

**5ESS® SWITCHING EQUIPMENT
SWITCHING MODULE APPLICATION
SCHEMATIC****4. REASONS FOR REISSUE***D. Description of Changes*

International Only Change - Provided for an additional two line trunk peripheral (LTP) cabinets (No.s 5 and 6) to be added to the left of LTP 0. This makes allowance for a six LTP switching module (SM) configuration.

Introduced switch maintenance control (SMC) and LTP cabinets equipped with the modular fuse filter unit J5D003FJ-() and provided cable MULT information for cabling between new and old fuse filter units.

International Only Change - Provided for an additional nine LTP cabinets (No.s 7 through 15) to support 50 Hz periodic pulse metering (FPPM) units. These cabinets can only be equipped with units which do not have peripheral interface control bus (PICB) or peripheral interface data bus (PIDB) interfaces. The cabinets can be in the same aisle or across the wiring aisle.

Introduced SMC and LTP cabinets equipped with the bi-directional fan unit J5D003FH-().

International Only Change - Introduced integrated services line unit model 2 (ISLU2) J5D004AL-().

Introduced integrated digital carrier unit (IDCU) J5D003FL-().

Provided the international introduction of the SM configuration which allows two SMs to be equipped with the digital line and trunk unit 2 (DLTU2), J5D024AA-(), in one SMC cabinet.

International Change Only - Introduced a single bay SM configuration equipped with three packet switch units (PSU) common shelves; the upper two are associated with a two-SM in a single bay configuration.

Introduced the communication module model 2C (CM2C) J5D020AJ-(), a two shelf communication module (CM) for small office applications. It mounts in an SMC or LTP adjacent to the administrative module (AM), of the 3B21D processor.

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DEPT NA5350300-RDA-FNG

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D. Description of Changes

- D.1 Add Line Unit Model 3 (LU3).
- D.2 Add LTP configuration without fan unit to support two ISLUs in a cabinet and fan alarm scan/distribute interconnections.
- D.3 Add Switching Model Control Cabinet Model 2 (SMC2) equipped with Module Controller and Time Slot Interchanger Unit Model 2 (MCTU2) and fan alarm scan/distribute interconnections.
- D.4 Add Split-Bus Fuse/Filter configuration for SMC2/MCTU2.
- D.5 Add Digital Line Trunk Unit Model 2 (DLTU2).
- D.6 Add Block Diagram to show host SM attenuation arrangement when using a NCT link on a 982th optic paddleboard.
- D.7 Add Special Single Bay SM configuration to support ISDN Primary Rate Interface (E/W one PSU shelf). This is option "ZH".

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D. Description of Changes

- D.1 Add six fan unit to SMC cabinet.
- D.2 Add six fan unit interconnection information for alarm scan/distribute interconnection.
- D.3 Add echo canceler-#5 signaling unit (ECSU) information allowing equippage in either an LTP or SMC cabinet.
- D.4 Add a special single bay SM configuration for export which allows a single shelf PSU and ECSU in the SMC cabinet.
- D.5 Add a special single bay SM configuration for OSPS which allows a single shelf PSU and DSU2 equipped with RAF in the SMC cabinet.

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CHANGES

D. Description of Changes

- D.1 Add new LTP configurations -
 - 3 fan unit and 4 feeder fuse/filter panel
 - 6 fan unit and 4 feeder fuse/filter panel
- D.2 Add interconnect information for new fan units' alarm scan/distribute connections.
- D.3 Add Packet Switch Unit (PSU) information to allow equipage in an LTP cabinet.
- D.4 Add Integrated Services Line Unit (ISLU) information to allow equipage in an LTP cabinet.
- D.5 Add a special export single bay SM configuration which allows a shelf of PSIU to be equipped in a SMC cabinet.
- D.6 Clarify DCLU information and drawing.

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CIRCUIT DESCRIPTION

CD-5D012-02
ISSUE 3B
APPENDIX 1B
DWG ISSUE 7B
DISTN CODE 7T13

5ESSTM SWITCHING EQUIPMENT

SWITCHING MODULE APPLICATION
SCHEMATIC

CHANGES

D. Description of Changes

D.1 Added the alarm and status unit into the switching module control (SMC) cabinet for multimodule remote switching module (MMRSM) application.

D.2 Clarified remote clock unit application.

D.3 Documented export remote switching module configuration.

D.4 Clarified option information and usage of available SMC cabinet space.

D.5 Corrected miscellaneous drawing errors.

D.6 Revisions to the SD because of the above changes include the following:

(a) Added drawings AS 24 and AS 25.

(b) Revised and added equipment/option notes.

(c) Corrected omission at drawing AS 16.

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SWITCHING MODULE APPLICATION
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SECTION I - GENERAL DESCRIPTION1. PURPOSE OF CIRCUIT

1.01 The 5ESS™ Switching Module Application Schematic defines all high-level interconnection within the Switching Module (SM) for 6-foot cabinets. The SM is configured to suit the types and quantities of lines and trunks it terminates on various peripheral units in its Line Trunk Peripheral (LTP) cabinets. Hardware required in every SM is housed in the Switching Module Control (SMC) cabinet. Each SM is composed of one SMC cabinet and up to four LTP cabinets, depending on the number of peripheral units included.

1.02 The SM Application Schematic also describes the following SM-level circuits:

- SM Fuse Alarm Circuit
- SM Fan Alarm Circuit
- -48V RTN interconnection

SECTION II - DETAILED DESCRIPTION1. SMC UNITS

1.01 The units which may be equipped in the SMC cabinet for a standard configuration are:

- Local Digital Service Unit (LDSU)
- Local Digital Service Unit - Export (LDSU-E)

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- Digital Service Unit Model 2 - Local Digital Service Unit Function (DSU2-LDSUF)
- Time Slot Interchange Unit (TSIU)
- Time Slot Interchange Unit Model 2 (TSIU2)
- Switching Module Processor Unit (SMPU)
- Switching Module Processor Unit Model 2 (SMPU2)
- Module Control and Time Slot Interchange Unit (MCTU)
- Memory Expansion Unit (MEU)

1.02 Additional units which may be equipped in the SMC cabinet for the Single Bay SM configuration are:

- Digital Line Trunk Unit (DLTU)
- Digital Line Trunk Unit - Export (DLTU-E)

1.03 The SMC cabinet is always equipped with a fuse/filter unit and a fan unit.

1.04 The LDSU and DSU2-LDSUF perform the same functions. The DSU2-LDSUF is a more recent design.

1.05 The SMC cabinet can be equipped with TSIU and SMPU, TSIU2 and SMPU2, or MCTU. The TSIU, TSIU2, and MCTU contain data interfaces to provide up to 32 Peripheral Interface Data Buses (PIDBs) for the peripheral units.

The SMPU, TSIU2, and MCTU contain control interfaces to provide up to 46 Peripheral Interface Control Buses (PICBs) for the peripheral units.

2. LTP UNITS

2.01 The units which may be equipped in the LTP cabinets of an SM are:

- Trunk Unit (TU)
- Analog Trunk Unit-Export (ATU-E)
- DLTU
- DLTU-E
- Global Digital Service Unit (GDSU)
- Global Digital Service Unit - Export (GDSU-E)
- Metallic Service Unit (MSU)
- Modular Metallic Service Unit (MMSU)
- Line Unit (LU)
- Line Unit Model 2 (LU2)
- Digital Carrier Line Unit (DCLU)
- Digital Carrier Line Unit - Supplement (DCLUS)
- Directly Connected Test Unit (DCTU)
- Facilities Interface Unit (FIU)
- Periodic Pulse Metering Unit (PPMU)
- Remote Clock Unit (RCU)

2.02 Each LTP cabinet is equipped with a fuse/filter unit and a fan unit.

2.03 The FIU and RCU are used only on the Remote Switching Module (RSM) application. The RCU is required for Multi-Module RSM (MMRSM) but is an option for single-module RSM.

2.04 The following units are used only for export application:

- ATU-E
- DLTU-E
- GDSU-E
- PPMU
- LDSU-E

2.05 The following units are used in both domestic and export application:

- TSIU2
- SMPU2
- MCTU
- MEU
- MMSU
- LU2
- DCLU
- DCLUS
- DCTU
- FIU
- RCU

2.06 The TSIU, SMPU, LU, and MSU are not part of the export design.

2.07 The MMSU and MSU perform the same functions. The MMSU is a more recent hardware design.

2.08 The LU and LU2 perform the same functions. The LU2 is a more recent hardware design.

This is the evolution of the standard SMC cabinet in export applications:

3. MOUNTING CONSIDERATIONS

3.01 The 6-foot cabinets provide six 8 1/2-inch high unit positions for 5ESS™ hardware units (other than the fuse/filter unit and the fan unit).

Unit Position		SEE2
6	LDSU-E	
5	LDSU-E	LDSU-E
4	TSIU2	LDSU-E
3	TSIU2	MCTU
2	SMPU2	MCTU
1	(MEU)	(MEU)

3.02 The SMC cabinet has a fixed configuration. This is the evolution of the standard SMC cabinet in domestic applications:

This is the evolution of the SMC cabinet when configured for Single Bay SM in export applications:

Unit Position		5E1(2)1	5E2(1)	5E2(2)
6	LDSU			
5	TSIU	LDSU		
4	TSIU	TSIU2	LDSU	DSU2-LDSUF
3	SMPU	TSIU2	MCTU	MCTU
2	SMPU	SMPU2	MCTU	MCTU
1		(MEU)	(MEU)	(MEU)

Unit Position		SEE2
6	LDSU-E	DLTU-E
5	LDSU-E	LDSU-E
4	TSIU2	LDSU-E
3	TSIU2	MCTU
2	SMPU2	MCTU
1	DLTU-E	(MEU)

This is the evolution of the SMC cabinet when configured for Single Bay SM in domestic applications:

The MEU option is equipped when the SM Memory exceeds 5 megabytes with TN28 memory boards or 10 megabytes with TN56 memory boards.

Unit Position		5E2(1)	5E2(2)
6	DLTU	DLTU	DLTU
5	LDSU	DLTU	DLTU
4	TSIU2	LDSU	DSU2-LDSUF
3	TSIU2	MCTU	MCTU
2	SMPU2	MCTU	MCTU
1	DLTU	(MEU)	(MEU)

3.03 The FIU, DLTU(s) and RCU (if equipped) in an RSM are to be equipped in the BAY0 LTP in this configuration:

Unit Position	BAY 0 LTP
6	
5	
4	RCU
3	FIU
2	DLTU
1	DLTU

The first DLTU is to be equipped in unit position 1 and the second in position 2.

3.04 The peripheral units in an SM may be equipped in any available unit positions in the LTP cabinets with the following exceptions:

- FIU, DLTU(s), and RCU (if equipped) in an RSM shall be placed as described above.
- The recommended placement for the DLTU is in one of the bottom two unit positions. This placement minimizes cable congestion.
- The recommended placement for the DLTU-E is in one of the two bottom unit positions for minimal cable congestion.
- The MMSU basic shelf is to be placed in one of the lower three unit positions, with growth shelves in adjacent positions above the basic shelf.
- The DCLU may be mounted in any two available unit positions. When required, the DCLUS shall be mounted in the unit position directly above the DCLU.

- The DCTU shall be mounted in the top two to four unit positions.

SECTION III - REFERENCE DATA

1. WORKING LIMITS

1.01 None.

2. FUNCTIONAL DESIGNATIONS

2.01 Not applicable.

3. FUNCTIONS

3.01 Not applicable.

4. CONNECTING CIRCUITS

4.01 Not applicable.

5. MANUFACTURING TEST REQUIREMENTS

5.01 Not applicable.

SECTION IV - REASON FOR REISSUE

1. Change and Added Functions

A.1 Added

MCTU
DSU2-LDSUF

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