660-TYPE CONVERTER POWER PLANT
+ OR —130 VOLTS, 15 AMPERES
DESCRIPTION

CONTENTS PAGE

CONTENTS PAGE

Figures

1. GENERAL

A. Introduction

1.01 This section describes the 660A (J86882A), the 660B (J86883A), and the 660C (J86884A) power plants (Fig. 1). The 660-type power plants are designed primarily for use in small central offices with anticipated loads of 2 to 15 amperes. Multiple 2-ampere or 5-ampere dc-to-dc converters are used to provide a positive or negative 130-volt dc supply from a negative 48-volt central office battery.

1.02 Whenever this section is reissued, the reason for reissue will be given in this paragraph. The Equipment Test List is not affected.

B. Purpose of the 660-Type Power Plant

1.03 The purpose of the 660 power plant is to provide a positive or negative 130-volt dc supply from the negative 48-volt office battery.

2. PHYSICAL DESCRIPTION

A. General

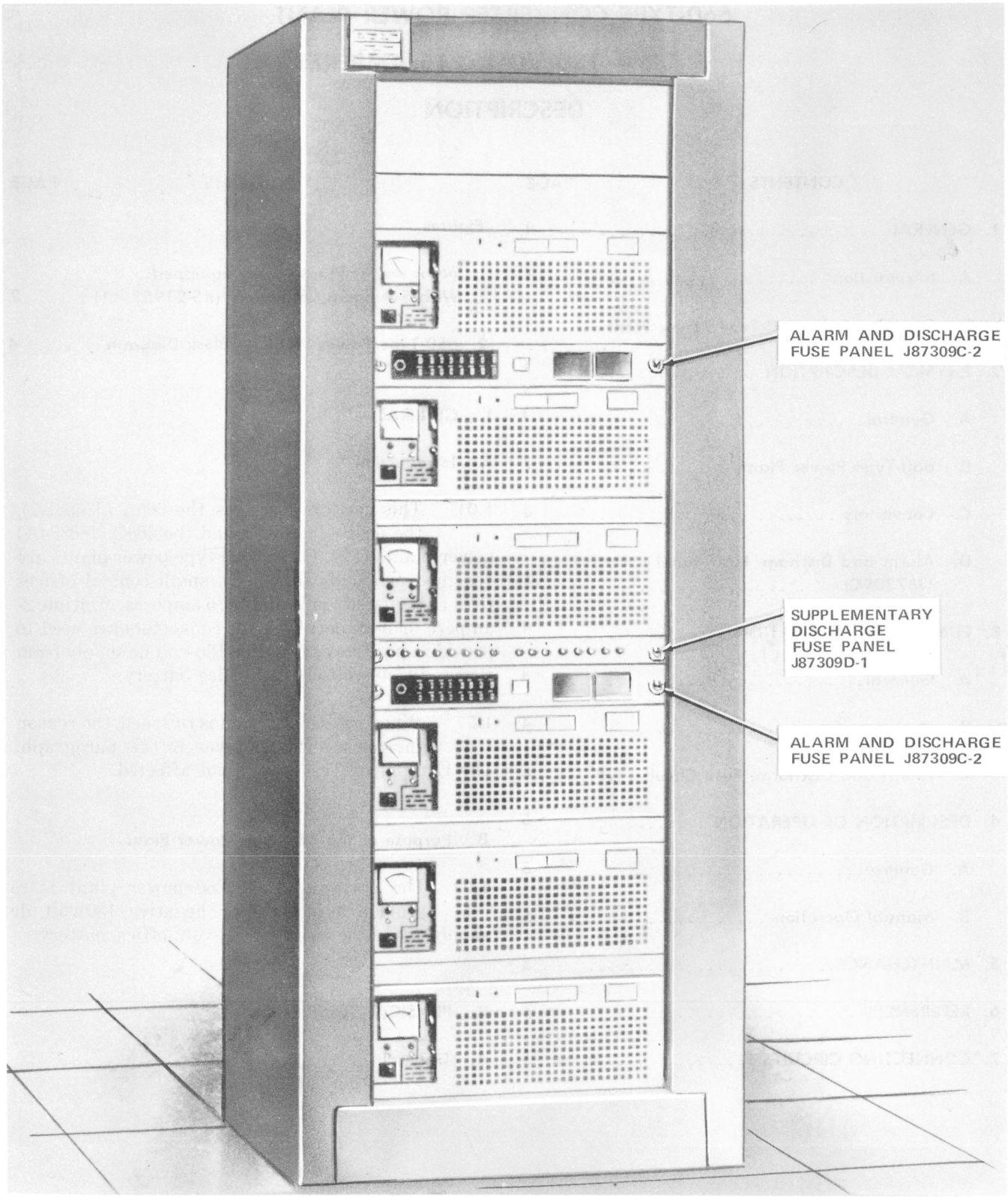

Fig. 1—660A Power Plant—Fully Equipped With 5-Ampere Converters (KS-21952, L1)

2.01 The initial equipment arrangement for the 660-type power plants consists of an alarm and dischage fuse panel and two converters for each polarity. Additional converters up to a maximum of four of the same capacity per polarity may be furnished. Since there is no 130-volt battery to provide reserve in case of a converter failure, one more converter than required to carry the peak load should be ordered.

B. 660-Type Power Plants

2.02 ***660A Power Plant (J86882A):*** This power plant is mounted on a 23-inch 7-foot duct-type framework per ED-97162-50 and is equipped with ED-82100-70 enclosures. The 7-foot duct-type framework with both ends enclosed is 2 feet 7-1/2 inches wide and 1 foot 3 inches deep. The weight of a fully equipped bay is approximately 740 pounds.

2.03 ***660B Power Plant (J86883A):*** This power plant is mounted on a 23-inch 7-foot cabinet-type power board framework per ED-82114-50. End covers and 1-foot top enclosure panels are available for the cabinet enclosed framework. The doors are equipped with latch assemblies to permit use at hardened sites. An alarm indication lamp is provided with the cabinet. The 7-foot cabinet-type framework measures 2 feet 3 inches wide and 2 feet 6 inches deep and requires a 2-side access. The weight of a fully equipped cabinet is approximately 975 pounds.

2.04 ***660C Power Plant (J86884A):*** This power plant is mounted on a 23-inch 9-foot duct-type framework per ED-97170-50 and is equipped with ED-82100-70 enclosures. The 9-foot duct-type framework with both ends enclosed is 2 feet 7-1/2 inches wide and 1 foot 3 inches deep. The weight of a fully equipped bay is approximately 760 pounds.

2.05 A supplementary discharge fuse panel is available for plants which require connections to a number of loads in excess of the basic alarm and discharge fuse panel capacity.

2.06 A relay panel is provided for alarm interface. The panel occupies 3 inches of vertical mounting space and is approximately 5 inches deep.

2.07 The 2-ampere converter occupies 8 inches of vertical mounting space. The earlier type 5-ampere converter occupies 12 inches of vertical mounting space, while the later type 5-ampere converter occupies 8 inches. All of the units are 12 inches deep. Front access only is required for this equipment.

2.08 The basic alarm and discharge fuse panel occupies 3 inches of vertical mounting space. The supplementary discharge fuse panel occupies 2 inches of vertical mounting space.

2.09 The plant ground connections are accommodated on a ground bus located at the top of the bay. This bus is insulated from framework ground to permit one-point reference grounding. A removable cover panel provides front access to the bus.

2.10 Each bay framework must be connected to the frame grounding system of the office. For this purpose, a frame grounding terminal lug is provided at the top of the bay.

2.11 All cable racks and associated mounting hardware will be furnished separately as required for the particular installation.

2.12 Spare fuses are not furnished as part of this plant and must be ordered separately.

2.13 The equipment is arranged to operate in any ambient temperature within the limits of the 0 to 50°C.

C. Converters

2.14 The 660-type power plant uses multiple 2-ampere or 5-ampere dc-to-dc converters to provide a positive or negative 130-volt dc supply. Up to four 2-ampere converters may be connected in parallel to deliver a maximum of 6-amperes, and up to four 5-ampere converters may be paralleled to deliver a maximum of 15-amperes. Since there is no 130-volt battery associated with this plant, one more converter than the number required to carry the peak load should be ordered.

2.15 The effective current rating of any converter plant is the sum of the current ratings of all converters less the current rating of one larger converter. Thus, in a plant growing by adding 5-ampere converters to a plant having 2-ampere converters, the first 5-ampere converter adds only two amperes to the plant capacity.

D. Alarm and Discharge Fuse Panel (J87309C)

2.16 The alarm and discharge fuse panel is 3 inches high and 8-1/4 inches deep. This panel contains alarm relays and fusing for the 130-volt load. Front access only is required for maintenance of the unit.

3. FUNCTIONAL DESCRIPTION

A. General

3.01 The function of the 660-type power plant is to supply up to 15 amperes of regulated positive 130-volt or negative 130-volt dc supply. Power and control signal flow within the 660-type power plant is shown in Fig. 2. The functional circuits of the 660 power plant are as follows.

- Converter circuit
- Alarm and Discharge Fuse Circuit.

B. Converter Circuit

3.02 The 130-volt output is obtained from dc-to-dc converters using either transistor or thyristor oscillator circuits to obtain an alternating current which is transformed, rectified, regulated, and filtered to provide the dc output. An output voltage adjustment is provided as well as a current limiting (droop) adjustment for circuit load variations. Voltage monitoring circuits provide alarms for voltage less than the nominal operating range. For voltage above the nominal operating range, a converter shutdown feature, in addition to the alarm, is provided.

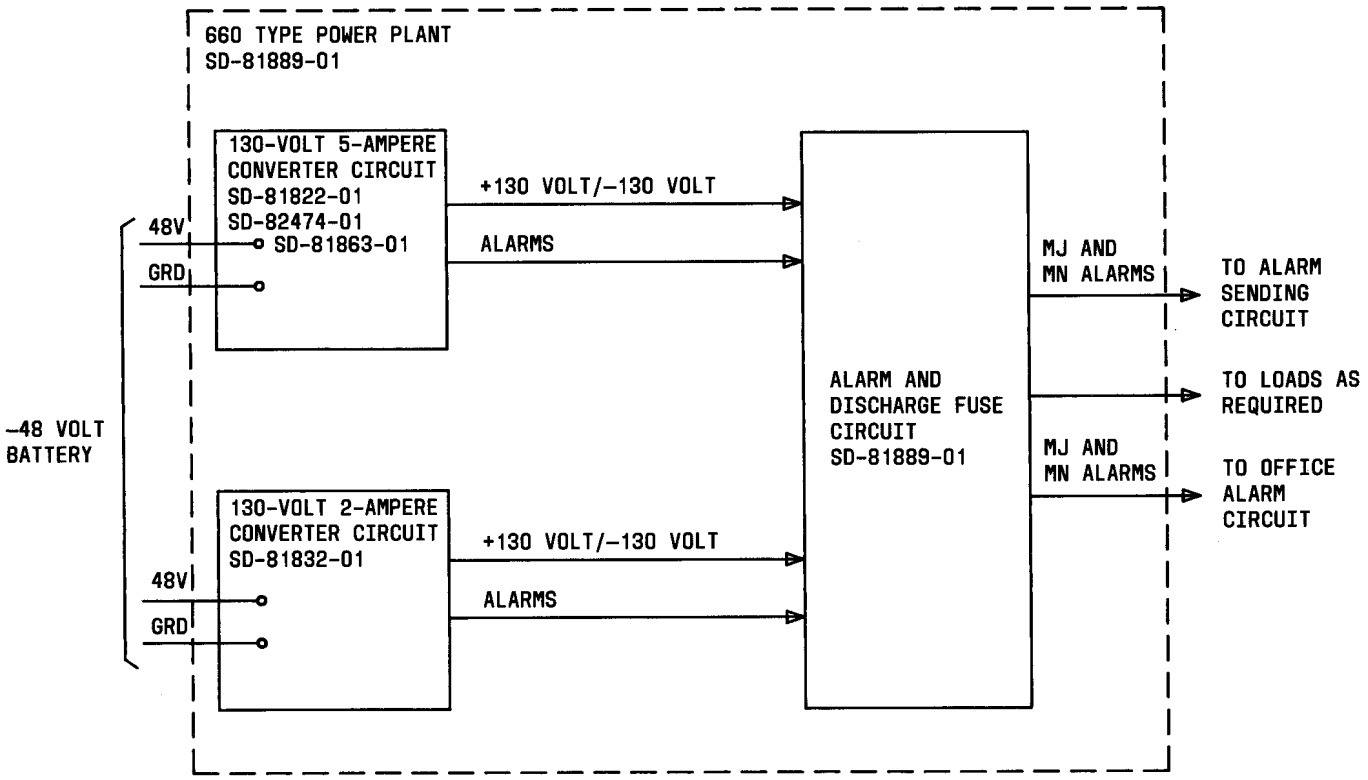

Fig. 2—660-Type Power Plant—Block Diagram

C. Alarm and Discharge Fuse Circuit

3.03 This circuit contains the 70-type and 15-ampere load fuse for plant output. The 70-type fuses are provided for small loads, and the 15-ampere fuses are provided for loads with decentralized filters. If any of these fail, the FA relay is operated. An operated FA relay will light the fuse alarm lamp, for a visual alarm, and connect grounds to the office major alarm circuits.

4. DESCRIPTION OF OPERATION

A. General

4.01 The 660-type power plants provide a positive or negative 130-volt dc output when connected to a 48-volt battery discharge circuit. The 130-volt output is obtained from dc-to-dc converters. Alarm circuitry is provided to indicate either a converter or discharge fuse failure.

B. Manual Operation

4.02 Manual control of the 660-type power plant is limited to the individual converter. If a converter is to be removed or restored to service, refer to the appropriate Section listed in Part 6.

5. MAINTENANCE

5.01 Routine checks and adjustments are intended to detect and correct defects and abnormal operating conditions that may cause service interruptions. Routine checks should be made during a period when they will cause the least service reaction.

5.02 Routine maintenance and repair functions are handled in accordance with local procedures.

5.03 For detailed information on the maintenance of individual equipment or apparatus, refer to the appropriate Section listed in Part 6.

6. REFERENCES

6.01 The followng list provides additional information concerning the 660-type power plants:

SECTION	TITLE
167-686-301	660-Type Power Plant (J86882A, J86883A, J86884A), 130-Volt DC Output—Operating Methods
161-299-303	DC-to-DC Converter, KS-21952, L1, 130 Volts DC, 5 Amperes—Operating Methods
161-283-302	DC-to-DC Converters, KS-19303, L3, and KS-19815, L2, 130 Volts DC, 2 Amperes—Operating Methods
161-279-301	DC-to-DC Converter, KS-19815, L1, 130 Volts DC, 5 Amperes—Operating Methods

7. CONNECTING CIRCUITS

7.01 The 660-type power plant, positive or negative 130-volt supply circuit using dc-to-dc converters SD-81889-01 is designed to connect to the following circuits.

SD-81472-01	Power Audible Alarm Circuit
SD-81822-01	KS-19815, L1, Converter (Lorain)
SD-81832-01	KS-19303, L3, and KS-19815, L2, Converters
SD-81863-01	KS-19815, L1, Converter (Exide)
SD-82474-01	KS-21952, L1, Converter.