MALSMED	0	Vac
TB2	5	MALSHI	0	Vac
TB2	7	FL	120	Vac

3. Remove wire between TB2-1 and TBl-10.

4. Place RRCIU in medium intensity with flashers on by connecting two wires between TB2-1 and TBl-1 1(MEDCONT), and TB1-11 and TB1-10.

Connect one lead of the voltmeter to TB2-2 (neutral) for 120 Vac, and verify the following conditions:

TB	Pin	Signal Name	Expected Value	
TB2	3	MALSLO	120	Vac
TB2	4	MALSMED	120	Vac
TB2	5	MALSHI	0	Vac
TB2	7	FL	120	Vac

5. Remove wires between TB2-1 and TB1-11, and TBl-11 and TBl-10.
6. Place RRCIU in high intensity with flashers on by connecting a wire between TB2-1 and TB1-12, TB1-12 and TB1-11, and TBl-11 and TB1-10.

Connect one lead of the voltmeter to TB2-2 (neutral) for 120 Vac, and verify the following conditions:

TB	Pin	Signal Name	Exnected Value	
TB2	3	MALSLO	120	Vac
TB2	4	MALSMED	120	Vac
TB2	5	MALSHI	120	Vac
TB2	7	FL	120	Vac

7. Turn RRCIU outputs off by removing wires between TB2- 1 and TB 1 - 12, TB 1- 12 and TB1-11, and TB1-11 and TB1-10.

Connect one lead of the voltmeter to TB2-2 (neutral) for 120 Vac, and verify the following conditions:

TB	Pin	Signal Name	Expected Value
TB2	3	MALSLO	0 Vac
TB2	4	MALSMED	0 Vac
TB2	5	MALSHI	0 Vac
TB2	7	FL	0 Vac

4.3.1.6 MEMORY TEST

The purpose of this test is to determine if the RRCIU returns to the previous G/G state after being in A/G mode.

1. Place RRCIU in G/G mode by momentarily placing the test jumper on J1 G/G.
2. Place RRCIU intensity off by momentarily placing the test jumper on J1 OFF.
3. Turn flashers Off by momentarily placing the test jumper on J1 FLO.
4. Place RRCIU in A/G mode by momentarily placing the test jumper on J1 A/G.
5. Place RRCIU in low intensity with flashers on by connecting a wire between TB2-1 and TB1-10.
6. Return to G/G mode by momentarily placing the test jumper on J1 G/G and make the following measurements:

Verify the system is in G/G mode by measuring the resistance between TB2-8 (FL1) and TB2-9 (V1). It should be an open circuit. Connect one lead of the voltmeter to TB2-2 (neutral) for 120 Vac, and verify the following conditions:

TB	Pin	Signal Name	Expected Value
TB2	3	MALSLO	0 Vac
TB2	4	MALSMED	0 Vac
TB2	5	MALSHI	0 Vac
TB2	7	FL	0 Vac

7. Remove jumper wire between TB2-1 and TB1-10.
8. Place RRCIU in G/G mode by momentarily placing the test jumper on J1 G/G.
9. Place RRCIU in low intensity by momentarily placing the test jumper on J1 LOW.
10. Turn flashers Off by momentarily placing the test jumper on J1 FLO.
11. Place RRCIU in A/G mode by momentarily placing the test jumper on J1 A/G.

12. Place RRCIU in medium intensity with flashers on by connecting two wires between TB2-1 and TB1-10, and TBl-10 and TB1-11.
13. Return to G/G mode by momentarily placing the test jumper on J1 G/G and make the following measurements:

Verify the system is in G/G mode by measuring the resistance between TB2-8 and TB2-9. It should be an open circuit. Connect one lead of the voltmeter to TB2-2 (neutral) for 120 Vac, and verify the following conditions:

TB	Pin	Signal Name	Expected Value
TB2	3	MALSLO	120 Vac
TB2	4	MALSMED	0 Vac
TB2	5	MALSHI	0 Vac
TB2	7	FL	0 Vac

14. Remove two wires between TB2-1 and TBl-10, and TBl-10 and TBl-11.
15. Place RRCIU in G/G mode by momentarily placing the test jumper on J1 G/G.
16. Place RRCIU in low intensity by momentarily placing the test jumper on J1 LOW.
17. Turn flashers On by momentarily placing the test jumper on J1 FL1 .
18. Place RRCIU in A/G mode by momentarily placing the test jumper on J1 A/G.
19. Place RRCIU in high intensity with flashers on by connecting three wires between TB2-1 and TB1-12, TB1-12 and TB1-11, and TB1-10 and TB1-11.
20. Return to G/G mode by momentarily placing the test jumper on J1 G/G and make the following measurements:

Verify the system is in G/G mode by measuring the resistance between TB2-8 and TB2-9. It should be an open circuit. Connect one lead of the voltmeter to TB2-2 (neutral) for 120 Vac, and verify the following conditions:

TB	Pin	Signal Name	Expected Value
TB2	3	MALSLO	120 Vac
TB2	4	MALSMED	0 Vac
TB2	5	MALSHI	0 Vac
TB2	7	FL	120 Vac

21. Remove three wires between TB2-1 and TB1-12, TB1-12 and TB1-11, and TB1-10 and TB1-11.
22. Place RRCIU in G/G mode by momentarily placing the test jumper on J1 G/G.
23. Place RRCIU in medium intensity by momentarily placing the test jumper on J1 MED.
24. Turn flashers Off by momentarily placing the test jumper on J1 FLO.
25. Place RRCIU in A/G mode by momentarily placing the test jumper on J1 A/G.

26. Place RRCIU in high intensity with flashers on by connecting a wire between TB2-1 and TB1-12, TB1-12 and TB1-11, and TB1-10 and TBl-11.
27. Return to G/G mode by momentarily placing the test jumper J1 on G/G and make the following measurements:

Verify the system is in G/G mode by measuring the resistance between TB2-8 and TB2-9. It should be an open circuit. Connect one lead of the voltmeter to TB2-2 (neutral) for 120 Vac, and verify the following conditions:

TB	Pin	Signal Name	Expected Value
TB2	3	MALSLO	120 Vac
TB2	4	MALSMED	120 Vac
TB2	5	MALSHI	0 Vac
TB2	7	FL	0 Vac

28. Remove three wires between TB2-1 and TB1-12, TB1-12 and TBl-11, and TBl-10 and TB1-11.
29. Place RRCIU in G/G mode by momentarily placing the test jumper on Jl G/G.
30. Place RRCIU in medium intensity by momentarily placing the test jumper on J1 MED.
31. Turn flashers On by momentarily placing the test jumper on J1 FL1 .
32. Place RRCIU in A/G mode by momentarily placing the test jumper on J1 A/G.
33. Place RRCIU in medium intensity with flashers on by connecting two wires between TB2-1 and TB1-11 and TBl-11 and TBl-10.
34. Return to G/G mode by momentarily placing the test jumper J1 on G/G and make the following measurements:

Verify the system is in G/G mode by measuring the resistance between TB2-8 and TB2-9. It should be an open circuit. Connect one lead of the voltmeter to TB2-2 (neutral) for 120 Vac, and verify the following conditions:

TB	Pin	Signal Name	Expected Value
TB2	3	MALSLO	120 Vac
TB2	4	MALSMED	120 Vac
TB2	5	MALSHI	0 Vac
TB2	7	FL	120 Vac

35. Remove two wires between TB2-1 and TBl-11 and TBl-11 and TBl-10.
36. Place RRCIU in G/G mode by momentarily placing the test jumper on J1 G/G.
37. Place RRCIU in high intensity by momentarily placing the test jumper on J1 HI.
38. Turn flashers Off by momentarily placing the test jumper on J1 FLO.
39. Place RRCIU in A/G mode by momentarily placing the test jumper on J1 A/G.

40. Place RRCIU in low intensity with flashers on by connecting a wire between TB2-1 and TBl-10.
41. Return to G/G mode by momentarily placing the test jumper on J1 G/G and make the following measurements:

Verify the system is in G/G mode by measuring the resistance between TB2-8 and TB2-9. It should be an open circuit. Connect one lead of the voltmeter to TB2-2 (neutral) for 120 Vac, and verify the following conditions:

TB	Pin	Signal Name	Exnected Value	
TB2	3	MALSLO	120	Vac
TB2	4	MALSMED	120	Vac
TB2	5	MALSHI	120	Vac
TB2	7	FL	0	Vac

42. Remove jumper wire between TB2-1 and TBl-10.
43. Place RRCIU in G/G mode by momentarily placing the test jumper on J1 G/G.
44. Place RRCIU in high intensity by momentarily placing the test jumper on J1 HI.
45. Turn flashers On by momentarily placing the test jumper on J1 FL1 .
46. Place RRCIU in A/G mode by momentarily placing the test jumper on J1 A/G.
47. Place RRCIU in medium intensity with flashers on by connecting two wires between TB2-1 and TB1-11 and TB1-11 and TB1-10.
48. Return to G/G mode by momentarily placing the test jumper on J1 G/G and make the following measurements:

Verify the system is in G/G mode by measuring the resistance between TB2-8 and TB2-9. It should be an open circuit. Connect one lead of the voltmeter to TB2-2 (neutral) for 120 Vac, and verify the following conditions:

TB	Pin	Signal Name	Exnected Value	
TB2	3	MALSLO	120	Vac
TB2	4	MALSMED	120	Vac
TB2	5	MALSHI	120	Vac
TB2	7	FL	120	Vac

49. Remove two wires between TB2-1 and TB1-11 and TB l-l 1 and TB1-10.

4.3.2 Test Fixture Test Procedure.

a. Disconnect power from the RRCIU Test Unit by removing the AC line voltage plug from the wall socket.
b. Connect each of the labeled wires from the RRCIU Test Unit cables to the pin board contact shown on the wire label.

c. Restore power to the RRCIU Test Unit by connecting the power input plug to the wall socket.
d. Turn on test fixture

4.3.2.1 Fixture Test

Before performing the test, press the following buttons: MALSR OFF, FLASHER OFF, and G/G to assure that the test will run correctly.

a. Press the A/G button. Observe the following conditions.

Indicator	ON/OFF
LOW	OFF
MEDIUM	OFF
HIGH	OFF
FL	OFF
RMS	ON

b. Flip A/G toggle switch (1) up for LOW. Observe the following conditions.

Indicator	ON/OFF
LOW	ON
MEDIUM	OFF
HIGH	OFF
FL	ON
RMS	ON

c. Flip A/G toggle switches (1) and (2) up for MEDIUM. Observe the following conditions.

Indicator	ON/OFF
LOW	ON
MEDIUM	ON
HIGH	OFF
FL	ON
RMS	ON

d. Flip A/G toggle switches (1), (2), and (3) up for HIGH. Observe the following conditions.

Indicator	ON/OFF
LOW	ON
MEDIUM	ON
HIGH	ON
FL	ON
RMS	ON

e. Press the following buttons: G/G, MALSR OFF, and FLASHER OFF. Observe the following conditions.

Indicator	ON/OFF
LOW	OFF
MEDIUM	OFF
HIGH	OFF
FL	OFF
RMS	OFF

f. Press the MALSR LOW button. Observe the following conditions.

Indicator	ON/OFF
LOW	ON
MEDIUM	OFF
HIGH	OFF
FL	OFF
RMS	OFF

g. Press the MALSR MEDIUM button. Observe the following conditions.

Indicator	ON/OFF
LOW	ON
MEDIUM	ON
HIGH	OFF
FL	OFF
RMS	OFF

h. Press the MALSR HIGH button. Observe the following conditions.

Indicator	ON/OFF
LOW	ON
MEDIUM	ON
HIGH	ON
FL	OFF
RMS	OFF

i. Press the FLASHER ON button. Observe the following conditions.

Indicator	ON/OFF
LOW	ON
MEDIUM	ON
HIGH	ON
FL	ON
RMS	OFF

j . Press the FLASHER OFF button. Observe the following conditions.

Indicator	ON/OFF
LOW	ON
MEDIUM	ON
HIGH	ON
FL	OFF
RMS	OFF

k. Press the MALSR OFF button. Observe the following conditions:

Indicator	ON/OFF
LOW	OFF
MEDIUM	OFF
HIGH	OFF
FL	OFF
RMS	OFF

4.3.2.2 Memory Test

a. Press the MALSR OFF, FLASHER OFF, and G/G buttons.
b. Flip all A/G toggle switches down.
c. Push A/G button, flip A/G toggle switch (1) up, and then push G/G button. Observe the following conditions:

Indicator	ON/OFF
LOW	OFF
MEDIUM	OFF
HIGH	OFF
FL	OFF
RMS	OFF

d. Flip all A/G toggle switches down.
e. Push MALSR LOW button.
f. Push A/G button.
g. Flip A/G toggle switches (1) and (2) up, and then push G/G button. Observe the following conditions:

Indicator	ON/OFF
LOW	ON
MEDIUM	OFF
HIGH	OFF
FL	OFF
RMS	OFF

h. Flip all A/G toggle switches down.
i. Push MALSR LOW and FLASHER ON buttons.
j. Push A/G button.
k. Flip A/G toggle switches (1), (2), and (3) up, and then push G/G button. Observe the following conditions:

Indicator	ON/OFF
LOW	ON
MEDIUM	OFF
HIGH	OFF
FL	ON
RMS	OFF

l. Flip all A/G toggle switches down.
m. Push FLASHER OFF button.
n. Push MALSR MEDIUM button.
o. Push A/G button.
p. Flip A/G toggle switches (1), (2), and (3) up, and then push G/G button. Observe the following conditions:

Indicator	ON/OFF
LOW	ON
MEDIUM	ON
HIGH	OFF
FL	OFF
RMS	OFF

q. Flip all A/G toggles switches down.
r. Push MALSR MEDIUM button.
s. Push FLASHER ON button.
t. Push A/G button.
u. Flip A/G toggle switches (1) and (2) up, and then push G/G button. Observe the following conditions:

Indicator	ON/OFF
LOW	ON
MEDIUM	ON
HIGH	OFF
FL	ON
RMS	OFF

v. Flip all A/G toggle switches down.
w. Push FLASHER OFF button.
x. Push MALSR HIGH button.

y. Push A/G button.
z. Flip A/G toggle switch (1) up, and then push G/G button. Observe the following conditions:

Indicator	ON/OFF
LOW	ON
MEDIUM	ON
HIGH	ON
FL	OFF
RMS	OFF

aa. Flip all A/G toggle switches down.
bb. Push MALSR HIGH button.
cc. Push FLASHER ON button.
dd. Push A/G button.
ee. Flip A/G toggle switch (1) and (2) up, and then push G/G button. Observe the following conditions:

Indicator	ON/OFF
LOW	ON
MEDIUM	ON
HIGH	ON
FL	ON
RMS	OFF

ff. Flip all A/G toggle switches down.
gg. Push MALSR OFF, FLASHER OFF, G/G buttons.
hh. Flip power switch off.

4.3.2.3 Remove the AC line voltage and disconnect TB1 and TB2 test leads from the RRCIU Test Unit. Enter the copy of test results in the test log and insert a copy of the test results in the RRCIU.

5. PACKAGING

5.1 Preservation, Packaging and Packing

a. All components and equipment (except spares) shall be individually preserved and packaged level A and packed level B IAW MIL-STD-2073-1 B, DOD Material Procedures Development and Application of Packaging Requirements.

b. Spares shall be preserved and packaged level A, and packed level C IAW MIL-STD-2073-1B.

c. Common hardware items shall be packaged in multiple unit pack quantities as normally supplied through retail trade channels or in standard commerical unit packed quantities compariable with the unit of issue (e.g. if unit of issue is gross then unit of package of package is gross). Appendix B, Factors and formulas establishing Quantity packed (QP) and Interim Container Quantity (ICQ) of MIL-STD-2073-1B shall be used as a guide in determining the quantity per container.

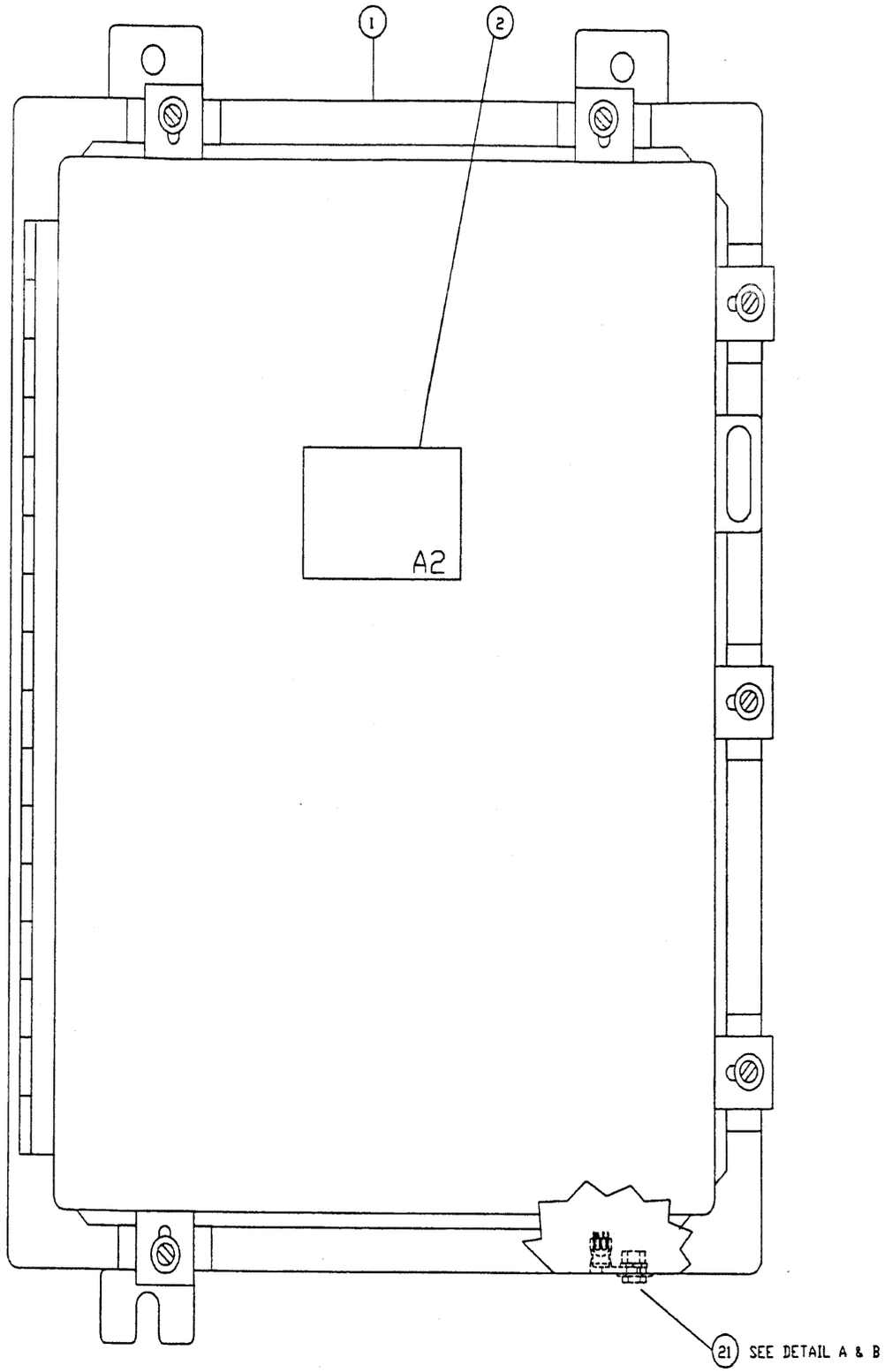
d. Kits shall be preserved and packaged level A and packed lelvel C IAW Appendix E, Development of Packaging Requirements of Kits (Parts and Modifications), of MIL-STD-2073-1 B

5.2 Marking

All components, equipment, and spares consigned to the FAA Logistic Center shall be marked IAW MIL-STD-129L, Marking for Shipment and Storage and MIL-STD-1189B, Standard Department of Defense Bar Code Symbology. In addition MIL-STD-1291 and MIL-STD-1189B, each unit, intermediate, and exterior container shall be marked with the following information:

1) National Stock Number (NSN)
2) Serial Number
3) Part Number
4) Warranty Expiration Data
5) Contract Number
6) Contract Line Item Number

6. Notes - none



ITEM	REF DES	DESCRIPTION	MFG. / PART #	QTY
1	A1	Enclosure, aluminum, NEMA 4X, continuous hinge	Hoffman Eng./A-20H1606ALLP	1
2	A2	Identification Plate	AE-D-1457/31	1
3	A3	Schematic Decal	AE-D-1457/29	1
4	A1A1	Mounting Panel, aluminum	Hoffman Eng./A-20P16AL	1
5	- - -	Screw, cap, hexag. head, 1/4-16, 5/8" long	- - -	4
6	- - -	Washer, flat, 11/16" OD, 13/32" ID, 1/16" thick	- - -	4
7	A1A1A2	Power Supply, 24 V, 1.0 A	Disan Corporation/10960	1
8	- - -	Screw, # 5 x 3/8", UNC-2A thread	MS51957-28	2
9	- - -	Washer, #6 Split Ring	MS35338-136	2
10	A1A1W1	Cable	AE-D-1457/32	1
11	- - -	Rectangular Standoff	AE-D-1457/26A	3
12	- - -	Rectangular Standoff	AE-D-1457/26B	3
13	- - -	Screw #8-32 x 1/2"	MS51957-45	18
14	- - -	Washer, #8 FLAT	MS15795-856	9
15	- - -	Washer, #8 Split Ring	MS35338-137	18
16	A1A1A1	RRCIU PWB Assembly	AE-D-1457/1	1
17	- - -	Screw, Cap, Hex Head, 1/4-20 x 1/2"	MS35307-303	1
18	- - -	Washer, 1/4 Flat	MS15795-811	1
19	- - -	Hex nut, 1/4-20 UNC-2B	MS35649-2254	1
20	- - -	Washer, 1/4 Split Ring	MS35338-139	1
21	- - -	Grounding Lug	Thomas & Betts/KA4C	1
22	- - -	Screw #4-40 x 1/4"	MS51957-13	4
23	- - -	Washer, No.4 Split Ring	MS35338-135	4
24	- - -	Hex Nut, #4-40 UNC-2B	MS35649-244	4

NOTES:

1. BEFORE ASSEMBLING, ALL NON-ALUMINUM COMPONENTS SHALL BE REMOVED, AND THE ENCLOSURE SHALL BE CHEMICALLY TREATED PER MIL-C-5541E, CLASS 3.

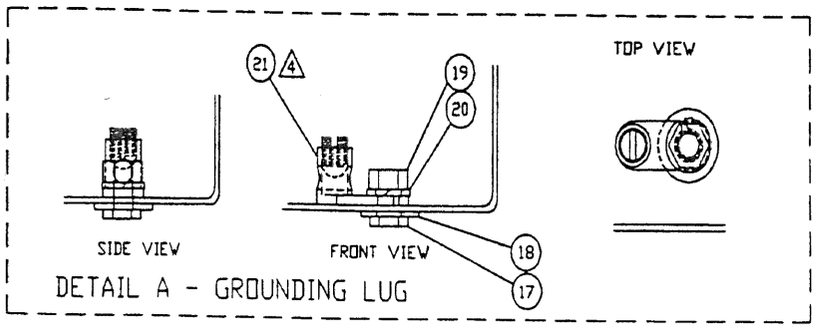
2. FOLLOWING THE CHEMFILM TREATMENT SPECIFIED IN NOTE 1, THE ENCLOSURE SHALL BE ANODIZED PER MIL-A-8625F, TYPE II, CLASS 1.

△ 3. ITEMS 5 & 6 ARE PROVIDED WITH ITEM 1.

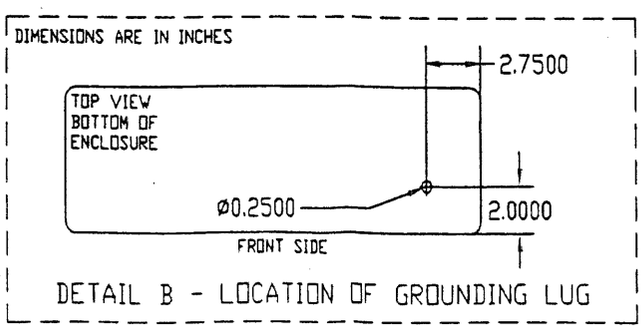
△ 4. THE OUTLINE OF ITEM 21 SHALL BE MASKED OFF PRIOR TO ANODIZATION, SO THAT THE SURFACE OF CONTACT WILL REMAIN CONDUCTIVE.

△ 5. THE FOUR THREADED INSERTS OF ITEM 1 SHALL BE MASKED OFF PRIOR TO ANODIZATION, SO THAT THE SURFACE OF CONTACT BETWEEN THE INSERT AND ITEM 5 WILL REMAIN CONDUCTIVE.

6. IF REMOVED, THE RUBBER GASKET OF ITEM 1 SHOULD BE REATTACHED WITH AN OIL-RESISTANT ADHESIVE OR REPLACED WITH A GASKET APPROVED BY THE MANUFACTURER.



DETAIL A - GROUNDING LUG



DETAIL B - LOCATION OF GROUNDING LUG

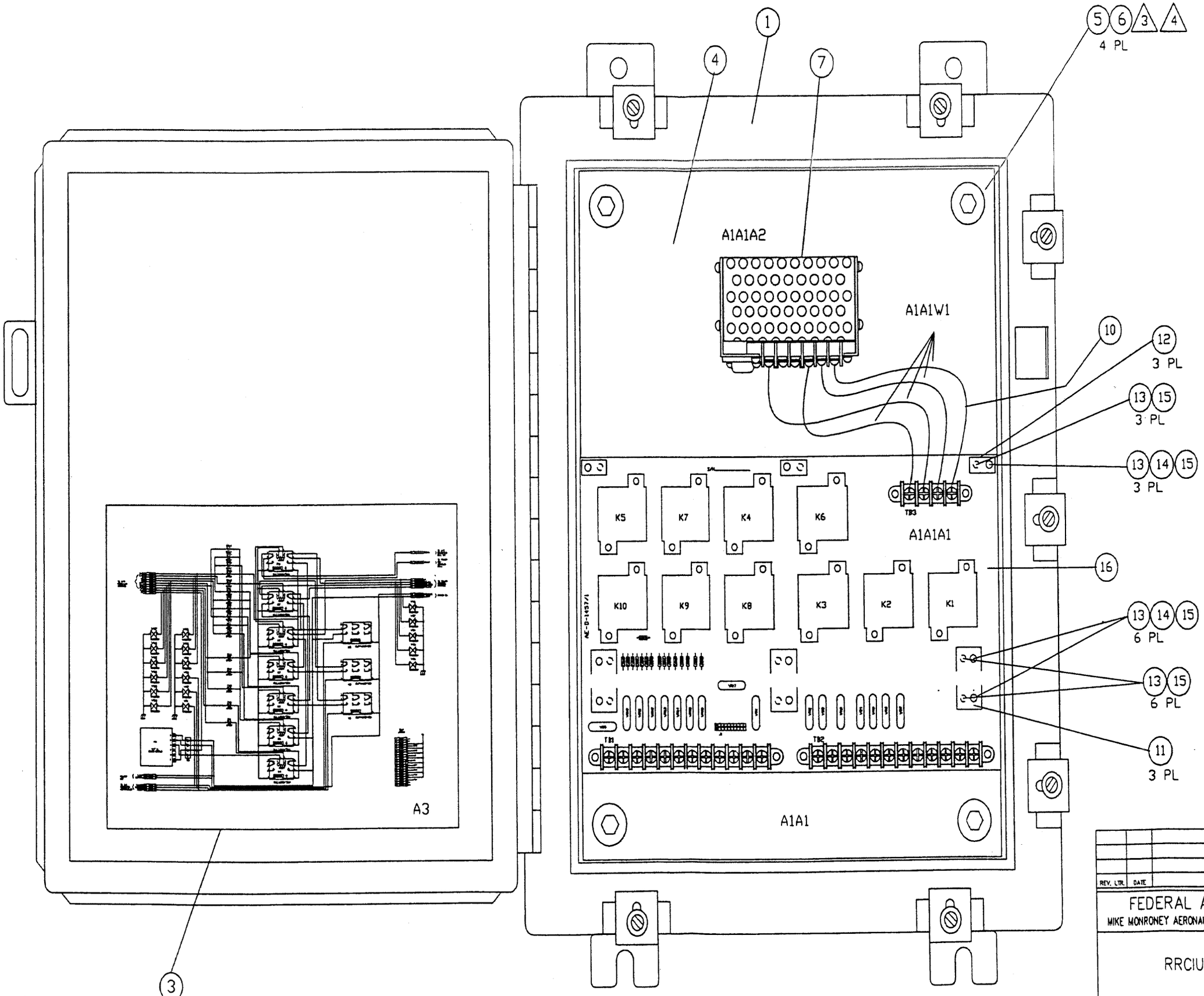
REV. LTR.	DATE	DESCRIPTION	CHECKED	APPROVED
A	11/17/1999	Changed Item 5 Part Number		

FEDERAL AVIATION ADMINISTRATION
MIKE MONRONEY AERONAUTICAL CENTER OKLAHOMA CITY, OKLAHOMA 73125

RRCIU CABINET ASSEMBLY (WITH PARTS LIST)

REVIEWED BY	DATE REVIEWED	SUBMITTED BY	APPROVED BY
		H. Cyrus	

DRAWN BY / DRAFTER — DATE: JUNE 1, 1999 — PROJECT NO. 242-1999M041A — REV. LTR. A
CHECKED BY / DANA MARRIS — ISSUED BY 240 — DRAWING NO. AE-D-1457-20
SCALE: NONE — SHEET 1 OF 13



REV. LTR.	DATE	DESCRIPTION	CHECKED	APPROVED

FEDERAL AVIATION ADMINISTRATION

MIKE MONRONEY AERONAUTICAL CENTER OKLAHOMA CITY, OKLAHOMA 73125

RRCIU CABINET ASSEMBLY

REVIEWED BY	DATE REVIEWED	SUBMITTED BY	APPROVED BY
		H. Cyrus	Bud Russell

DRAWN BY DRAFTER — DATE: JUNE 1, 1999

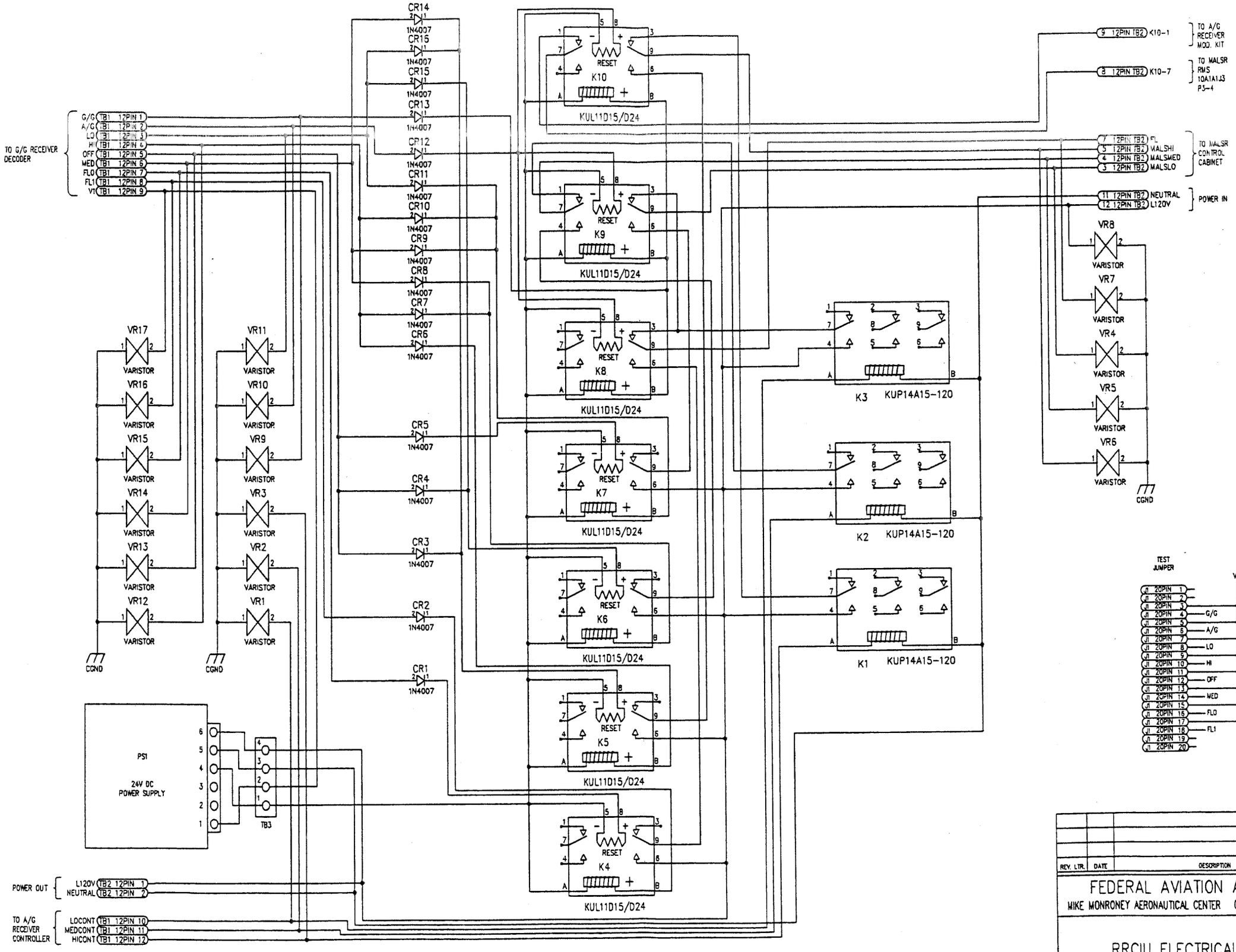
CHECKED BY DANIEL MARTIN — ISSUED BY 240

SCALE: NONE — SHEET 2 OF 13

PROJECT NO. 242-1999M041A

DRAWING NO. AE-D-1457-21

REV. LTR.



REV. LTR.	DATE	DESCRIPTION	CHECKED	APPROVED

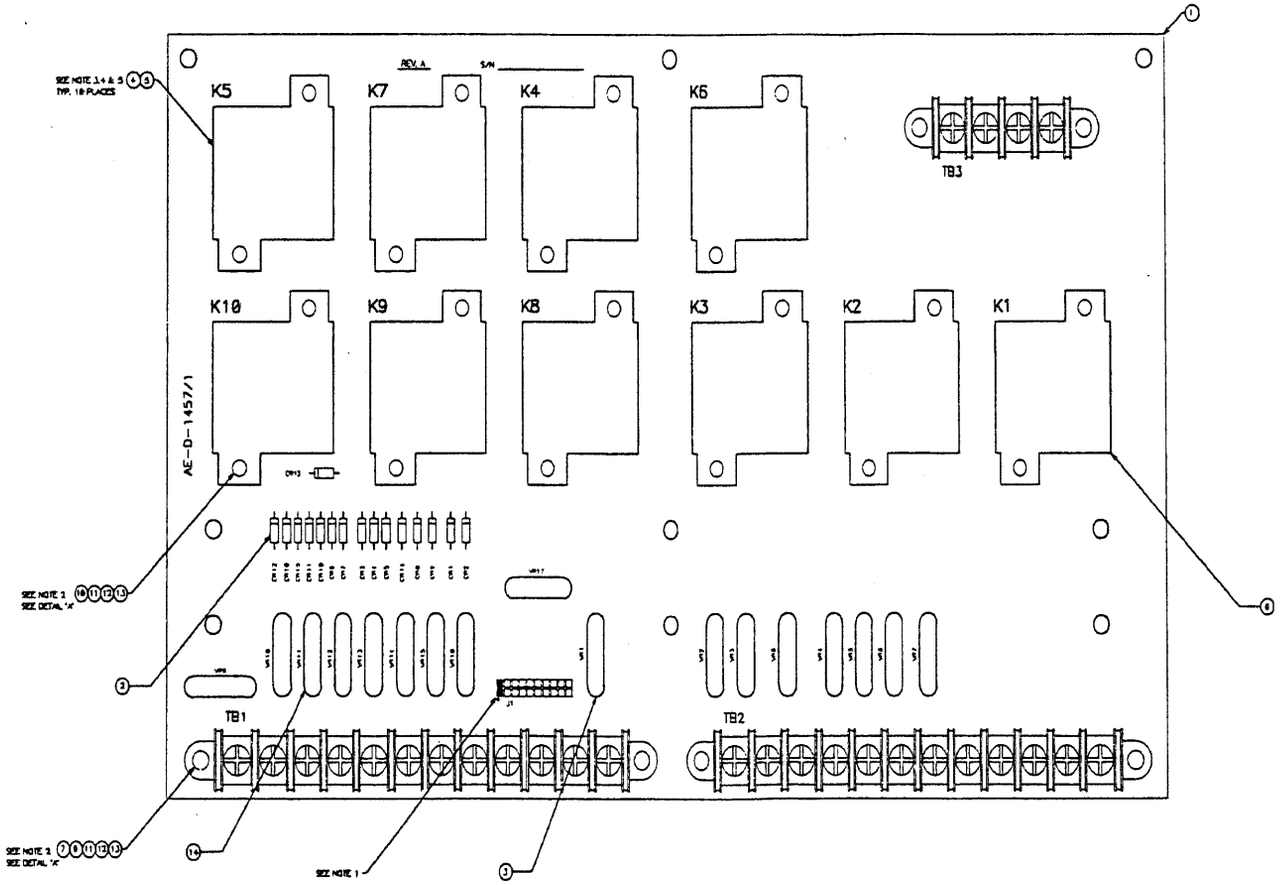
FEDERAL AVIATION ADMINISTRATION
MIKE MONRONEY AERONAUTICAL CENTER OKLAHOMA CITY, OKLAHOMA 73125

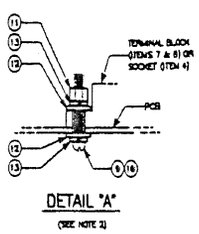
RRCIU ELECTRICAL SCHEMATIC

REVIEWED BY	DATE REVIEWED	SUBMITTED BY	APPROVED BY
		H. Cyrus	Bud Russell
DRAWN BY DRAFTER		DATE: JUNE 1, 1999	PROJECT NO. 242-1999M041A
CHECKED BY CHRIS HARRIS		ISSUED BY 240	DRAWING NO. AE-D-1457-30
		SCALE: NONE	SHEET 11 OF 13

REV. LTR.

ITEM NO	REF DES	DESCRIPTION	MFR/PART NO	QTY
1		PWB ASSEMBLY, RADIO REMOTE CONTROL	AE-D-1457/1	1 EA
2	CR1-CR15	DIODE, GENERAL PURPOSE RECTIFIER, 1000V MAX REVERSE VOLTAGE DO-41 PACKAGE	MICROSEMI/1N4007 OR 1N4007GP OR MOTOROLA/1N4007RL	15 EA
3	VR1-VR8	TRANSIENT/SURGE ABSORBERS, 200 VOLTS, 6500A SURGE CURRENT	PANASONIC/ERZ-V200271 OR SIEMENS /SIOV-S20K175	8 EA
4	XK1-XK10	SOCKET, RELAY PCB MOUNT	SIEMENS ELECTROMECHANICAL, POTTER & BRUMFIELD/27E045	10 EA
5	K4-K10	RELAY, LATCHING, 2 FORM C CONTACTS, 10A CONTACTS, 24 VOLT COILS	SIEMENS ELECTROMECHANICAL, POTTER & BRUMFIELD/ KUL-11D15D-24	7 EA
6	K1-K3	RELAY, GENERAL PURPOSE, 3 FORM C CONTACTS, 10A CONTACTS, 120VAC COIL	SIEMENS ELECTROMECHANICAL, POTTER & BRUMFIELD/ KUP-14A15-120	3 EA
7	TB1,TB2	TERMINAL BLOCK, 0.438 INCH CENTERS, 600V, PCB MOUNT, 12 POLES	BEAU/63512	2 EA
8	TB3	TERMINAL BLOCK, 0.438 INCH CENTERS, 600V, PCB MOUNT, 4 POLES	BEAU/63504	1 EA
9		#6 x 3/4 INCH CROSS RECESSED SCREW, UNC-2A THREAD	MS51957-32	6 EA
10		#6 x 5/8 INCH CROSS RECESSED SCREW, UNC-2A THREAD	MS51957-31	28 EA
11		#6 HEXNUT, UNC-2B	MS35649-264	25 EA
12		#6 FLAT WASHER, 0.312 INCH OD	MS15795-305	52 EA
13		#6 LOCKWASHER, SPLIT RING	MS35338-135	52 EA
14	VR9-VR17	TRANSIENT/SURGE ABSORBERS, 33 VOLTS, 2000A SURGE CURRENT	PANASONIC/ERZ-V20D330 OR SIEMENS/SIOV-S20K20	9 EA
15	J1	HEADER, 0.100 INCH CENTERS, 0.025 SQUARE POST	SULLINS/PTC10DFBN OR DIGIKEY S2222-10 OR EQUIVALENT	1 EA
16	JP1	SHORTING JUMPER, 0.100 INCH	SULLINS/STC02SYAN OR DIGIKEY S9000 OR EQUIVALENT	1 EA





DETAIL "A"
(SEE NOTE 2)

NOTES:

1. INSTALL SHORTING JUMPER, (ITEM 16), ON HEADER J1, (ITEM 15), AT END POSITION PINS 1 AND 2.
2. TIGHTEN MOUNTING SCREWS (ITEMS 9 & 10) UNTIL THE SCREW HEAD AND NUT (ITEM 11) CAN BE FELT BOTTOMING AGAINST THE FLEXIBLE SPLIT RING LOCK WASHERS (ITEM 13).
3. WHEN SOLDERING RELAY SOCKETS XK1-XK10 (ITEM 4), TAKE STEPS TO AVOID SOLDER WICKING UP THROUGH THE TAB CONNECTORS, WHICH COULD PREVENT INSTALLATION OF RELAYS K1-K10 (ITEMS 5 & 6). THIS MAY BE DONE BY INSTALLING RELAYS DURING SOLDER PROCESSING, BY HAND SOLDERING, OR BY OTHER METHODS.
4. INSTALL GENERAL PURPOSE RELAYS (ITEM 6) IN RELAY SOCKETS XK1-XK3.
5. INSTALL LATCHING RELAYS (ITEM 5) IN RELAY SOCKETS XK4-KX10.
6. MARK SERIAL NUMBER ON ASSEMBLY TOP IN SPACE PROVIDED. USE PERMANENT NONCONDUCTIVE, HIGH CONTRAST INKS OR LABELS PER IPC-2221, WITH SUFFICIENT DURABILITY TO SURVIVE ASSEMBLY AND CLEANING.

REV. LTR	DATE	DESCRIPTION	CHECKED	APPROVED

FEDERAL AVIATION ADMINISTRATION

MIKE MONRONEY AERONAUTICAL CENTER OKLAHOMA CITY, OKLAHOMA 73125

RRCIU PWB ASSEMBLY REFERENCE (WITH PARTS LIST)

SUBMITTED BY: N. Cyrus		APPROVED BY: Bud Russell	
DRAWN BY: R. FAFE	DATE: JULY 16, 1999	PROJECT NO. 242-19930404SA	REV. LTR.
	ISSUED BY: ACD-210	DRAWING NO. AE-D-1457-1	
NEXT ASSY	SHEET 1 OF 9		

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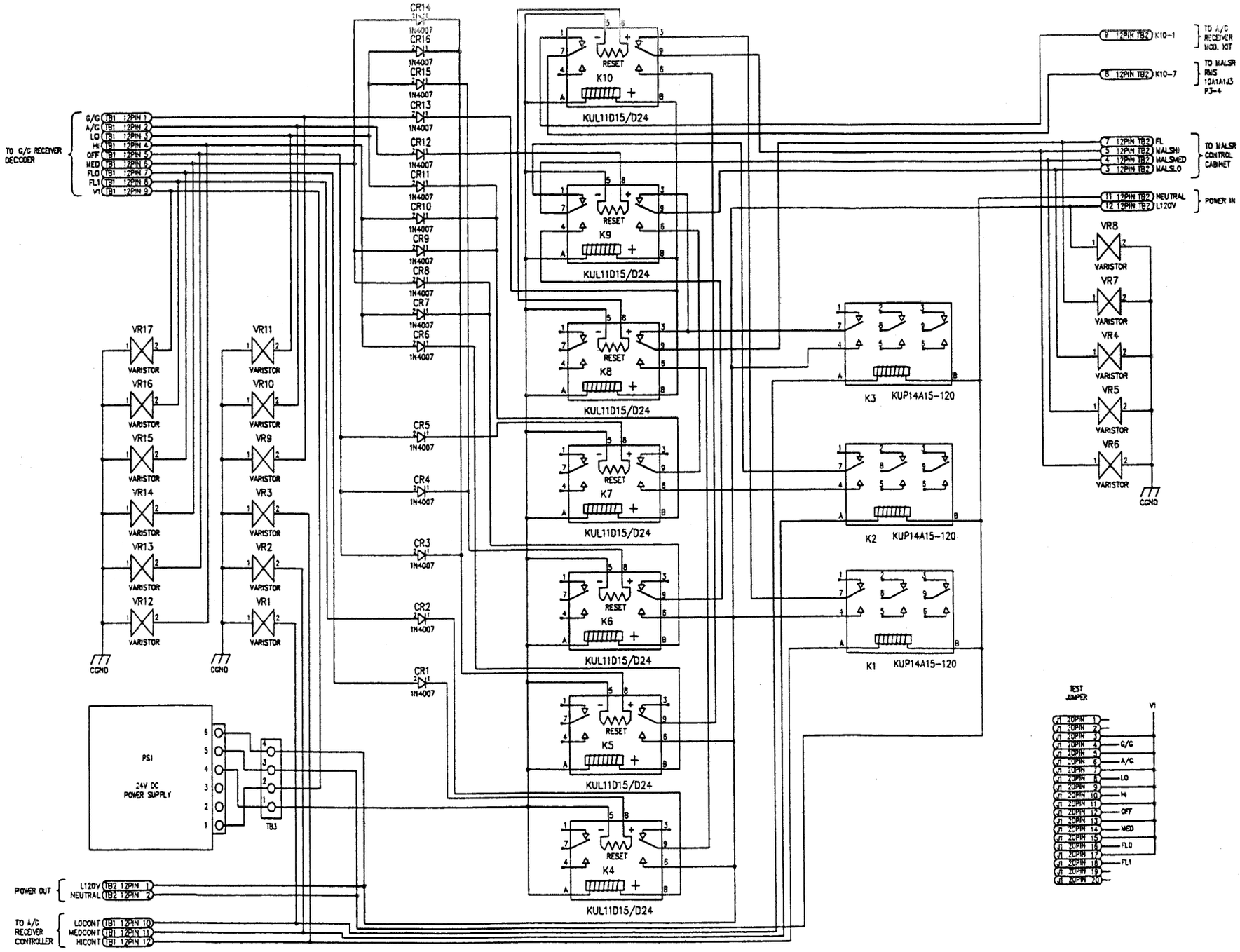
9.0000



RRCIU SCHEMATIC DIAGRAM

REV. LTR.	DATE	DESCRIPTION	CHECKED	APPROVED

FEDERAL AVIATION ADMINISTRATION
MIKE MONRONEY AERONAUTICAL CENTER OKLAHOMA CITY, OKLAHOMA 73125

DOOR SCHEMATIC DECAL

REVIEWED BY	DATE REVIEWED	SUBMITTED BY	APPROVED BY
		H. Cyrus	Bud Russell

DRAWN BY DRAFTER | DATE: JUNE 1, 1999
CHECKED BY CHRIS HARRIS | ISSUED BY 240
SCALE: FULL | SHEET 10 OF 13

PROJECT NO. 242-1999M041A
DRAWING NO. AE-D-1457-29
REV. LTR.