

5ESS® SWITCHING EQUIPMENT
FUSE/FILTER PANEL 3
CIRCUIT

CHANGES

B. Changes in Apparatus

B.1 Removed

R5.0 KS-20289, L6C, 2610
Resistor, App. Fig. 1.

CR9 549A
Diode, App. Fig. 1.

Removed Replaced By

ED-5D521-G1 ED-5D521-G2B
App. Fig. 1 App. Fig. 1

D. Description of Changes

- D.1 To reduce cost, the resistor (R5) and LED (CR9) have been removed on Sheet C1.
- D.2 The alarm board has been changed from A Group 1 to A Group 2B on sheets B2 and C1.

F. Changes in Description of Operation or Changes in CD Sections

- F.1 Remove reference to the light-emitting diode on Page 2 Section I Paragraph 2.01 and Section II Paragraph 1.01.

AT&T BELL LABORATORIES

DEPT 55535-TPG-JCB

NOTICE

This document is either
AT&T - Proprietary, or WESTERN
ELECTRIC - Proprietary

Pursuant to Judge Greene's Order of August 5, 1983,
beginning on January 1, 1984, AT&T will cease to use
"Bell" and the Bell symbol, with the exceptions as set
forth in that Order. Pursuant thereto, any reference to
"BELL" and/or the BELL symbol in this document is here-
by deleted and expunged.

CIRCUIT DESCRIPTION

CD-5D084-01
ISSUE 1
APPENDIX 2B
DWG ISSUE 3B
DISTN CODE BT13

SESS® SWITCHING EQUIPMENT
FUSE/FILTER PANEL 3
CIRCUIT

Add Paragraph 1.03

Early version of this unit contained a feed-through terminal to provide the capability of multing together -48 volt RTN leads. With drawing Issue 3B, this terminal was removed; the multing together of the RTNs, when required, is now accomplished with external jumper wires, placed on the load connection side of terminal strips TS0 and TS1.

AT&T BELL LABORATORIES

DEPT 55535-RCK-JCB

NOTICE

This document is either
AT&T - Proprietary, or WESTERN
ELECTRIC - Proprietary
Pursuant to Judge Greene's Order of August 5, 1963,
beginning on January 1, 1964, AT&T will cease to use
"Bell" and the Bell symbol, with the exceptions as set
forth in that Order. Pursuant thereto, any reference to
"BELL" and/or the BELL symbol in this document is here-
by deleted and "expunged."

CIRCUIT DESCRIPTION

CD-5D064-01
ISSUE 1
APPENDIX 1E
LWG ISSUE 2E
DISTN CODE 7T13

5ESSTM SWITCHING EQUIPMENT

FUSE/FILTER PANEL 3
CIRCUIT

CHANGES

D. Description of Changes

D.1 Changed code of capacitors C1, C2 C3 from Mepco/Electra No. 3196 FC163U075AM to equivalent KS number, KS-20133, L135 (App Fig. 1).

D.2 Made minor drawing corrections to SD, including the following:

- (a) Added missing alarm straps on FS 1 (Sheet B#1).
- (b) Corrected feeder numbering on Sheet D#2.
- (c) Corrected LED location in Information Note 305 on Sheet D#3.

D.3 On Sheets D1 and D2, changed stamping lists to agree with J5D003BJ-1.

D.4 On Sheets C#1 and D1, added 127D apparatus mountings to wiring side of TS 2 to secure paddleboard connectors.

F. Changes in Description of Operation

F.1 Add the following at the end of para 1.01, Section I:

This circuit now applies to the new reduced-depth unit (J5D003BJ-2) in addition to the original-depth unit (J5D003BJ-1).

NOTICE

This document is either
AT&T - Proprietary, or WESTERN
ELECTRIC - Proprietary

Pursuant to Judge Green's Order of August 6, 1983,
beginning on January 1, 1984, AT&T will cease to use
"Bell" and the Bell symbol, with the exceptions set
forth in that Order. Pursuant thereto, any reference to
"BELL" and/or the BELL symbol in this document is here-
by deleted and "expurgated".

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION OF
AT&T BELL LABORATORIES AND IS NOT TO BE DISCLOSED,
REPRODUCED, OR PUBLISHED WITHOUT WRITTEN CONSENT.
THIS DOCUMENT MUST BE RENDERED ILLEGIBLE WHEN BEING DISCARDED.

F.2 Change para 4.01(a) of Section III to read:

(a) Fuse/Filter Panel Units J5D003BJ-1 and J5D003BJ-2.

AT&T BELL LABORATORIES

DEPT 55613-RCK-SAZ

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION OF
AT&T BELL LABORATORIES AND IS NOT TO BE DISCLOSED,
REPRODUCED, OR PUBLISHED WITHOUT WRITTEN CONSENT.
THIS DOCUMENT MUST BE RENDERED ILLEGIBLE WHEN BEING DISCARDED.

5ESS™ SWITCHING EQUIPMENT

FUSE/FILTER PANEL 3
 CIRCUIT

TABLE OF CONTENTS	PAGE	SECTION I - <u>GENERAL DESCRIPTION</u>
		<u>1. PURPOSE OF CIRCUIT</u>
SECTION I - GENERAL DESCRIPTION . . .	1	1.01 This circuit provides fusing for all equipment units that are located in the same ESS™ CM2 bay as the fuse/filter panel. This circuit provides an electrical alarm signal and a visual indicator whenever any fuse operates. It also has a test capability feature to ensure that the alarm circuitry is functioning.
1. PURPOSE OF CIRCUIT.	1	
2. GENERAL DESCRIPTION OF OPERATION	1	
SECTION II - DETAILED DESCRIPTION	2	<u>2. GENERAL DESCRIPTION OF OPERATION</u>
1. CIRCUIT AND PHYSICAL ARRANGEMENT	2	2.01 The nominal power input to the fuse panel is -48 volts, with the return (RTN) isolated from frame ground in the equipment cabinet. Each fuse/filter panel has three circuits that are each fed from a 20-amp fuse in the power distributing cabinet or from the power plant. Circuit 0 feeds 6 high current fuse positions, each equipped with a 74 type fuse (10-amp maximum) and a 70G 0.5-amp pilot fuse. Circuit 0 also feeds 2 low current fuse positions, each equipped with any 70 type fuse. Circuit 1 is equipped the same as circuit 0. Circuit 2 feeds 4 high current fuse positions, each equipped with a 74 type fuse (10-amp maximum), and a 70G 0.5 amp pilot fuse. Circuit 2 also feeds 2 low current fuse positions, each equipped with any 70 type fuse. The total load fuse capability of the unit therefore is 16 high current fuses and 6 low current fuses. The parallel arrangement of load and pilot fuse is necessary because the high-current, type-74 fuses
2. ALARMS.	3	
3. ALARM TESTING	3	
SECTION III - REFERENCE DATA.	3	
1. WORKING LIMITS.	3	
2. FUNCTIONAL DESIGNATIONS	3	
3. FUNCTIONS	4	
4. CONNECTING CIRCUITS	4	
5. MANUFACTURING TESTING REQUIREMENTS.	4	
6. ALARM INFORMATION	4	
7. TAKING EQUIPMENT OUT OF SERVICE (TEOS).	5	

NOTICE

This document is either
 AT&T - Proprietary, or WESTERN
 ELECTRIC - Proprietary

Pursuant to Judge Greene's Order of August 5, 1982,
 beginning on January 1, 1984, AT&T will cease to use
 Bell and the Bell symbol with the exceptions set forth
 in that Order. Pursuant thereto, any reference to
 BELL, and/or the BELL symbol in this document is hereby
 deleted and "omitted"

do not have an alarm pin and cannot send out an electrical alarm signal. When a fault occurs, the type-74 fuse blows first; the fault current then flows through the type-70 fuse and blows it. Operation of the type-70 fuse then sends out an electrical alarm signal. Those alarms generated when a fuse operates are sent to the plug-in circuit packs (ED-5D521-30,G1) where they are combined to illuminate a light-emitting diode for the appropriate bus (0, 1, or 2), and to send from the fuse panel an electrical signal to indicate that a fuse in that panel has operated.

2.02 A typical installation is two fuse panels per CM2 equipment bay with distribution to all equipment loads in that bay. Power is never sent to other equipment units from the bay in which the fuse panel is located. Available load fuse positions are assigned to satisfy reliability service group requirements and load balance goals between the 0, 1 and 2 buses. Considerable flexibility exists as to how this unit may be powered; typically all three circuits are powered from the same bus, i.e., either "A" or "B". ("A" buses feed "0" circuits, and "B" buses feed "1" circuits.) The equipment arrangement in the cabinet can require either one unit or two side-by-side units. The most common CM2 arrangement will be two units, with the left unit and right units powered from the same bus.

For "0" (or "A") bus installations the left unit (viewed from the front) would have feeders designated as -48V00, -48V01 and -48V02. The right unit would have feeders designated -48V03, -48V04, and -48V05. For "1" (or "B") bus installations the left unit (viewed from the front) would have feeders designated as -48V10, -48V11, and -48V12. The right unit would have feeders designated -48V13, -48V14, and -48V15. These designations are summarized in equipment note 309.

SECTION II - DETAILED DESCRIPTION

1. CIRCUIT AND PHYSICAL ARRANGEMENT

1.01 The physical construction of the fuse/filter panel 3 unit consists of 3 30D fuse blocks at the lower level of the unit. These are fed from circuits 0, 1 and 2 respectively from the left as viewed from the front. Each block has 4 high current 74 type fuses, with the left pair of fuses on one fuse alarm and the right pair of fuses on another fuse alarm. The upper level of the unit is equipped on the right (as viewed from the front) with another 30D fuse block. The left pair of high current fuses is powered from the "0" circuit and has its own fuse alarm. The right pair of fuses is powered from the "1" circuit and has its own fuse alarm. The fuse block in the center of the upper level of the unit is a 29A block, providing 6 low current fuses. The left fuses (top and bottom) are powered from circuit "0", the center fuses (top and bottom) from circuit "1", and the right fuse (top and bottom) from the circuit "2". The circuit "0" fuses have one fuse alarm, the circuit "1" fuses have one fuse alarm, and the circuit "2" fuses each have their own fuse alarms. Three fuse alarm circuit packs (ED-5D521-30, G1,A) are provided in the upper level of the unit. The left pack collects all "0" circuit alarms, the center pack collects all "1" circuit alarms, and the right pack collects all "2" circuit alarms. Any fuse alarm coming into the alarm pack will light the red FA LED on the front of the pack, and will send out an electrical fuse alarm via the small rear terminal strip.

1.02 To receive the push-on receptacles for the load power wiring, the rear panel of each fuse/filter unit is arranged with two large tab-type terminal strips. A small terminal strip is provided for pluggable connectors for fuse alarms and also for the TEL, SP, TTY A, and TTY B functions. This terminal strip

has pairs of terminals made common in its printed wiring pattern, such that two connectors plugged into it, side-by-side, will have identical signals present. These carry alarm and jack module mulds down the line-up. To collect fuse alarm circuits, as required, the terminal strip may also have wire jumper strapping. Only one set of straps need be installed for each pair of connectors because of the terminals being made common in the wiring pattern.

2. ALARMS

2.01 Circuit "0" has a total of 4 fuse alarms available: 2 from the lower left 30D fuse block, 1 from the upper 30D fuse block (left side), and 1 from the 29A fuse block, left fuses (top and bottom). Circuit "1" has a total of 4 fuse alarms available: 2 from the lower center 30D fuse block, 1 from the upper 30D fuse block (right side), and 1 from the 29A fuse block center fuses (top and bottom). Circuit "3" has a total of 4 fuse alarms available: 2 from the lower right 30D fuse block, and 2 from the 29A fuse block (one for the top fuse and one for the bottom fuse). If separate alarms are not required, the alarm terminals at the alarm circuit pack can be connected, as required, on the small terminal strip at the back of the unit.

3. ALARM TESTING

3.01 Alarm testing is incorporated in SESS switch using circuits to ensure the proper functioning of both the fuse panel and the external wiring to the circuit being used. The alarm test leads introduce a -48 volt test voltage into the beginning of the series circuit that makes up the interconnected alarm terminals. If all wiring is proper and intact, the test voltage reaches the alarm circuit packs and indicates an alarm condition, both visually (light-emitting diode) and

through electrical manifestation. The maintenance circuit of the equipment being used expects this response, and it indicates improper operation if the correct input signal is not received from the fuse panel.

SECTION III - REFERENCE DATA

1. WORKING LIMITS

1.01 <u>Battery Symbol</u>	<u>Voltage Range</u>
-48V	-42.75 to -52.5V

2. FUNCTIONAL DESIGNATIONS

2.01

<u>Designation</u>	<u>Voltage</u>	<u>Bus</u>	<u>Meaning</u>
-48V00	-48	A	A bus, First feeder, Circuit 0
-48V01	-48	A	A bus, Second feeder, Circuit 0
-48V02	-48	A	A bus, Third feeder, Circuit 0
-48V03	-48	A	A bus, Fourth feeder, Circuit 0
-48V04		A	A bus Fifth feeder, Circuit 1
-48V05		A	A bus Sixth feeder Circuit 2
-48V10	-48	B	B bus, First feeder, Circuit 0
-48V11	-48	B	B bus, Second feeder, Circuit 1
-48V12	-48	B	B bus, Third feeder, Circuit 2
-48V13	-48	B	B bus, Fourth feeder, Circuit 0

<u>Designation</u>	<u>Voltage</u>	<u>Bus</u>	<u>Meaning</u>	<u>Designation</u>	<u>Voltage</u>	<u>Bus</u>	<u>Meaning</u>
-48V14	-48	B	B bus Fifth feeder Circuit 1	RTN14	-48	B	Return for B bus, Fifth feeder, Circuit 1
-48V15	-48	B	B bus Sixth feeder Circuit 2	RTN15	-48	B	Return for B bus, Sixth feeder, Circuit 2
FA	-48		Fuse alarm	FBO1018	-48	-	Fuse block at EQL 01-018
RTN00	-48	A	Return for A bus, First feeder, Circuit 0	10184B	-48	-	Fuse block at VEQL 01, HEQL 018, load fuse 4B
RTN01	-48	A	Return for A bus, Second feeder, Circuit 1	10184BR	-48	-	Fuse block at VEQL 01, HEQL 081, return for load fuse 4B
RTN02	-48	A	Return for A bus, Third feeder, Circuit 2	02-018,01	-48	-	Terminal strip at VEQL 02, HEQL 018, terminal 01 (Connection for 1018 4B)
RTN03	-48	A	Return for A bus, Fourth feeder, Circuit 0	01-043,207	-	-	Terminal strip at VEQL 01, HEQL 043, Column 2, Row 07 (Connection for fuse alarm FA)
RTN04	-48	A	Return for A bus, Fifth Feeder Circuit 1	CPO	-48	-	Fuse alarm circuit pack CPO for Circuit 0
RTN05	-48	A	Return for A bus, Sixth feeder Circuit 2				
RTN10	-48	B	Return for B bus, First feeder, Circuit 0				
RTN11	-48	B	Return for B bus, Second feeder, Circuit 1				
RTN12	-48	B	Return for B bus, Third feeder, Circuit 0				
RTN13	-48	B	Return for B bus, Fourth feeder, Circuit 1				

3. FUNCTIONS

3.01 Provides equipment load fusing for up to 8 circuit 0 loads, up to 8 circuit 1 loads, and up to 6 circuit 2 loads per fuse panel.

3.02 Provides visual and electrical fuse alarm indications for each bus.

3.03 Provides alarm circuit testing capability.

4. CONNECTING CIRCUITS

4.01 When this circuit is listed on a keysheet, the connecting information thereon is to be followed:

- (a) Fuse/Filter Panel Unit
J5D003BJ-1.
- (b) Appropriate SESS Cabinet
Schematic Drawing.
- (c) Appropriate SESS Equipment Unit
Schematic Drawings.

5. MANUFACTURING TESTING REQUIREMENTS

5.01 None.

6. ALARM INFORMATION

6.01 Electrical alarm signal indications are sent to the control and display circuit pack SN 516 in equipment units as required. This

pack relays the information to the processor frames over the optical fiber data link.

7. TAKING EQUIPMENT OUT OF SERVICE
(TEOS)

7.01 Any group of 8 or 6 load fuses can be taken out of service by first powering down all equipment units using those fuses (in accordance with system operational guidelines). Then the appropriate power distributing cabinet fuse assigned to the feeder for the 8 or 6 fuses can be removed.

7.02 To power up a group of 8 or 6 load fuses, insert the feeder fuse at the power distributing cabinet; this is done only after properly using the charging circuit and tool at that cabinet. With the feeder energized, the equipment units are powered up individually through operation of the on pushbutton on the SN 516, as described in the appropriate system operational guidelines.

AT&T BELL LABORATORIES

DEPT 55614-RCK-CEJ