SLC® Series 5 Carrier System/ *SLC*® LineReach™ Access System

AUB27( ) Alarm Display Unit — 5SCSAA0 (AUB27) 5SPQABM (AUB27B) 5SPQAED (AUB27C)

Features/Functions

- Local alarm display
- BC option switches
- Bank identification
- Serial interface to CIU through CTU connector
- Protection switching (*SLC* Series 5 only)
- ACO and LED test push buttons
- MISC alarm inputs
- Alarm telemetry closure outputs.
- Provisioning coefficient storage for special service channel units

Description

This data sheet describes the AUB27( ) alarm display unit (ADU) (COMCODE 103841235, AUB27; 106894116, AUB27B and 108544255, AUB27C) and is intended for end-users of the units.

The AUB27( ) ADU is used in the *SLC*® Series 5 Carrier System remote terminal (RT). The AUB27C ADU is also used in the *SLC*® LineReach™ Access System. In *SLC* Series 5 Carrier System, the AUB27B and AUB27C ADUs support FPC/AC, FPB (TR-08)[1], INA and FP303 applications in all RT dual channel banks (DCBs). The AUB27 ADU is not recommended for use in FPB (TR-08)

1 Telcordia Technical Reference TR-TSY-000008 Issue 2, August 1987, and all Revisions and Supplements, *Digital Interface Between the SLC 96 Digital Loop Carrier System and a Local Digital Switch*.

applications in older-vintage DCBs. See Table 3 for *SLC* Series 5 applications of the AUB27( ) ADU.

In *SLC* LineReach Access Systems the AUB27C ADU supports FPC, INA, TR303[1] and TR-08 Mode 1 or Mode 2 applications. See Table 4 for AUB27C ADU Applications.

The AUB27B ADU eliminates an intermittent framing problem in *SLC* Series 5 FPB Mode 1 (TR-08) configurations that occurred when RT systems in older DCBs (J1C182AB and J1C182AC) equipped with an AUB27 ADU were used with the TR-08 interface of a DACS system, 5ESS® switch or DMS[2]-100 switch. The AUB27B is therefore backward compatible with all AUB27 applications and in addition with all FPB (TR-08) applications.

The AUB27C alarm display unit has been designed to replace discontinued older-technology components. The AUB27C is backward compatible with the AUB27 and AUB27B in all applications. In addition, the polarity of the Miscellaneous alarm input (RTMISC1 and RTMISC2) detectors has been reversed to allow these inputs to be bridged with the RTMISC inputs of the AUB24 and AUB26 ADUs, which is desirable in certain configurations. See the Compatibility section for further details.

This data sheet is being reissued to clarify how the NORM/CLR option switch is used in *SLC* Series 5 Carrier System Feature Packages FPB and FPC.

The AUB27( ) ADU is further illustrated in the following tables and figure.

- Table 1 lists applicable option switch settings for Feature Package B (FPB), Feature Package C with AutoCut (FPC/AC), Integrated Network Access – Remote Terminal (INA-RT) systems, and FP303 systems for the *SLC* Series 5 Carrier System.
- Table 2 lists applicable option switch settings for TR08 Mode, TR303, INA and Feature Package C (FPC) systems for the *SLC* LineReach Access System.
- Table 3 lists RT applications for the *SLC* Series 5 Carrier System.
- Table 4 lists RT applications for the *SLC* LineReach Access System.
- Table 5 lists the environmental specifications.
- Table 6 lists conditions of unit LED indicators during the RT LED test.
- Table 7 lists the edge connections.
- Figure 1 shows the printed wiring board (PWB) switches and faceplate.

1 Telcordia Technical Reference TR-NWT-000303 Issue 2, December 1992, and all Revisions and Supplements, *Integrated Digital Loop Carrier System Generic Requirements, Objectives, and Interface*.

2 DMS is a trademark of Nortel

Functions

The bank control unit (BCU) and the AUB27( ) ADU perform the following bank controller functions for the RT:

- Internal performance monitoring and fault diagnosis
- Alarm inputs and outputs
- Craft inputs for option settings and bank identification
- Channel unit provisioning using the craft interface unit (CIU) or SCAT[1]
- TR-303 embedded operation channel (EOC) ASN.1 message support (FP303)
- EOC path protection switching *SLC* Series 5 (FP303)
- T1 line protection switching (Not applicable to *SLC* LineReach Access System).

The AUB27( ) provides a serial interface to the other plug-ins in the bank. The bank controller uses the serial link to control the plug-ins and their LED indicators, and monitors plug-in status. The AUB27( ) also has inputs to detect failures in the RT common equipment such as the ringing generators, the rectifiers, the battery charger, and the AC power plant. The AUB27( ) also provides alarm closures and an alarm cut-off (ACO) function.

Like the BCU, the AUB27( ) ADU contains an electrically erasable, programmable read-only memory (EEPROM) for the semipermanent storage of the provisioning coefficients of the channel unit as a backup for the BCU EEPROM. The AUB27( ) ADU also has a universal asynchronous receiver transmitter (UART) as the communication interface for the CIU or SCAT.

1 Special Channel Administration Tool (SCAT) is a software product of Lucent Technologies to allow CIU-equivalent provisioning operations. Upgrades from SCAT to SCAT-III software can be obtained via the Internet at http://www.lucent-ade.com/scat.

SLC Series 5 Option Switch Settings

The board-mounted switches of the AUB27( ) ADU provide the options for *SLC* Series 5 Carrier System Feature Packages FPB, FPC/AC, INA-RT and FP303 systems (See Table 1).

Options for *SLC* Series 5 Carrier System Feature Packages FPB, FPC/AC, INA-RT, FP303

Table 1 summarizes the board-mounted option setting of the AUB27( ) ADU. The setting provides the following functions:

S1 (FPB, FPC/AC, INA-RT) (8-position, board-mounted option switch).

- Position 1: No protection line/protection line (NPL/PL). Applicable for all modes except INA-RT. The PL selection enables operation of the protection line switching. The NPL selection disables operation of the protection line switching.
- Position 2: Two DS1 lines/four DS1 lines (2/4). The 2 selection enables the operation of 2 DS1 lines for FPB Mode 2 or INA-RT Mode III. The 4 selection enables the operation of 4 DS1 lines for the other RT modes.
- Position 3: AB in-service/preservice (ABI/ABP). The ABI selection puts the AB shelf in the in-service state. The ABP selection puts the AB shelf in the preservice state.
- Position 4: CD in-service/preservice (CDI/CDP). The CDI selection puts the CD shelf in the in-service state. The CDP selection puts the CD shelf in the preservice state.
- Position 5: AB equipped/unequipped (ABE/ABU). The ABE selection marks the AB shelf as equipped with common plug-ins. The ABU selection marks the AB shelf as not equipped.
- Position 6: CD equipped/unequipped (CDE/CDU). The CDE selection marks the CD shelf as equipped with common plug-ins. The CDU selection marks the CD shelf as not equipped.
- Position 7: RTMISC1 MJ/MN (1MJ/1MN). Used in FPB and FPC/AC to monitor input alarms — has no function in INA-RT. The 1MJ selection associates the RTMISC1 closure with a *major* (MJ) alarm. The 1MN selection associates the RTMISC1 closure with a *minor* (MN) alarm. In INA-RT, RTMISC1 is used for a system alarm output for connection to a telemetry system. MISC1 with MISC2 leads can provide MJ, MN, and power minor (PMN) alarms.
- Position 8: RTMISC2 MJ/MN (2MJ/2MN). Used in FPB and FPC/AC to monitor input alarms — has no function in INA-RT. The 2MJ selection associates the RTMISC2 closure with a *major* alarm. The 2MN selection

associates the RTMISC2 closure with a *minor* alarm. In INA-RT, RTMISC2 is used for a system alarm output for connection to a telemetry system. MISC1 with MISC2 leads can provide MJ, MN, and PMN alarms.

S2 (FPB, FPC/AC, INA-RT) (8-position, board-mounted option switch).

- Position 1: Alarm field length (16/13). The 16 selection sets a 16-bit alarm field length in the TR-08 for communicating with the terminal at the other end. The 13 selection sets a 13-bit field length. Only the 13-bit field is valid for all indicated modes.
- Position 2: FS/FE framing (FS/FE). The FS selection chooses the super frame (SF or F_s) pattern. The FE selection chooses the extended super frame (ESF or F_e) pattern. This switch is ignored if switch S2, position 3 is set to CUT.
- Position 3: No cutover/cutover hunting enabled (NC/CUT). Applicable for automatic FPC to FPB Mode 1 cutover (AutoCut) — not applicable in INA-RT. The CUT selection enables automatic cutover ESF or SF T1 framing. The NC selection disables automatic framing and switch S2, position 2 determines framing.
- Position 4: Single/dual (SGL/DBL). Applicable only in INA-RT operation — this switch has no function in Mode I INA-RT. The SGL selection enables only the odd channels in Mode III INA-RT to be operational. The DBL selection enables both channels of a dual channel unit in an INA-RT.
- Position 5: Power alarm integrate/no power alarm (PA/NPA). Applicable only in INA-RT operation. The PA selection enables the PMN (power minor) alarm to be integrated into the *major* or *minor* alarm telemetry outputs (see switch S2, position 6). The NPA selection enables the PMN to appear on the PMN telemetry output.
- Position 6: Integrate MJ/MN (MJP/MNP). Applicable only in INA-RT operation. The MJP selection chooses the PMN to be indicated as a *major* alarm if the PA option of switch S2, position 5 is selected. The MNP selection chooses the PMN to be indicated as a *minor* alarm if the PA option is selected.
- Position 7: Not used.
- Position 8: Not used.

S3 data link enabled/no data link (DL/NDL). When Switch S3 is set to data link enabled (DL) the RTMISC1 and RTMISC2 alarm inputs are activated. If the system is to be used in a central office or an external alarm telemetry S3 may be set to no data link (NDL) in which case the RTMISC1 and RTMISC2 are converted to Major/Minor/Power Minor alarm outputs to interface with an external alarm system. RTMISC1 and RTMISC2 may be set as either Major or Minor alarms by S1 positions 7 and 8. For INA use NDL only.

S4 — S7/S8 — S11 (Rotary, board-mounted option switches). These two groups of four rotary switches permit the craft personnel to input system identification

numbers in the range of 0000 to 9999, with the following place values:

- S4 and S8 are for the *thousands* digit.
- S5 and S9 are for the *hundreds* digit.
- S6 and S10 are for the *tens* digit.
- S7 and S11 are for the *ones* digit.

In INA-RT applications, switches S4 through S7 are associated with the AB (lower) shelf, and switches S8 through S11 are associated with the CD (upper) shelf of the bank.

In FPB and FPC/AC applications, switches S4 through S7 are used to set the system ID. Switches S8 through S11 are ignored.

NOTE:
The use of the bank identification switches depends on the operating mode of the bank (see Table 1).

In INA-RT text reference, a bank is defined as one-half of a *SLC* Series 5 Carrier System dual channel bank (two shelves). In INA-RT Mode I, if the two groups of switches (S4 - S7 and S8 - S11) agree, the INA-RT is assumed to be a single 96-channel system. If the two sets of switches disagree, then the RT is assumed to be two 48-channel systems. In INA-RT Mode III, the RT provides 48 channels and the S4 - S11 switches are used to identify the system counting sequence. In INA-RT Mode III-48, if the two sets of switches are different, then the system is assumed to be a 1- through 48-channel count system (odd and even channels used), and switch group S8 - S11 is ignored. If the two sets of switches are equal, then the system is assumed to be a Mode III-96 system, 1- through 96-channel count with only 48 odd channels usable. Therefore, Mode III-96 is also a 48-line system.

NORM/CLR (Board-mounted plug or slide switch.) The NORM selection disables automatic memory clearing and provisioning memory can only be cleared by the CIU. The CLR selection enables the bank provisioning memory to clear following BCU insertion in the shelf under certain conditions. In Feature Package FPC, provisioning memory is stored in three places, the COT BCU, the COT ADU and the RT BCU. Therefore, in FPC the RT AUB 27 ( ) ADU is not involved in provisioning memory at all and the CLR selection has no effect. In FPC, one must use the CIU/SCAT to clear provisioning memory. In Feature Package FPB, the provisioning memory is also stored in three places, the RT BCU, the RT ADU and a checksum is stored in the A digroup LIU. If there is a three-way mismatch in Feature Package FPB the provisioning memory can be cleared provided no CIU provisionable channel units are in the bank. Note that CLR would normally be used only during system turnup.

Options for *SLC* Series 5 Carrier System Feature Package FP303

The board-mounted option setting of the AUB27( ) ADU provides the following function:

S1 (FP303) (8-position, board-mounted option switch).

- Position 1: No protection line/protection line (NPL/PL). The PL selection enables operation of the protection line switching. The NPL selection disables operation of the protection line switching.
- Position 2: Two DS1 lines/four DS1 lines (2/4). Not used for FP303.
- Position 3: AB in-service/preservice (ABI/ABP). The ABI selection puts the AB shelf in the in-service state. The ABP selection puts the AB shelf in the preservice state.
- Position 4: CD in-service/preservice (CDI/CDP). The CDI selection puts the CD shelf in the in-service state. The CDP selection puts the CD shelf in the preservice state.
- Position 5: AB equipped/unequipped (ABE/ABU). The ABE selection marks the AB shelf as equipped with common plug-ins. The ABU selection marks the AB shelf as not equipped. The ABE switch position is required in an in-service FP303 system to equip the mandatory LIU A DS1 facility that carries the active or standby EOC and time slot management channel (TMC).
- Position 6: CD equipped/unequipped (CDE/CDU). The CDE selection marks the CD shelf as equipped with common plug-ins. The CDU selection marks the CD shelf as not equipped. The CDE switch position is required in an in-service FP303 system to equip the mandatory LIU C DS1 facility that carries the active or standby EOC and TMC.
- Position 7: RTMISC1 major/minor (1MJ/1MN). The 1MJ selection associates the RTMISC1 closure with a *major* alarm. The 1MN selection associates the RTMISC1 closure with *minor* alarm.
- Position 8: RTMISC2 major/minor (2MJ/2MN). The 2MJ selection associates the RTMISC2 closure with a *major* alarm. The 2MN selection associates the RTMISC2 closure with *minor* alarm.

S2 (FP303) (8-position, board-mounted option switch).

- Position 1: (16/13) Not used for FP303 systems.
- Position 2: FS/ESF framing (FS/FE). Select FE for FP303 systems.
- Position 3: (NC/CUT). Not used for FP303. Set to NC position.
- Position 4: (SGL/DBL) Not used for FP303. Set to SGL position.
- Position 5: (PA/NPA) Not used for FP303. Set to NPA position.
- Position 6: (MJP/MNP) Not used for FP303. Set to MNP position.
- Position 7: Set to left (toward bottom of board) if equipping the LIU B DS1 facility. Otherwise, set to the right.

- Position 8: Set to left (toward bottom of board) if equipping the LIU D DS1 facility. Otherwise, set to the right.

S3 data link enabled/no data link (DL/NDL). When Switch S3 is set to data link enabled (DL) the RTMISC1 and RTMISC2 alarm inputs are activated. If the system is to be used in a central office or an external alarm telemetry S3 may be set to no data link (NDL) in which case the RTMISC1 and RTMISC2 are converted to Major/Minor/Power Minor alarm outputs to interface with an external alarm system. RTMISC1 and RTMISC2 may be set as either Major or Minor alarms by S1 positions 7 and 8.

S4-S7/S8–S11 (Rotary board-mounted option switches).

NOTE:
Switches S8 through S11 are not used for FP303 systems — set S8 through S11 to 0.

These four rotary switches permit the craft personnel to input system identification numbers in the range of 0000 through 9999, with the following place values:

- S4 is for the *thousands* digit.
- S5 is for the *hundreds* digit.
- S6 is for the *tens* digit.
- S7 is for the *ones* digit.

NORM/CLR (Board-mounted plug or slide switch).

CAUTION:
If the NORM/CLEAR option plug is left in the CLEAR position, administrative memory clears each time the bank resets. This memory clearing results in a temporary service interruption.

The CLR selection initiates a clearing of provisioning (partition 1) memory following a bank reset if a 3-way mismatch exists (TRU checksum, ADU memory, and BCU memory all conflict). The CLR selection also initiates a clearing of administrative (partition 2) memory following a bank reset regardless of whether a 3-way mismatch exists. This NORM/CLR option is used during system turnup to clear random data from system memory.

Table 1. AUB27( ) ADU Option Switch Settings for *SLC* Series 5 Carrier System

Switch & Position		Switch Option	*SLC* Series 5 Carrier System					
			Switch Setting (Notes 1 and 2)					
			FPB Mode		FPC/AC	INA-RT		FP303
			1	2		I	III	
S1	1	No protection line/protection line (NPL/PL)	Opt	Opt	Opt	NP	NP	Opt
	2	2 DS1 lines/4 DS lines (2/4)	4	2	4	4	2	NU
	3	AB in-service/AB preservice (ABI/ABP)	Opt	Opt	Opt	Opt	Opt	Opt
	4	CD in-service/CD preservice (CDI/CDP)	Opt	Opt	Opt	Opt	Opt	Opt
	5	AB equipped/AB unequipped (ABE/ABU)	Opt	Opt	Opt	Opt	Opt	Opt
	6	CD equipped/CD unequipped (CDE/CDU)	Opt	Opt	Opt	Opt	Opt	Opt
	7	RTMISC1 major/minor alarm (1MJ/1MN)	Opt	Opt	Opt	NU	NU	Opt
	8	RTMISC2 major/minor alarm (2MJ/2MN)	Opt	Opt	Opt	NU	NU	Opt
S2	1	16-bit/13-bit alarm field (16/13)	13	13	13	13	13	NU
	2	FS/ESF framing (FS/FE)	FS	FS	*	Opt	Opt	FE
	3	No cutover hunting/cutover enabled (NC/CUT)	Opt	NC	Opt	NU	NU	NC
	4	single/double channel (SGL/DBL)	NU	NU	NU	NU	Opt	SGL
	5	Pwr alm integrated/no pwr alm (PA/NPA)	NU	NU	NU	Opt	Opt	NPA
	6	MJ/MN power alarm (MJP/MNP)	NU	NU	ONU	Opt	Opt	MNP
	7	B DS1 equipped/unequipped (BEQ/BUE)	NU	NU	NU	NU	NU	†
	8	D DS1 equipped/unequipped (DEQ/DUE)	NU	NU	NU	NU	NU	‡
S3		Data Link enabled/no data link (DL/NDL)	Opt§	Opt§	Opt§	NDL	NDL	Opt§
S4		Thousands system ID number¶	0-9	0-9	0-9	0-9	0-9	0-9
S5		Hundreds system ID number¶	0-9	0-9	0-9	0-9	0-9	0-9
S6		Tens system ID number¶	0-9	0-9	0-9	0-9	0-9	0-9
S7		Ones system ID number¶	0-9	0-9	0-9	0-9	0-9	0-9
S8		Thousands system ID number**	NU	NU	NU	0-9	0-9	0††
S9		Hundreds system ID number**	NU	NU	NU	0-9	0-9	0††
S10		Tens system ID number**	NU	NU	NU	0-9	0-9	0††
S11		Ones system ID number**	NU	NU	NU	0-9	0-9	0††

Notes:
1. Opt denotes optional setting. NU denotes a setting not used (the bank controller ignores the switch setting).
2. The system identification number 0000 is used in INA-RT Mode III-48 to designate an unused system number set. See 363-099-105TD, *INA-RT* Technical Description for details.

* In FPC/AC, switch S2-2 should be set to FE if S2-3 NC/CUT switch is set to NC (FPC system with no cutover hunting). If S2-3 switch is set to CUT (cutover enabled), then S2-2 may be set to either FE or FS.

† Set to left (toward bottom of board) if equipping the LIU B DS1 facility. Otherwise, set to the right.

‡ Set to left (toward bottom of board) if equipping the LIU D DS1 facility. Otherwise, set to the right.

§ When Switch S3 is set to data link enabled (DL) the RTMISC1 and RTMISC2 alarm inputs are activated. If the system is to be used in a central office or an external alarm telemetry S3 may be set to no data link (NDL) in which case the RTMISC1 and RTMISC2 are converted to Major/Minor/Power Minor alarm outputs to interface with an external alarm system. RTMISC1 and RTMISC2 may be set as either Major or Minor alarms by S1 positions 7 and 8. See Table 3 for BCU compatibility.

¶ AB Shelf in INA-RT.

** CD Shelf in INA-RT.

†† Switches S8 through S11 are not used for FP303 systems — set S8 through S11 to 0.

SLC LineReach Option Switch Settings

The board-mounted switches of the AUB27C ADU provide the following options for *SLC* LineReach Access System for use in FPC, INA, TR303, and TR-08 Mode applications (see Table 2).

Options for *SLC* LineReach Access System in FPC, INA, TR-08, or TR303 applications

Table 2 summarizes the board-mounted option setting of the AUB27C ADU. The switch setting provides the following functions:

S1 (TR-08, TR303, INA, FPC Modes) (8-position, board-mounted option switch).

- Position 1: No protection line/protection line (NPL/PL). Set to No protection line (NPL) position.
- Position 2: DS1 line select (2/4). The 2 selection enables the operation of 1 DS1 line for TR-08 Mode 2. The 4 selection enables the operation of 2 DS1 lines for the other RT modes.
- Position 3: AB in-service/preservice (ABI/ABP). The ABI selection puts the AB digroups in the in-service state. The ABP selection puts the AB digroups in the preservice state.
- Position 4: CD in-service/preservice (CDI/CDP). This switch must be set to CDP position.
- Position 5: AB equipped/unequipped (ABE/ABU). The ABE selection marks the AB digroups as equipped with common plug-ins. The ABU selection marks the AB digroups as not equipped. Set to ABE.
- Position 6: CD equipped/unequipped (CDE/CDU). This switch must be set to CDU position.
- Position 7: RTMISC1 MJ/MN (1MJ/1MN). Used in TR-08, TR303 and FPC Modes to monitor input alarms. The 1MJ selection associates the RTMISC1 closure with a *major* (MJ) alarm. The 1MN selection associates the RTMISC1 closure with a *minor* (MN) alarm. MISC1 with MISC2 leads can provide MJ, MN, and power minor (PMN) alarms. Not used for INA systems.
- Position 8: RTMISC2 MJ/MN (2MJ/2MN). Used in TR303 and FPC Modes to monitor input alarms. The 2MJ selection associates the RTMISC2 closure with a *major* alarm. The 2MN selection associates the RTMISC2 closure with a *minor* alarm. MISC1 with MISC2 leads can provide MJ, MN, and PMN alarms. Not used for INA or TR-08 systems.

S2 (TR-08, TR303, INA, FPC) (8-position, board-mounted option switch).

- Position 1: Alarm field length (16/13). The 16 selection sets a 16-bit alarm field length in the TR-08 for communicating with the terminal at the other end. The 13 selection sets a 13-bit field length. Only the 13-bit field is valid for TR-08 and FPC applications.
- Position 2: FS/FE framing (FS/FE). The FS selection chooses the super frame (SF or F_s) pattern. The FE selection chooses the extended super frame (ESF or F_e) pattern. Set to FE for TR303 applications.
- Position 3: No cutover/cutover hunting enabled (NC/CUT). Applicable for automatic FPC to TR-08 cutover (AutoCut). Not used in *SLC* LineReach systems. Set to NC for all applications.
- Position 4: Single/dual (SGL/DBL). This switch must be set to SGL position for TR-08, TR303 and FPC applications. Set to DBL for INA.
- Position 5: Power alarm integrate/no power alarm (PA/NPA). The PA selection enables the PMN (power minor) alarm to be integrated into the *major* or *minor* alarm telemetry outputs (see switch S2, position 6). The NPA selection enables the PMN to appear on the PMN telemetry output.
- Position 6: Integrate MJ/MN (MJP/MNP). The MJP selection chooses the PMN to be indicated as a *major* alarm if the PA option of switch S2, position 5 is selected. The MNP selection chooses the PMN to be indicated as a *minor* alarm if the PA option is selected.
- Position 7: B digroup equipped / B digroup unequipped (BEQ/BUE). The BEQ/BUE is not labeled on the switch. The BUE is located on top (toward the top of the board) of switch S2 position 7. The BEQ is located at the bottom (toward the bottom of the board) of the switch S2 position 7. For proper system operation in *SLC* LineReach Access System this switch **must** be set per Table 2.
- Position 8: D digroup equipped / D digroup unequipped (DEQ/DUE). The DEQ/DUE is not labeled on the switch. The DUE is located on top (toward the top of the board) of switch S2 position 8. The DEQ is located at the bottom (toward the bottom of the board) of the switch S2 position 8. For proper system operation in *SLC* LineReach Access System this switch **must** be set per Table 2.

S3 (TR-08, TR303, INA, FPC Modes) enables/external alarm inputs or outputs. When Switch S3 is set to (DL) the RTMISC1 and RTMISC2 [1] alarm inputs are activated. If the system is to be used in a central office or with external alarm telemetry S3 may be set to (NDL) in which case the RTMISC1 and RTMISC2 are converted to Major/Minor/Power Minor alarm outputs to interface with an external alarm system. RTMISC1 and RTMISC2 may be set as either Major or Minor alarms by S1 positions 7 and 8. In INA interfaces always set switch S3 to (NDL).

S4 — S7/S8 — S11 (Rotary, board-mounted option switches). These two groups of four rotary switches permit the craft personnel to input system identification numbers in the range of 0000 to 9999, with the following place values:

- S4 and S8 are for the *thousands* digit.
- S5 and S9 are for the *hundreds* digit.
- S6 and S10 are for the *tens* digit.
- S7 and S11 are for the *ones* digit.

In TR-08, TR303, INA and FPC applications, switches S4 through S7 are used to set the system ID. Switches S8 through S11 are ignored.

NOTE:
The use of the bank identification switches depends on the operating mode of the bank (see Table 2).

NORM/CLR (Board-mounted plug or slide switch.) The NORM selection disables automatic memory clearing and provisioning memory can only be cleared by the CIU. The CLR selection enables the bank provisioning memory to clear following BCU insertion in the shelf, provided no CIU provisionable channel units are in the bank. Note that CLR would be used only temporarily during system turnup.

1 TR-08 applications does not support the RTMISC2 input.

Table 2. AUB27C ADU Option Switch Settings for *SLC* LineReach Access System

Switch & Position		Switch Option	*SLC* LineReach Access System				
			Switch Setting (Notes 1 and 2)				
			TR08 Mode		FPC	INA	TR303
			1	2			
S1	1	No protection line/protection line (NPL/PL)	NPL	NPL	NPL	NPL	NPL
	2	2 DS1 lines/4 DS lines (2/4)	4	2	4	4	4
	3	AB in-service/AB preservice (ABI/ABP)	Opt	Opt	Opt	Opt	Opt
	4	CD in-service/CD preservice (CDI/CDP)	CDP	CDP	CDP	CDP	CDP
	5	AB equipped/AB unequipped (ABE/ABU)	ABE*	ABE*	ABE*	ABE*	ABE*
	6	CD equipped/CD unequipped (CDE/CDU)	CDU	CDU	CDU	CDU	CDU
	7	RTMISC1 major/minor alarm (1MJ/1MN)	Opt	Opt	Opt	NU	Opt
	8	RTMISC2 major/minor alarm (2MJ/2MN)	NU	NU	Opt	NU	Opt
S2	1	16-bit/13-bit alarm field (16/13)	13	13	13	13	13
	2	FS/ESF framing (FS/FE)	FS	FS	FE	Opt	FE
	3	No cutover hunting/cutover enabled (NC/CUT)	NC	NC	NC	NU	NC
	4	single/double channel (SGL/DBL)	SGL	SGL	SGL	DBL	SGL
	5	Pwr alm integrated/no pwr alm (PA/NPA)	†	†	†	Opt†	†
	6	MJ/MN power alarm (MJP/MNP)	†	†	†	Opt†	†
	7	B DS1 equipped/unequipped (BEQ/BUE)	‡	BUE	‡	‡	BEQ
	8	D DS1 equipped/unequipped (DEQ/DUE)	DUE	DUE	NU	DUE	DUE
S3		Data Link enabled/no data link (DL/NDL)	Opt§	Opt§	Opt§	NDL§	Opt§
S4		Thousands system ID number	0-9	0-9	0-9	0-9	0-9
S5		Hundreds system ID number	0-9	0-9	0-9	0-9	0-9
S6		Tens system ID number	0-9	0-9	0-9	0-9	0-9
S7		Ones system ID number	0-9	0-9	0-9	0-9	0-9
S8		Thousands system ID number	NU	NU	NU	NU	NU
S9		Hundreds system ID number	NU	NU	NU	NU	NU
S10		Tens system ID number	NU	NU	NU	NU	NU
S11		Ones system ID number	NU	NU	NU	NU	NU

Notes:
1. Opt denotes a user-selectable option, based on system configuration and or status.
NU denotes a switch position not used in LineReach for which the setting does not matter.

* This switch may be set to the unequipped position (ABU) during turn-up procedures.

† Switch S2 Positions 5 and 6 are associated with the NDL position of S3. If NDL is selected, the PMN input to the ADU may be either combined with the Major/Minor alarm output (S2 position 5: PA position) or appear as a separate Power Minor output (S2 position 5: NPA position). If the PA selection is then position 6 is used to select either Major or Minor for the integrated power alarm.

‡ Switch 2 Position 7 should be set to BEQ for a 48-line system and BUE for a 24-line system when operating in TR-08 mode 1, INA or FPC.

§ When Switch S3 is set to data link enabled (DL) the RTMISC1 and RTMISC2 alarm inputs are activated. If the system is to be used in a central office or with external alarm telemetry, S3 may be set to no data link (NDL), in which case the RTMISC1 and RTMISC2 are converted to Major/Minor/Power Minor alarm outputs to interface with an external alarm system. RTMISC1 and RTMISC2 may be set as either Major or Minor alarms by S1 positions 7 and 8. For INA interfaces always set S3 to NDL.

Compatibility

The AUB27( ) alarm display unit is compatible with *SLC* Series 5 Carrier System Feature Packages B (FPB), Feature Package C with AutoCut (FPC/AC), Integrated Network Access – Remote Terminal (INA-RT) systems, and FP303 systems.

The AUB27C alarm display units are also compatible with *SLC* LineReach System for TR-08, TR303, INA and Feature Package C (FPC) applications.

Certain applications involve carrying a single telemetry closure (e.g., a door alarm) back to the central office via the shared Miscellaneous Alarm inputs of several systems. If bridging of the RTMISC( ) inputs is desired, care must be taken to ensure that the proper polarity is observed:

- Bridged RTMISC( )/ALMRTN( ) inputs from multiple systems containing AUB21, AUB24, AUB26, or AUB27C ADUs will respond correctly to a telemetry closure if the polarity of the inputs is matched.
- Bridged RTMISC( )/ALMRTN( ) inputs from multiple systems containing AUB27 or AUB27B ADUs will respond correctly to a telemetry closure if the polarity of the inputs is matched.
- Same polarity bridging of RTMISC( )/ALMRTN( ) inputs between a system containing an AUB21/AUB24/AUB26/AUB27C ADU and a system containing an AUB27/AUB27B ADU will result in a permanent MISC( ) alarm; in this case, special cabling is required to reverse the polarity of the connection.

Table 3. AUB27( ) ADU *SLC* Series 5 Carrier Systems Applications

Service Configurations (Notes 1 and 2)	BCUs	TRUs	LIUs
FPB/SS/U/M1*	MC97776A1( )†	AUA22/AUA109/AUA105( )	Any
FPB/SS/U/M2	MC97776A1( )†	AUA105( )	*D* Series
FPB/SS/I/M1*	MC97776A1( )†	AUA22/AUA109/AUA105( )	Any
FPB/SS/I/M2	MC97776A1( )†	AUA105( )	*D* Series
FPC/AC‡	MC97776A1( )†§	AUA109/AUA105( )	*C* or *D* Series
INA-RT	MC97769A1	AUA21	*C* or *D* Series
FP303¶ R1 & R2	MC97777A1	AUA112**	*C* or *D* Series
FP303¶ R3	MC97796A1( )§	AUA112B**	*C* or *D* Series

Notes:

1. Where more than one unit is shown for a particular configuration, any of the units shown may be used.
2. In all cases, Mode 2 capability can be converted to Mode 1 by changing ADU option setting and adding two LIUs.

* Only the AUB27B and AUB27C are recommended for these applications when the system is installed in a J1C182AB or J1C182AC dual channel bank.

† MC97771A1 BCU (DA) can also be used.

‡ FPC/AC supports all FPC services except DCU. FPC/AC automatically cuts to FPB/SS/M1. By initially selecting D LIUs and AUA105( ) TRU, the RT will be equipped for later conversion to a Mode 2 configuration. FPC/AC systems that will be converted to FPB mode should also be equipped with the AUB27B/AUB27C ADU when the system is installed in a J1C182AB or J1C182AC dual channel bank.

§ To support alarm telemetry (S3 = NDL) either the MC97776A1D BCU or MC97796A1B BCU is required.

¶ FP303 must use the AUA74 line switch unit (LSU). All other feature packages use the AUA73( ) LSU. FP303 Release 3 requires the MC97796A1( ) BCU and AUA112B TRU.

** 993A TRU faceplate connector is required.

Table 4. AUB27C ADU *SLC* LineReach Access System Applications

Service Configurations (Note 1)	BCUs	TRUs	LIUs
TR08 Mode 1	MC97797A1( )	AUA109 AUA105B	AUA61E, AUA64G, or AUA66
TR08 Mode 2	MC97797A1( )	AUA105B	AUA61E, AUA64G, or AUA66
FPC	MC97797A1( )	AUA109 AUA105B	AUA61E, AUA64G, or AUA66
INA	MC97797A1B	AUA109 AUA105B	AUA61E, AUA64G, or AUA66
TR303	MC97798A1( )	AUA112B	AUA61E, AUA64G, or AUA66

Notes:
1. Where more than one unit is shown for a particular configuration, any of the units shown may be used.

Specifications

This unit is intended for use in *SLC* Series 5 Carrier Systems and *SLC* LineReach Access Systems located in controlled environments that conform to the specifications of Telcordia Technologies GR-63[1]. It may also be used in applicable Lucent Technologies cabinets designed for *SLC* Series 5 or *SLC* LineReach and intended for applications in non-controlled (outside plant) environments that conform to Telcordia Technologies GR-487[2]. These cabinets, when properly equipped, are designed to maintain internal environmental conditions within appropriate operational limits for *SLC* LineReach equipment such that system performance meets TR-NWT-000057[3].

The applicable outside plant environment criteria for cabinet enclosures (per GR-487) are summarized in Table 5 Environmental Specifications.

Table 5. Environmental Specifications

A. Temperature Range (Ambient) 1. Operating, per TR-NWT-000057: in Lucent Technologies cabinets exposed to ambient temperatures of -40° F (-40° C) with no solar load to +115° F (46° C) with maximum solar load and maximum power dissipation. Lucent Technologies cabinets are designed to ensure that the components within do not exceed their rated temperatures for the above conditions. 2. Storage, per TR-NWT-000057: ambient temperatures of -40° to 140° F (-40° to 60° C).
B. Relative Humidity 1. Operating, per TR-NWT-000057. For outside ambient temperature 84° F (29° C) or less, relative humidity of 5% to 95%. For ambient temperatures above 84° F (29° C), the relative humidity is limited to that corresponding to a specific humidity of 0.024 pound of water per pound of dry air. 2. Storage, per TR-NWT-000057: ambient temperatures 84° F (29° C) or less, 10% to 95%. For ambient temperatures above 84° F (29° C), the relative humidity is limited to that corresponding to a specific humidity of 0.024 pound of water per pound of dry air.

1 Telcordia Technologies Generic Reference GR-63, Issue 1, October 1994, and all Revisions and Supplements, "Network Equipment-Building System Requirements: Physical Protection (a module of LSSGR, GR-64; TSGR, FR-440, and NEBS FR, FR-2063)," Telcordia Technologies, Inc.

2 Telcordia Technologies General Requirements GR-487, Issue 1, June 1996, and all Revisions and Supplements. "*General Requirements for Electronic Equipment Cabinets*," Telcordia Technologies, Inc.

3 Telcordia Technologies Technical Reference TR-NWT-000057, Issue 2, January 1993, and all Revisions and Supplements, "*Functional Criteria For Digital Loop Carrier Systems*," Telcordia Technologies, Inc.

Faceplate Features

The AUB27, AUB27B, and AUB27C alarm display units share a common faceplate layout. Refer to Figure 1 for the faceplate diagram and circuit board switch locations. Refer to Table 4 for edge connections for the AUB27( ) alarm display unit.

The LED indicators and push button switches located on the faceplate of the ADU provide the following functions.

FAIL (Red LED): When lighted, this LED indicates that the failure has been identified in the AUB27( ) ADU.

MJ (Red LED): When lighted, this LED indicates that the bank has an active *major* alarm. This alarm indicates that at least one 24-channel digroup is out of service or in FP303 configurations, that the call-carrying capacity of the system is reduced by 25 percent or more.

MN (Yellow LED): When lighted, this LED indicates that the bank has an active *minor* alarm. No digroups are out of service although a subsequent failure may cause an outage if the *minor* alarm condition is not fixed.

ACO (Yellow LED): When lighted, this LED indicates that the alarm outputs to the remote reporting system from the bank are cut off. Bank indicators are not affected by the ACO.

ACO (Push button switch): When pressed, this faceplate-mounted switch cuts off the bank alarm outputs to the remote reporting system. Bank indicators are not affected by the ACO.

FE (Yellow LED): When lighted, this LED indicates that a failure has been identified at the far-end office.

NE (Yellow LED): When lighted, this LED indicates that a failure has been identified at the near-end RT.

CMP (Yellow LED): When lighted, this LED indicates that the option switches are set incorrectly, a common equipment incompatibility exists, or a channel unit slot incompatibility exists.

NOTE:
If the CMP LED is lighted and the LED TEST faceplate-mounted push button is pressed, those indicators under the control of the test switch will light except for the plug-in that caused the incompatibility.

PRV (Yellow LED):

CAUTION:
While the PRV LED is lighted, do not remove the AUB27( ) ADU, the BCU, or power as this can cause a service interruption and corrupt memory data. In FPC mode, the PRV LED does not light during updating of provisioning memory. After installing a new BCU operating in FPC mode, wait 15 minutes (or until the CIU stops responding with "SYSTEM IS BUSY") before performing additional system activities.

In FPB, this LED lights when channel unit provisioning memory is being updated or cleared. In FP303, this LED lights when provisioning or administrative memory is being cleared. In both FPB and FP303, when the PRV, FAIL, and MN LEDs on the ADU and the FAIL LED on the BCU are lighted, a 3-way mismatch in provisioning memory exists.

LED TEST (Faceplate-mounted push button): While pressed, this faceplate-mounted push button causes newer vintage channel units and most bank common circuit pack LED indicators to light (see Table 6).

NOTE:
Rectifiers, ringing generators, PCU, BFU (LineReach only), LFU (*SLC* Series 5 only), CFU (*SLC* Series 5 only) and battery chargers are not affected by the LED TEST push button.

Table 6. *SLC*® Series 5 and *SLC* LineReach RT LED Test

Unit	Status of LED(s)
Channel Units	All LEDs are lighted*
AUB27( ) ADU	All LEDs are lighted †
BCU	All LEDs are lighted
TRU	All LEDs are lighted
LIU	All LEDs are lighted
LSU	FAIL LED is lighted (Not used in LineReach)
CTU	FAIL LED is lighted

* LineReach systems support the latest vintage CUs. Older vintage CUs may not light during LED test.

† CMP blinks when S2-3 is set to CUT; PRV blinks when the system is operating in TR-08 (*SLC* 96) mode.

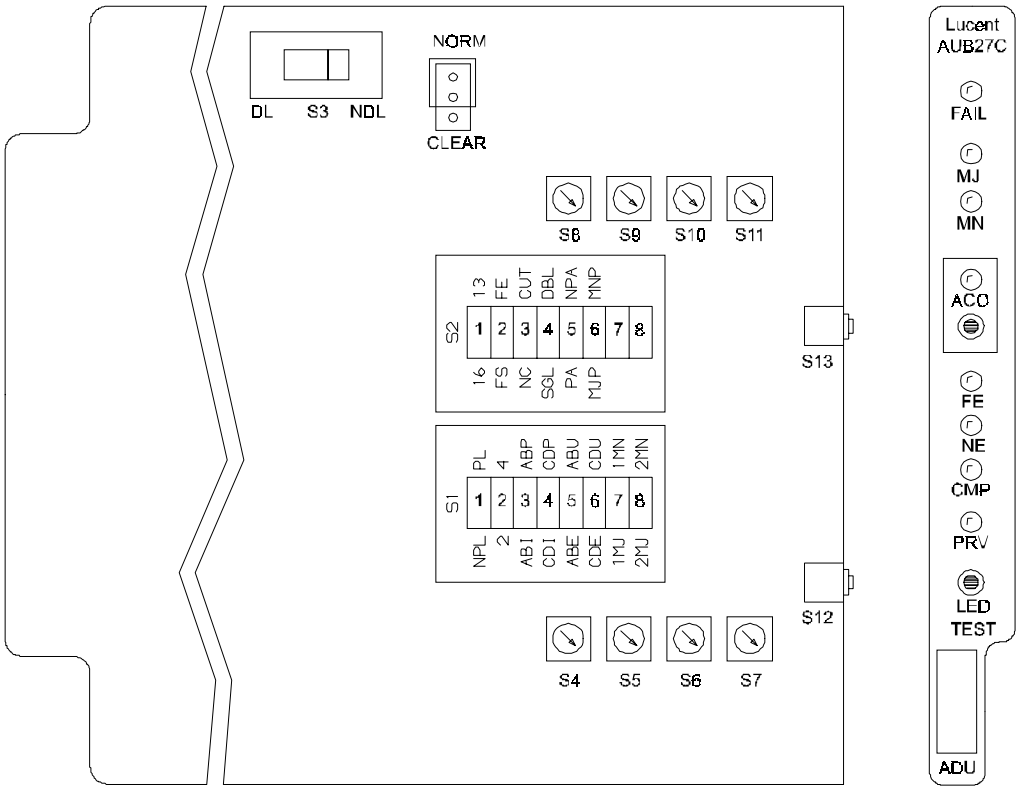

Figure 1. AUB27( ) Circuit Board Switch Locations and Faceplate

Table 7. Edge Connections For AUB27( ) Alarm Display Unit

Finger	Function
1	FRGRD (Frame Ground)
18, 60, 87	CKT GRD (Circuit Ground)
20	+5VOUT (+5 Volts Output to Bank Controller)
42	RINGGENMN (Ringing Generator Minor)
43	RINGGENMJ (Ringing Generator Major)
44	PSMN (Power Shelf Minor)
45	PMN (Power Minor)
47	RTMISC2/MN (Miscellaneous input 2 or minor alarm output)
48	RTMISC1/MJ (Miscellaneous input 1 or major alarm output)
49	+5VEXT (Backup +5 Volts From Facility Shelf)
50	-48VRTN (-48 Volts Return)
98	ALMRTN2/COM (Miscellaneous input 2 or alarm common output return)
99	ALMRTN1/PMN (Miscellaneous input 1 or power minor alarm output return)
100	-48V (-48 Volts)

NOTE:
Alarm *outputs* for *SLC* LineReach Access System applications can be used in any configuration.

References

The following documents provide additional information about the use of this channel unit in the *SLC Series 5 Carrier System* and the *SLC* LineReach Access System:

363-099-105TD	*SLC Series 5 Carrier System* *Integrated Network Access - Remote Terminal*
363-205-010	*SLC Series 5 Carrier System* *Application and Planning Guide*
363-205-401	*SLC Series 5 Carrier System* *Remote Terminal - Acceptance and Turnup*
363-205-402	*SLC Series 5 Carrier System* *Channel Unit Installation and Testing*
363-205-500	*SLC Series 5 Carrier System* *Maintenance and Trouble Clearing*
363-208-400	*SLC LineReach Access System* *Applications, Planning, and Ordering Guide*
363-208-401	*SLC LineReach Access System* *User/Service Manual*
915-710-115	*SLC Series 5 Carrier System* *Application Engineering*

Technical Assistance

Follow local procedures for obtaining technical assistance. Lucent Technologies also provides in-hours or emergency out-of-hours help for the *SLC* Series 5 Carrier System and the *SLC* LineReach Access System. Call the Lucent Technologies Regional Technical Assistance Center at 1-800-225-RTAC.

Ordering Information

Additional copies of this document (363-005-190) are available from the Customer Information Center — call 1-888-582-3688.

Comments

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