# POWER SYSTEMS
# RECTIFIER CIRCUIT
# SEMICONDUCTOR TYPE - AUTOMATIC REGULATION
# 48 VOLTS 7.5 AMPERES
# J86281A

## SECTION I - GENERAL DESCRIPTION

### 1. PURPOSE OF CIRCUIT

1.1 To provide 48-volt talking and relay power for PBX Systems without a reserve battery and charging power when a reserve battery is furnished.

## SECTION II - DETAILED DESCRIPTION

### 1. GENERAL

1.1 This rectifier incorporates a 160A ferro-resonant regulator which holds the output voltage at 52.1 ±1% volts for line and load variations. This regulator has a current-limiting characteristic which protects the rectifier against overloads. Taps on the regulator transformers permit the adjustment of the output voltage.

Six silicon diodes arranged in a three-phase bridge are the rectifying elements of this rectifier. Other components of the rectifier are a filter network consisting of two inductors and a capacitor, a voltmeter, an ammeter, an input circuit breaker, suitable output fuses, and an alarm circuit.

The 313D capacitor (Option "T") is effective in suppression of radio frequency noise. The 542G capacitors (Option "K") suppress radio frequency noise as well as transient voltages due to line interruption.

When this rectifier is used without a reserve battery, the rectifier is wired for "Z" option and two output leads are provided. They are separated by a blocking diode so that output circuits beyond the diode may be protected against momentary power failures.

When a reserve battery is furnished, the rectifier is wired for "Y" option and the diode mentioned above acts to make the (PF) relay release on power failures to provide an alarm indication on terminal 2.

"Y" and "Z" wiring at TS1 is provided to optionally connect other units in the 756A PBX either to this circuit or to another and is of no concern in the functioning of the rectifier.

### 2. ALARMS

2.1 When used with Z wiring, all fuses are discharge fuses except fuse (5). Failure of a fuse extends the rectifier output voltage to terminal 2 to the alarm circuit and operates lamp (FA1). When used with "Y" wiring, fuses (1) and (2) are charge fuses and all others except (5) are discharge fuses and relay (PF) acts as a power failure alarm. Failure of a fuse extends battery over the alarm circuit to terminal 2 and operates lamp (FA1). If an external lamp is desired, it is operated from terminal 12. If ac power fails, the diodes (CR7) and CR8 block in their high resistance direction and relay (PF) releases to extend battery to the alarm circuit and terminal 2. Fuse (5) is provided to protect against an accidental ground in the PF relay alarm path. Resistance (R2) is provided to prevent overloading the output in case of a ground on terminal 2.

### 3. ADJUSTMENT

3.1 The PF relay will normally be accurately adjusted at the factory. If rectifier output voltage readjustment is needed, an accurate voltmeter must be used. Adjustment is made at the coil taps on the regulator. The taps connected at boards 2 and 3 are most effective in adjusting light load voltage. Terminal board 1 will be more effective in adjusting heavy level outputs in the intermittent range.

## SECTION III - REFERENCE DATA

### 1. WORKING LIMITS

1.1 AC input - 105-125 volts, 60 cycles.

1.2 DC output.

1.21 Normal limits - 52.1 ±1% volts, 0.015-7.5 amperes.

1.22 Intermittent limits - 45-52.6 volts, 3.7 ohm load.

1.3 Noise limits - 34 dba with F1A line weighting.

### 2. FUNCTIONS

2.1 This rectifier provides 48-volt dc for relay and talking power for PBX systems with no reserve battery and 48-volt dc charging power when a reserve battery is furnished.

3. CONNECTING CIRCUITS

3.1 Power Supply for 756A PBX - SD-81326-01.

SECTION IV - REASONS FOR REISSUE

CHANGES

B. CHANGES IN APPARATUS

B.1 Fuse A, formerly rated at 10 amperes has been changed to 15 amperes.

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 The lead size designation"AA" on leads A, B, C, and G in Fig. 1 were in error and have been removed.

D.2 The lead size of 16 has been added to the lead to terminal 7 of TS2.

D.2 The word "minimum" was added to the rating of C1.

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