

VOLTAGE REGULATOR J87324A OPERATING METHODS

1. GENERAL

1.01 The J87324A semiconductor-type voltage regulator is designed to be used in the A2AT Video System. The voltage regulator may also be used in other systems where its voltage and current characteristics meet the requirements of the equipment with which it will be associated. In addition to telephone company installations, the voltage regulator is compatible for use for customer premises and temporary installations using portable A2AT Video System equipment for occasional use. The voltage regulator, designed to operate on a nominal +24 and -24 volt dc input will provide a regulated output of +18 and -18 volt dc supply at loads up to approximately 1 ampere. The input power may be provided by one of the four following optional sources.

- (1) A +24 and -24 volt dc, J87232A L1 and L2 rectifier, supplied by commercial ac, with engine-alternator reserve, if available.
- (2) A +24 and -24 volt dc, J87308 converter supply, powered by a -48 volt battery.
- (3) A +24 and -24 volt dc, J87308 converter supply, powered by a -24 volt battery.
- (4) A +24 and -24 volt battery plant.

1.02 This section is reissued to:

- Revise 3.02 and delete trouble condition (3)
- Revise 3.04
- Delete Step (4) in 4.02
- Revise 5.01

This reissue does not affect the Equipment Test List.

1.03 A transmitting terminal, a repeater, and a receiving terminal comprise the basic units of the A2AT Video System. Each of these three units contains a J87324A voltage regulator. The rear of each voltage regulator is equipped with a male connector, the mate for which is provided on the related transmitting terminal, repeater, and receiving terminal located at the rear of the A2AT Video System equipment lineup. The connectors are arranged to provide a unit plug-in mounting. The outer face of the plug-in voltage regulators provides convection cooling of the heatsink-mounted transistors. The approximate overall dimensions of the voltage regulator are 9-7/8 inches wide, 3-1/2 inches high, and 4 inches deep. The weight is approximately two pounds.

Caution: Do not remove the voltage regulator from the plug-in mounting unless the visual red alarm lamp (ALM) is lighted indicating that the input power is removed.

1.04 Instructions are based on schematic drawing SD-81911-01. For detailed description of the operation of the circuit, refer to the corresponding circuit description.

2. LIST OF TOOLS AND TEST APPARATUS

CODE OR SPEC NO.	DESCRIPTION
TOOLS	
—	3-Inch C Screwdriver
TEST APPARATUS	
KS-8039	DC Volt-Milliammeter (or equivalent)

3. OPERATION

3.01 The J87324A voltage regulator has no disconnecting switches and is connected to the input and output leads when the male connector is inserted into the mate connector provided on the related transmitting terminal, repeater, and receiving terminal located at the rear of the A2AT Video System equipment lineup.

3.02 A local visual red alarm lamp (ALM) is provided on the jack field of the A2AT Video System equipment panel for each voltage regulator to indicate that the K1 relay is operated with the consequent disconnection of input power from the voltage regulator caused by any one or more of the following trouble conditions.

- (1) Short circuit or heavy overload on the positive output
- (2) Short circuit or heavy overload on the negative output.

3.03 An alarm cutoff key (ACO) and a white alarm cutoff lamp (AC) are provided on the jack field of the A2AT Video System equipment panels for each voltage regulator to indicate that the remote visual and audible alarms have been disabled even though the alarm condition may still exist.

3.04 Following correction of the condition(s) that caused the K1 relay to operate power may be restored to the voltage regulator by depressing the RST key on the jack field of the A2AT Video System equipment panel.

4. ROUTINE CHECKS AND ADJUSTMENTS

4.01 The positive output voltage potentiometer (R10) and the negative output voltage potentiometer (R17) of circuit pack CP1 are set at the factory and do not ordinarily require field adjustment; however, if adjustments are required to obtain +18 or -18 volt dc, the following procedure is recommended.

(a) POSITIVE OUTPUT VOLTAGE ADJUSTMENT

- (1) Using the KS-8039 volt-milliammeter set on the 30-volt dc scale, connect the (+) lead of the meter to the TP1 jack and the (-) lead of the meter to the TP3 jack on the jack

field of the A2AT Video System equipment panel.

Requirement: The volt-milliammeter shall indicate between +22 and +26 volts dc.

- (2) Remove the (+) lead of the meter from the TP1 jack and connect it to the TP2 jack on the jack field of the A2AT Video System equipment panel.

Requirement: The volt-milliammeter shall indicate +18 volts dc ± 2 percent.

- (3) If the requirement is not met, rotate the R10 (CP1) potentiometer clockwise to increase the voltage or counterclockwise to decrease the voltage.

(b) NEGATIVE OUTPUT VOLTAGE ADJUSTMENT

- (1) Using the KS-8039 volt-milliammeter set on the 30-volt dc scale, connect the (+) lead of the meter to the TP3 jack and the (-) lead of the meter to the TP5 jack on the jack field of the A2AT Video System equipment panel.

Requirement: The volt-milliammeter shall indicate between -22 and -26 volts dc.

- (2) Remove the (-) lead of the meter from the TP5 jack and connect it to the TP4 jack on the jack field of the A2AT Video System equipment panel.

Requirement: The volt-milliammeter shall indicate -18 volts dc ± 2 percent.

- (3) If the requirement is not met, rotate the R17 (CP1) potentiometer clockwise to increase the voltage or counterclockwise to decrease the voltage.

VOLTAGE ALARM CIRCUIT CHECK

Caution: *Since the simulated voltage alarm circuit check results in losing power to the amplifier circuits in the A2AT Video Transmission System, the following check is interpreted as a major alarm and should be performed only when the video system is not being used.*

4.02 To check the appropriate alarm signals to the office alarm circuit, proceed as follows.

- (1) Ensure that the A2AT Video System is not being used; then, remove either the +24 or -24 volt output fuse at the rectifier, converter, or battery plant associated with one of the three terminals under test (see 1.02).

Requirement: The local red alarm lamp (ALM) lights and a major alarm sounds.

- (2) Operate the alarm cutoff key (ACO).

Requirement: The white alarm cutoff lamp (AC) lights and the major alarm is silenced.

- (3) Replace the +24 or -24 volt output fuse that was removed in (1).

Requirement: The input voltage to the voltage regulator is restored and the red alarm lamp (ALM) extinguishes.

- (4) Restore the alarm cutoff key (ACO).

Requirement: The white alarm cutoff lamp (AC) extinguishes.

Note: The red ALM lamp, the white ACO lamp, the ACO key, and RST key are provided on the jack field of the A2AT Video System equipment panel for each voltage regulator.

5. TROUBLE

5.01 In general, a short circuit, a heavy overload, low voltage on one of the voltage regulator output leads will energize control relay (K1) in circuit pack CP1, disconnecting the power input to the voltage regulator, lighting the red alarm lamp (ALM), and sounding a major alarm. ♦However, the input power to the regulator will not be disconnected if either of the voltage regulator input leads is low or is not present. ♦As a consequence of the plug-in nature of the design of the voltage regulator, it is expected that the maintenance procedure will be simplified by replacement of the small circuit packs, after it has been determined that the trouble is internal to the voltage regulator. Repair work to the defective units will be done at a maintenance and repair center rather than in the field.