

CIRCUIT DESCRIPTION

CD-5D119-02  
ISSUE 1  
APPENDIX 5B  
DWG ISSUE 6B  
DISTN CODE BT13

5ESS® SWITCHING EQUIPMENT  
LINE TRUNK PERIPHERAL  
CABINET

CHANGES

B. Changes in Apparatus

B.01 Add App. Fig. 7 to show 6 fan exhaust unit.

D. Description of Changes

D.01 Add the 6 fan exhaust unit to the LTP cabinet to provide additional cooling for cabinets equipped with PSUs.

F. Changes in CD Sections

F.01 Add description of new 6 fan exhaust unit to Section II 2.01 of cabinet circuit description.

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CIRCUIT DESCRIPTION

CD-5D119-02  
ISSUE 1  
APPENDIX 4M  
DWG ISSUE 5M  
DISTN CODE BT13

5ESS® SWITCHING EQUIPMENT  
LINE TRUNK PERIPHERAL  
CABINET (6FT)

CHANGES

B. Changes in Apparatus

B.01 Added options "V" and "U" to App. Figure 1.

D. Description of Changes

D.01 Option V, which provided the 549D (red) and 549F (yellow) leds that mount in wire-wrapped sockets in the bezel and connected them to fuse and fan alarm cabling respectively, is replaced by option U, which provides the 300A cabinet fan/fuse indicator circuit which connects to the fuse alarm and fan alarm circuits by connectorized cable.

F. Changes in CD Sections

F.01 Sections 3.05 and 3.07.

4. REFERENCES

300A cabinet fan/fuse indicator circuit CMSM-300A.

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CIRCUIT DESCRIPTION

CD-5D119-02  
ISSUE 1  
APPENDIX 3M  
DWG ISSUE 4M  
DISTN CODE BT13

5ESS® SWITCHING EQUIPMENT  
LINE TRUNK PERIPHERAL  
CABINET (6 FT)

CHANGES

B. Changes in Apparatus

B.01 Added options "X" and "W" to App. Figure 1.

D. Description of Changes

D.01 This change is being introduced to reduce the number of cable groups required for the SM fuse alarms. Option "W" provides cable groups of ED5D688-15 to replace option "X" cable groups of ED5D503-15 on all new SMs.

F. Changes in CD Sections

F.01 None.

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CIRCUIT DESCRIPTION

CD-5D119-02  
ISSUE 1  
APPENDIX 2M  
DWG ISSUE 3M  
DISTN CODE BT13

5ESS® SWITCHING EQUIPMENT  
LINE TRUNK PERIPHERAL  
CABINET (6 FT)

B. Changes in Apparatus

B.1 Added J5D003BN-2 to Appendix Figure 6.

D. Description of Change

D.1 When required in the LTP Cabinet, 6-FAN UNIT J5D003BN-2 will replace J5D003BN-1.

F. Changes in CD Sections

F.1 None.

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CIRCUIT DESCRIPTION

CD-5D119-02  
ISSUE 1  
APPENDIX 1M  
DWG ISSUE 2M  
DISTN CODE BT13

5ESS® SWITCHING EQUIPMENT  
LINE TRUNK PERIPHERAL  
CABINET (6 FT)

CHANGES

B. Changes in Apparatus

B.1 Added option "Y" to APP FIG. 4, to provide a J5D003BT-1 Fuse/Filter Unit with wiring list "WD".

D. Description of Change

D.1 This change allows a single J5D003BT-1 Fuse/Filter Unit to bring in power from both buses (A and B) when required by peripheral unit equipage.

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5ESS™ SWITCHING EQUIPMENT

LINE TRUNK PERIPHERAL  
CABINET (6 FT)

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1. PURPOSE OF CIRCUIT. . . . .	1	1.01 The line and trunk peripheral (LTP) cabinet is used in a switching module (SM) along with the switching module control cabinet, model 1 or 2 (SMC or SMC2). The LTP provides fusing and cooling for any equipped peripheral units within the cabinet. The peripheral unit interconnections are covered in the switching module application schematic (SD-5D012-02) or the remote switching module application schematic (SD-5D133-01).
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2. FAN UNIT. . . . .	3	2.02 The two FFUs provide fusing for all equipped units in the LTP cabinet. Each FFU also provides an electrical alarm signal and a visual indicator whenever any fuse fails. To ensure that the alarm circuitry is functioning, the FFU provides an alarm test capability. Two types of FFUs are used in the LTP cabinet: the SD-5D053-01 and the SD-5D087-01.
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beginning on January 1, 1964, AT&T will cease to use  
"Bell" and the Bell symbol, with the exceptions as set  
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"BELL" and/or the BELL symbol in this document is hereby  
deleted and "expunged".

2.03 The fan unit provides air flow for maintaining correct operating temperatures for all peripheral units. A three-fan unit or a six-fan unit may be equipped, depending on cooling needs. The six-fan unit is equipped when the LTP cabinet contains a packet switch unit (PSU). When two integrated services line units (ISLUs) are equipped in the LTP Cabinet, neither the three nor the six-fan unit will be equipped. Circuitry to detect and report a fan failure is provided via a scan point from the unit. A fan failure alarm can be retired manually, or under software control, using a distribute point to the fan unit.

SECTION II - DETAILED DESCRIPTION

1. FUSE/FILTER UNIT

1.01 Two FFUs are used in the LTP cabinet. Each FFU receives its power by being connected to either a "0" or "1" -48V feed and return bus. The SD-5D087-01 FFU is allowed to be "split," thereby connecting to both the "0" and "1" bus.

1.02 Two types of FFUs are used in the LTP cabinet: SD-5D053-01 and SD-5D087-01. Each provides 24 "low" current (<5A) load fuses. The SD-5D053-01 FFU may be optionally equipped with an additionally "high" current (<15A) fuse block in addition to its standard low current fuse block, thereby providing eight high-current load fuses and 24 low-current load fuses. The LTP cabinet uses combinations of the two types of FFUs and a number of -48V bus arrangements to produce seven fusing configurations for peripheral units. These seven FFU fusing configurations are summarized in the following tabulation.

LTP CONFIG	FFU TYPE EQUIPPED	-48V BUS	# OF FUSES	
			HIGH	LOW
1	SD-5D053-01	0	0	24
	SD-5D053-01	1	0	24
2	SD-5D053-01	0	8	24
	SD-5D053-01	1	8	24
3	SD-5D087-01	0	0	32
	SD-5D087-01	1	0	32
4	SD-5D087-01	0	0	32
	SD-5D087-01	0	0	32
5	SD-5D087-01	1	0	32
	SD-5D087-01	1	0	32
6	SD-5D087-01	0	0	32
	SD-5D087-01	0	0	16
	SD-5D087-01	1	0	16
7	SD-5D087-01	1	0	32
	SD-5D087-01	0	0	16
	SD-5D087-01	1	0	16

1.03 Each -48V bus to the FFU is fused at the power distribution cabinet with a 15A fuse; therefore, the total typical power drain on each -48V bus should not exceed 13.5A.

1.04 When a fuse blows, fuse alarms are generated in the FFU by sending a -48V signal to the FFU plug-in circuit pack (ED-5D521-30,G1). Here they are combined to illuminate a red LED in the FFU, and are cabled to illuminate a red LED cabinet bezel and send an electrical signal cabled to other FFUs within the SM indicating the fuse alarm.

## 2. FAN UNIT

2.01 The typical LTP cabinet contains either a three-fan unit (SD-5D019-01) or a six-fan unit (SD-5D081-01). The six-fan unit is equipped when the LTP cabinet contains a PSU. When two ISLUs are equipped in the LTP cabinet, neither the three- nor the six-fan unit will be equipped. The fan unit provides the following functions:

1. Maintains airflow through the LTP cabinet.
2. Provides a fan failure detection for any one of the (six or three) fans of the unit through a "fan failure" scan point and a red light-emitting diode (LED) located in the rear of the unit.
3. Provides a "clear fan failure" distribute point, used to clear a "fan failure" alarm through software.
4. Provides a reset button, located in the rear of the unit, to clear a "fan failure" alarm manually.

Within the fan unit an alarm board is used to detect and report fan failures. This procedure requires detecting a fan failure and activating corresponding visual displays on the rear of the fan unit (red LED) and on the LTP cabinet bezel (yellow LED). A fan failure also will activate a scan point, cabled to fan units throughout the SM cabinet line-up and used by software to detect the fan failure. The alarm board provides a reset capability for retiring a fan failure alarm. This is accomplished by momentarily removing power to the alarm detection circuitry; it can be activated by a switch located on the alarm board or through a

software controllable distribute point. Each fan of the six- or three-fan unit is powered by a separate -48V feeder, while the alarm board obtains its power from two of the fans.

## 3. INTERFACES

### EXTERNAL INTERFACES

#### Power Feed and Return to FFU Interface

3.01 CADs 1-3 contain the -48V feed and return connections to the FFU. The SD-5D053-01 FFU has two power feeders connected to the power distributing cabinet. The SD-5D087-01 FFU has four power feeders connected to the power distributing cabinet.

#### Inter-Cabinet -48V Return Mult

3.02 CAD 4 provides a -48V return connection from the FFU to other FFUs within an SM for the purpose of creating a common return for the "0" and "1" -48V return bus.

#### Inter-Cabinet Fuse Alarm Mult

3.03 CAD 7 and 8 provide two fuse alarm connections (0 and 1) from the FFU to other FFUs within an SM for the purpose of creating a common fuse alarm reported to SM software for all peripheral units.

#### Inter-Cabinet Fan Scan and Distribute Mult

3.04 CAD 11 and 12 provide a fan scan and distribute connection from the fan unit to other fan units within an SM for the purpose of creating a common fan alarm and fan reset for SM software. CAD 11 documents connections used on the three-fan unit. CAD 12 documents connections used on the six-fan unit.

## INTERNAL INTERFACES

### Fuse Alarm LED Interface

3.05 To give a visual indication of a fuse failure, CAD 5 provides the connections between the LTP cabinet bezel red LEDs and the FFU.

### Inter-FFU Interface

3.06 CAD 6 provides a connection between both FFU fuse alarms to create a common alarm signal before being cabled to the cabinet LEDs.

### Fan Alarm LED Interface

3.07 To give a visual indication of a fan failure, the fan unit provides an interface to the LTP cabinet bezel yellow LEDs. CAD 9 contains the three-fan unit connections to the cabinet LEDs. CAD 10 contains the six-fan unit connections to the cabinet LEDs.

### Fan Unit Power

3.08 The two different fan units and various FFU configurations in the LTP cabinet create three different types of -48V feed and return connections between them. CAD 13 contains the power connections to a three-fan unit when the LTP cabinet is equipped with two SD-5D053-01 FFUs. CAD 14 contains the power connections to a three-fan unit when the LTP cabinet is equipped with one SD-5D053-01 FFU and one SD-5D087-01 FFU. CAD 15 contains the power connections to a six-fan unit when the LTP cabinet is equipped with two SD-5D087-01 FFUs.

### Fan Alarm LED with an ISLU Interface

3.09 The ISLU contains its own fan unit as part of its construction; therefore, special connections are made between it, the cabinet alarm LEDs,

and, if equipped, the fan unit. CADs 16-18 provide connections to the LTP cabinet bezel LEDs when the cabinet is equipped with two ISLUs and no fan unit, one ISLU and a three-fan unit, or one ISLU and a six-fan unit.

### FFU Alarm Strapping

3.10 Each FFU provides four fuse alarm groups. Within an FFU, all fuse alarms per -48V bus are strapped together to create one fuse alarm.

## SECTION III - REFERENCE DATA

### 1. WORKING LIMITS

#### Voltages

1.01 The SMC2 will function correctly at a nominal voltage of -48 volts, +(-4.5) or -(6.25) volts.

#### Ambient Temperature

1.02 The SMC2 will function correctly at an ambient temperature of 0 to 70 degrees Centigrade at the circuit packs and 0 to 50 degrees Centigrade in the office aisle.

#### Equipment Growth

1.03 The LTP cabinet provides room for seven shelves of equipment. The fan unit, if equipped, will use one of these seven shelf positions. Different types of FFUs, equipped in the LTP cabinet, will create varying amounts of load fuses available to peripheral equipment.

### 2. FUNCTIONS

2.01 The function of this unit is described in Section 1 of this Circuit Description.

3. CONNECTING CIRCUITS

- Switching Module Control Cabinet - SD-5D118-03
- Switching Module Control Cabinet 2 - SD-5D160-01
- Power Distribution Cabinet - SD82619-02
- Peripheral Units:
  - Line Unit - SD-5D051-01
  - Line Unit 2 - SD-5D032-01
  - Line Unit 3 - SD-5D180-01
  - Trunk Unit - SD-5D300-01
  - Digital Carrier Line Unit - SD-5D203-01, SD-5D202-01
  - Integrated Services Line Unit - SD-5D091-01
  - Packet Switch Unit - SD-5D074-01
  - Digital Line and Trunk Unit - SD-5D201-01
  - Digital Line and Trunk Unit Export - SD-5X204-01
  - Metallic Service Unit - SD-5D033-01
  - Modular Metallic Service Unit - SD-5D015-01
  - Digital Service Unit - SD-5D035-01
  - Digital Service Unit 2 - SD-5D092-01

- Digital Service Unit Export - SD-5X201-01
- Remote Clock Unit - SD-5D075-01
- Facilities Interface Unit - SD-5D401-01
- Transmission Rate Converter Unit - SD-5D086-01 and SD-5D086-02
- Switching Transmission Facilities Unit - SD-5D167-01
- Directly Connected Test Unit - SD-2P077-01
- Echo Canceler #5 Signaling Unit - SD-5X213-01

4. REFERENCES

Supplementary information is contained in the following documents:

- Three-Fan Unit, Circuit Description - CD-5D019-01
- Six-Fan Unit, Circuit Description - CD-5D081-01
- Fuse/Filter Unit 2, Circuit Description - CD-5D053-01
- Fuse/Filter Unit 4, Circuit Description - CD-5D087-01
- Switching Module Application Schematic - CD-5D012-02
- Remote Switching Module Application Schematic - CD-5D133-01

Acronyms

FFU	fuse/filter unit
ISLU	integrated services line unit
LED	light-emitting diode
LTP	line and trunk peripheral cabinet
PSU	packet switch unit
SM	switching module
SMC	switching module control cabinet
SMC2	switching module control cabinet, model 2

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