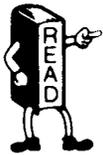


## DMS-1\* DIGITAL MULTIPLEX SYSTEM ROUTINE MAINTENANCE

### 1. GENERAL

1.01 This section describes the routine maintenance operations for the DMS-1 system, and gives recommended maintenance intervals. See Table A.



*The information contained in this section affects maintenance administration plans.*

1.02 **Reason For Reissue:** to add new and revised information.

1.03 **Test Apparatus.** The tests in this section require the following test apparatus:

1 Digital Voltmeter with:

- 4-1/2 digit display, minimum

- input impedance  $\geq 1$  megohm

- accuracy better than 0.1 percent

*Example:* John Fluke 8100A or 8040A.

1 Receiver (Telephone); 716C, or QSE4A1, or equivalent.

1.04 **Supplementary Documents.** The following DMS-1 practices are required for use while performing the tests in this Section:

- Section 363-2011-207
- Section 363-2011-213
- Section 363-2011-214
- Section 363-2011-300
- Section 363-2011-500
- Section 363-2011-505.

**TABLE A  
MAINTENANCE OPERATIONS AND RECOMMENDED INTERVALS**

MAINTENANCE OPERATION	PROCEDURE CHART	RECOMMENDED INTERVAL
Rectifier Voltage Measurement	1	6 months
Battery Float Voltage Measurement	2	6 months
Battery Physical Inspection	3	6 months
Power Converter Voltage Measurement	4	1 year
Lamp Test	5	1 year
Reorder Tone Check	6	1 year
Local Link	363-2011-213 Chart 5	1 year

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**CHART 1  
RECTIFIER VOLTAGE MEASUREMENT**

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*Caution: This test applies only to the J7209C Power Bay. Do not use this procedure to adjust the rectifier in any other type of power supply.*

**APPARATUS:**

- 1 Digital Voltmeter (see 1.03).

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**STEP      PROCEDURE**

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- 1      On the front panel of the J2357E rectifier in the J7209C power bay, connect the digital voltmeter to the -48 V and GRD pin jacks.

*Requirement:* The meter indicates  $55 \pm 0.5$  V.

If the requirement is met, the rectifier output is within limits. Go directly to Step 5.

If the requirement is not met, continue with Step 2.

- 2      Open the front panel of the rectifier by unscrewing the fastener and swinging the panel open.
- 3      On the QPY355 circuit pack (on the inside of the front panel) locate the VOLT ADJ control and turn the adjustment screw until the digital voltmeter reads 55.0 V. See 363-2011-214.

If the voltage cannot be adjusted to 55.0 V the rectifier may be faulty. Refer to 363-2011-214, Chart 1.

- 4      When the voltage has been correctly adjusted, close the front panel of the rectifier.
- 5      Disconnect the digital voltmeter from the pin jacks.
- 6      Record the reading on the VOLTS meter on the front of the J2357E rectifier.

*Note:* This record can be used as a check of the rectifier performance on visits to the equipment in the intervals between routine maintenance.

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**CHART 2**  
**BATTERY FLOAT-VOLTAGE MEASUREMENT**

*Caution: This test applies only to the J7209C power bay. Do not use this procedure for float-voltage measurements on the batteries of any other type of power supply.*

**TEST PREREQUISITES:**

- (1) The output voltage of the J2357E rectifier in the J7209C power bay must be  $55 \pm 0.5$  V dc. Refer to Chart 1.
- (2) The float voltage of the batteries must have been stable for at least 24 hours.

*Caution: Take particular care to check and observe correct polarities when making connections to the batteries.*

**APPARATUS:**

1 Digital Voltmeter (see 1.03).

STEP	PROCEDURE
1	<p>Using the digital voltmeter, measure and record the voltage across the terminals of each battery to turn.</p> <p><i>Requirement:</i> The voltage reading at each battery must be between 13.5 and 14.4 V dc.</p> <p>If the requirement is met the test is complete. Omit the Steps which follow.</p>
2	<p>If the requirement at Step 1 is not met, replace the faulty battery as follows:</p> <ol style="list-style-type: none"> <li>2.1 Pull the cable connectors off the terminals of the faulty battery. Tape the loose cable ends to prevent shorts.</li> <li>2.2 Remove the faulty battery from the shelf.</li> </ol> <p><i>Note:</i> If the faulty battery is at the back of the battery shelf, it will be necessary to disconnect and remove the batteries in front before the rear battery can be removed.</p> <ol style="list-style-type: none"> <li>2.3 Refer to 363-2011-207 and install a new battery in place of the faulty battery. If applicable, reinstall any other batteries removed for access to the faulty battery.</li> <li>2.4 Reconnect the cables to the battery terminals.</li> </ol>
3	<p>Repeat the test in Step 1.</p>

CHART 3  
BATTERY PHYSICAL INSPECTION

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*Caution: This procedure applies only to the batteries in the J7209C power bay.*

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STEP      PROCEDURE

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- 1      Inspect the following areas for evidence of moisture or corrosion:
    - (a) the battery terminals and connectors,
    - (b) the battery shelf.
  
  - 2      If there are any signs of moisture or corrosion:
    - 2.1     Remove the affected batteries.
    - 2.2     Clean the affected cable connectors and the shelf with a solution of baking soda in water. Continue until there is no foaming of the cleaning solution when it is applied.
    - 2.3     Thoroughly dry all surfaces.
  
  - 3      Refer to 363-2011-207 and install new batteries in place of those showing evidence of leakage or corrosion.
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CHART 4  
POWER CONVERTER VOLTAGE MEASUREMENTS

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This test verifies that the common power converter and line power converter voltages are within the specification limits.

APPARATUS:

- 1 Digital Voltmeter (see 1.03).
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STEP      PROCEDURE

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- 1      On both QPC85 common power converters in the DMS-1 bay, measure the voltages at the test points using a digital voltmeter.

*Requirement:* The voltage readings are within the limits shown in Table B.

If the requirements are not met, replace the faulty QPC85 converter(s) and repeat Step 1.
  
  - 2      On each of the QPP439 line power converters in the bay measure the voltages at the test points using a digital voltmeter.

*Requirement:* The voltage readings are within the limits shown in Table C.

If the requirements are not met, replace the faulty QPP439 converter(s) and repeat Step 2.
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**CHART 5  
LAMP TEST**

This test verifies that no alarm or other indicator lamps or Light Emitting Diodes (LED) in the DMS-1 circuit packs have failed.

STEP	PROCEDURE
1	<p>Refer to Table D and press, one at a time, the test buttons on the circuit packs listed.</p> <p><i>Requirement:</i> The lamp and LED shall light as shown in Table D.</p> <p><i>Caution: Replacement of the QPP428 and QPP429 circuit packs (at Step 2) causes service interruptions.</i></p>
2	If the requirements of Step 1 are not met, replace the faulty circuit packs(s) and repeat Step 1.
3	If the requirements of Step 1 are still not met, refer to 363-2011-500, Part 4, to locate and clear the fault.

**CHART 6  
REORDER TONE CHECK**

This test verifies that the QPP427 circuit pack is functioning and producing a reorder tone signal.

**APPARATUS:**

- 1 Receiver (Telephone); 716C or QSE4A1, or equivalent.

STEP	PROCEDURE
1	<p>Connect the telephone receiver to the pin-jack test points on the QPP427 circuit pack.</p> <p><i>Requirement:</i> Reorder tone shall be heard on the telephone receiver (480 and 620 Hz tones interrupted at a rate of 120 interruptions per minute).</p>
2	If the requirement in Step 1 is not met, replace the QPP427 circuit pack and repeat the test.

**TABLE B**  
**QPC85 COMMON POWER CONVERTER VOLTAGES**

TEST POINT	REQUIREMENT (range in volts)
+5 V	+4.75 through +5.25
+12 V	+11.75 through +12.25
-12 V	-11.4 through -12.6
<p><i>Note:</i> Voltages measured between the test points indicated and the GRD test point.</p>	

**TABLE C**  
**QPP439 POWER CONVERTER VOLTAGES**

TEST POINT	REQUIREMENT (range in volts)
+5 V	+4.75 through +5.25
+6 V	+5.93 through +6.06
-6 V	-5.93 through -6.06
+10 V	+9.5 through +10.5
-10 V	-9.5 through -10.5
<p><i>Note:</i> The voltages measured at the +6 and -6 V test points must be within 0.06 V of each other (ignoring polarity).</p>	

**TABLE D  
LAMP TEST REQUIREMENTS**

CIRCUIT PACK	BUTTON	REQUIREMENTS	
		LAMPS ON	NUMERIC DISPLAY
QPP420 Alarm-Remote	LP TST (Note 1)	All	None
QPP421 Alarm-Office	LP TST	All	None
QPP424 Line Test Office	ON-OFF (Note 2)	All (Note 3)	-.8.8.8 (Note 3)
QPP425 System Test	LAMP TEST	All	None
QPP499 1-for-n Protection Switch – Office	LP TST	All	None
QPP429 Protection Switch Office	LP TST	All	888

*Notes:*

1. The display ON-OFF switch must be switched to the ON position.
2. The ON-OFF button is latching and must be depressed and released after the test is completed.
3. The lamps and the display turn off automatically after approximately 1 second. A calibration test is then performed.