DMS-1 DIGITAL MULTIPLEX SYSTEM

J7209C POWER BAY

DESCRIPTION

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1. GENERAL

1.01 This section describes the J7209C power bay which supplies 48 V at up to 25 A to the J7209A Remote Concentrator Terminal (RCT).

1.02 ***Reason for Reissue.*** To add new and revised information. Since this is a general revision, changes are not marked by margin arrows.

1.03 The power bay accommodates two basic equipment configurations:

(a) one rectifier, with up to ten battery shelves; or,

(b) two rectifiers, with up to eight battery shelves.

The actual number of battery shelves in a bay is as specified by the customer, up to the maximum in each case.

1.04 One power bay can power up to two fully equipped RCT, and provide backup battery protection against commercial power failure for up to six hours at 0°C.

1.05 An optional second rectifier can be connected in parallel with the initial rectifier to protect the system from rectifier failure.

2. MECHANICAL DESCRIPTION

2.01 The power bay is available in 7 foot (2.13 m), 9-foot (2.74 m), or 11.5-foot (3.50 m) heights on 19 inch (483 mm) duct-type bay frames. The bay depth is 15 inches (381 mm) including 5 inches (127 mm) projecting in front of the frame.

2.02 The layout of the 7-foot power bay is shown in Fig. 1. The rectifiers are placed at the top of the bay to prevent heating the batteries. Each battery shelf holds four 12-V batteries wired in series to provide a nominal 48 V.

2.03 Battery shelves are installed as required to obtain the backup time desired, and to prevent system downtime when commercial power fails. Ten battery shelves can be installed on the 7-foot bay with one rectifier; eight battery shelves with two rectifiers.

Note: It is recommended that additional battery shelves not be placed in the spare space above the rectifiers on 9-foot and 11.5-foot bays because of floor-loading limits and to avoid heating the batteries.

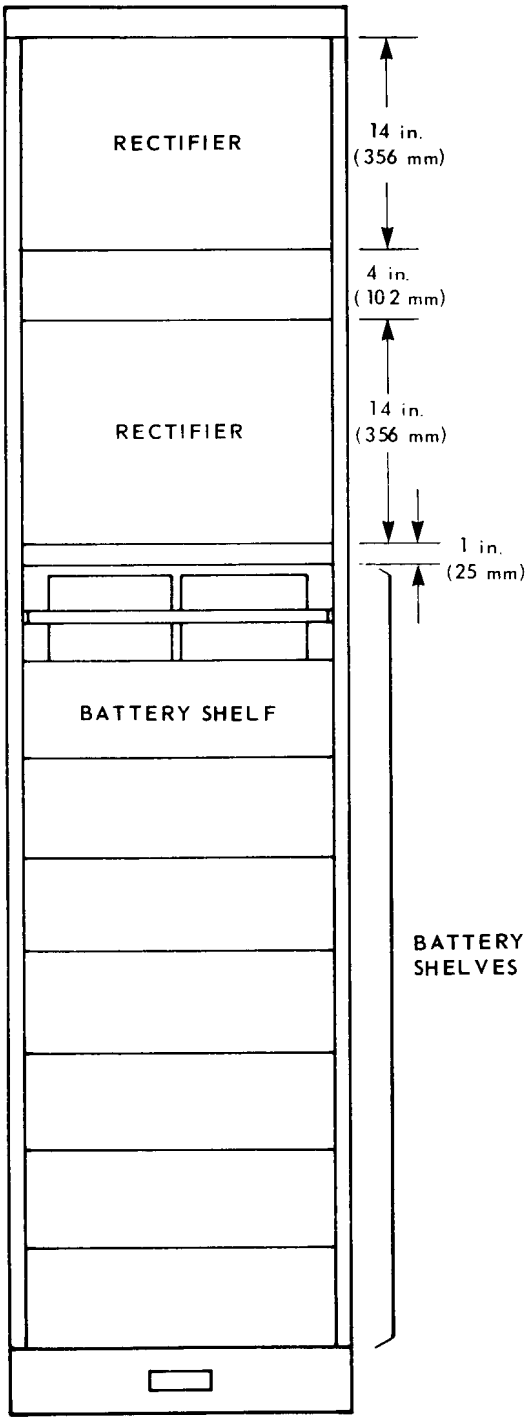

Fig. 1 — J7209C Power Bay (7 Foot)

3. FUNCTIONAL DESCRIPTION

J2357E RECTIFIER

3.01 The J2357E Rectifier (Fig. 2) consists of:

(a) basic rectifier,

(b) voltage regulator,

(c) protection circuits,

(d) low-voltage, load-disconnect circuit,

(e) alarm circuit.

3.02 The basic rectifier transforms the 115/230-V 60-Hz input to 75 V 60 Hz, which is then rectified with a diode-SCR bridge circuit. Each rectifier dissipates 100 watts at 10-A loading and 115 V ac input.

3.03 The regulator varies the phase of the gate signal to the SCR to keep the output voltage constant with ± 1 percent with variations of load and input voltage.

3.04 There are two protection circuits in the rectifier. The overvoltage circuit trips the input voltage breaker, if the output voltage exceeds 57 V dc, to prevent damage to the batteries or the load. The current limit circuit prevents the output current from rising above the preset threshold. The threshold is set to 9, 12, 15, 18, 21 or 25 A by strapping options in the rectifier.

3.05 To prevent completely discharging the batteries during extended commercial power failures, the load is disconnected from the batteries when the battery voltage falls below 44 V.

3.06 Two separate alarms indicate different failures of the rectifier.

(a) *AC.* Input power failure or overvoltage protection operation.

(b) *DC.* Low input voltage ($\leqslant$ 47 V) or current limit.

Isolated contact closures are provided for each alarm for connection to the RCT alarm circuit pack. (See 169-2191-200 for further description of the rectifier.)

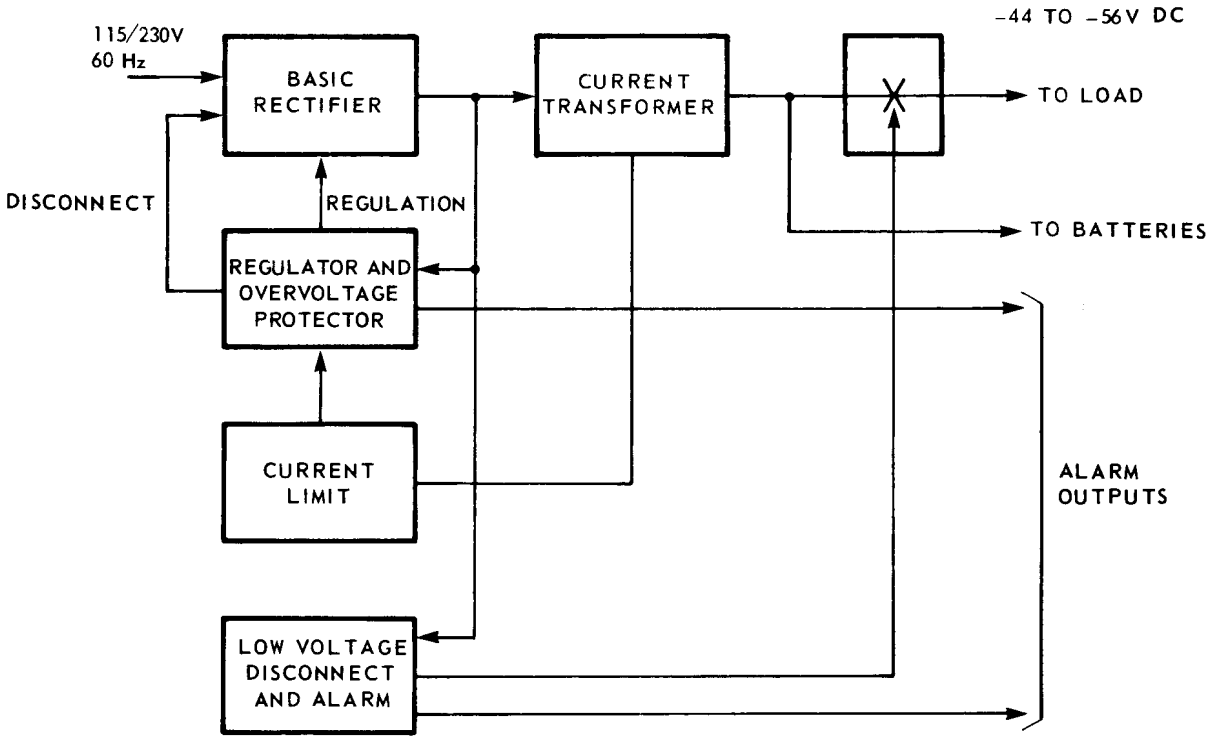

Fig. 2 — J2357E Rectifier Block Diagram

BATTERIES

3.07 For backup power, 12-V, 20-A hour batteries are used. Each battery is about 5 inches (127 mm) high, 6.5 inches (165 mm) wide, and 7 inches (178 mm) deep. The weight of each battery is about 17 pounds. The batteries are maintenance-free; their terminals do not corrode, nor does water have to be added periodically. The nominal float voltage per battery is 13.75 V.

3.08 Four batteries are mounted on each battery shelf and wired in series to a shelf terminal block. The number of batteries required depends on the number of subscriber lines on the RCT being powered, and on the desired emergency backup time. Refer to 363-2011-150.

3.09 The batteries require a terminal voltage of 55 V for full charging. New, fully-charged batteries draw less than 30 mA per string.