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CROSSBAR SYSTEMS NO. 3 POWER, RINGING, AND TONE DISTRIBUTING CIRCUIT

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SECTION I - GENERAL DESCRIPTION

1. PURPOSE OF CIRCUIT

1.01 This circuit performs the following functions:

(a) Provides a circuit for centralizing the fuses of individual circuits for all potentials.

(b) Provides sources of filtered talk battery for +48 volt.

(c) Provides protective resistance and ballast lamps in -48 volt, in the ringing, ringing tone, and pickup supply leads.

2. GENERAL DESCRIPTION OF OPERATION

FUSE PANELS AND FUSE ALARM RELAY ARRANGEMENTS

2.01 Each fuse panel on the frame is provided with a fuse alarm panel lamp. The alarm bar of each panel, or section, connects to a fuse panel alarm through a fuse alarm resistor or relay. The fuse panels are provided in various sizes depending upon the potential fused and the amount or type of equipment located in the central office.

2.02 An operated fuse will cause the lighting of the associated panel lamp, and trigger the audible and visual alarms. Removal of the blown fuse will extinguish the lamps and silence the audible alarm.

2.03 On panels using the fuse alarm relay, the circuit is also capable of giving an alarm when ground is present on the alarm bar of any fuse panel. With this feature, ground on the alarm bar will cause the alarm relay to operate just as when a fuse operated. However, a test employee checking the fuse panel having the false ground will find the panel lamp lit, no fuse operated, thereby detecting false ground.

SECTION II - DETAILED DESCRIPTION

1. SUPPLY CIRCUITS (FOR VARIOUS POTENTIALS) (FIG. 1, 3, AND 5)

1.01 The operation of an individual circuit fuse of any potential supplied by Fig. 1, 3, or 5; the operation of the

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20A feeder fuse of Fig. 5 connects the potential fused over alarm bar lead AB to an associated fuse panel alarm relay of Fig. 24, 25, 23, 22, 21, 20, 18, 17, or 16.

Note: In Fig. 5, the feeder fuse 20A shall be replaced before its associated pilot fuse 1-1/3A is replaced.

2. FUSE ALARM RELAY CIRCUITS - (FIG. 24, 25, 23, 22, 21, 20, 18, 17

2.01 Fuse alarm relay circuit figures are provided for each potential fused on the PRTD frame, except -48 volt signal and talk provided to circuits other than the PRTD. Operation of a fuse on a panel will connect the fused potential through to the alarm bar, lead AB, operating the fuse panel alarm relay. (There is a fuse alarm relay and panel lamp provided for each panel, or section thereof.) The operation of a fuse alarm relay lights the panel lamp of the fuse panel on which the operated fuse is located. Battery is connected over lead E or F to the miscellaneous circuit in series with a low-resistance MJ relay in the alarm circuit. Operation of the MJ relay lights the pilot and main pilot lamps and causes the major audible alarm to sound. Removal of the operated fuse will extinguish the panel lamp and retire the audible and visual power alarms.

2.02 Either -48 or -130 volts is connected to the winding of each alarm relay opposite from the alarm bar, depending upon the potential fused by the associated supply circuit panel. In this manner the fuse alarm relay can detect the presence of ground on the alarm bar before a fuse is operated. This additional safeguard is provided to prevent operation of a main or feeder power supply fuse by giving an alarm before a panel fuse operates.

2.03 The shunting diode in Fig. 20 is provided to protect the transistors in power supply circuits from possible damage when the fuse alarm relay releases.

3. FUSE ALARM RELAY CIRCUIT FOR PRTD 48-VOLT SIGNAL BATTERY - (FIG. 19)

3.01 This fuse alarm relay figure operates and functions in much the same manner as the other alarm relay figures with one notable exception.

3.02 Operation of the alarm relay lights the associated fuse panel lamp, by closing ground over lead L to Fig. 11. Alarm battery is also closed through, over lead E or F, to the miscellaneous circuit activating the audible and visual alarms. The source of this "alarm battery" is different than that to other alarm relay figures. Two separate fuses, designated D and E, are used to provide "alarm battery" from the PRTD service fuse panels. The source of alarm battery for the ODD Fig. 19 is received through fuse E, which is located on the fuse panel, and conversely the EVEN Fig. 19 receives "alarm battery" from fuse D, which is located on the ODD fuse panel. By arranging the circuit in this manner a degree of reliability is achieved as to providing an alarm indication whenever any fuse on the PRTD frame is operated.

4. TALKING BATTERY FILTER CIRCUIT - (FIG. 6)

4.01 The talking battery filter circuit consists of a low pass L section filter designed to reduce battery noise and other noise induced into the battery supply leads from load circuits. approximate cut-off frequency is 60 Hz (attenuation 3dB).

4.02 The series inductor presents a high impedance to low frequencies, effectively blocking them, while the shunt

ground. The filter circuits are designed with a low-resistance, 15-AMP fuse in the capacitor bypass path providing a means to isolate and test the electrolytic capacitor.

5. FIGURE 2 - FUSE ALARM RESISTOR FOR FUSE ALARM RELAY CIRCUIT

5.01 This resistor circuit provides an operating path for the aisle pilot relay.

6. FIGURE 4 - SUPPLY CIRCUIT FOR -48 VOLT SIGNAL ALARM BATTERY

6.01 The operation of an individual circuit fuse connects the potential fused over alarm bar lead A to the office alarm circuit. The office alarm circuit returns ground through the FA relay which lights the fuse alarm lamp on the PRTD circuit.

7. GROUND FEEDER CIRCUIT - (FIG. 7)

7.01 The ground feeder is provided to connect the ground bars on the frame to the power plant.

8. FUSE ALARM PANEL LAMP - (FIG. 11)

8.01 The panel lamps, per Fig. 11, provide an indication to aid in locating an operated fuse. One lamp is provided for each fuse panel or, if a fuse panel has more than one section assigned to the same or another potential, each section shall have a separate lamp.

SECTION III - REFERENCE DATA

1. WORKING LIMITS

1.01 None.

2. FUNCTIONAL DESIGNATIONS

2.01 None.

3. FUNCTIONS

3.01 See SECTIONS I and II.

4. CONNECTING CIRCUITS

4.01 When this circuit is listed on a key-sheet the connecting information thereon should be followed:

(a) Trunk Circuits (Typical) - SD-26397-01, SD-26410-01, SD-26424-01, SD-26426-01.

(b) 60- or 120-IPM Interrupter Circuit - SD-26407-01.

(c) Positive and Negative 130 Volt Converter Circuit - SD-26455-01.

(d) Miscellaneous Circuit for all Frames - SD-26406-01.

(e) Dial Long Line Circuit - SD-26130-01.

(f) Negative 48-Volt Plant Circuit - SD-26452-01.

(g) Test Circuit - SD-26411-01.

(h) Positive 48-Volt Plant Circuit - SD-26453-01.

(i) Power Ring Plant Circuit - SD-26457-01.

(j) Subscriber Message Register and Message Register Power Supply Circuit - SD-26408-01.

5. MANUFACTURING TESTING REQUIREMENTS

5.01 This circuit shall be capable of performing all the functions listed in this Circuit Description and meeting the requirements listed in the Circuit Requirements Tables.

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