SLC®-2000 MSDT

BYB2B T1/DSX Line Interface Unit—SAC1MBW (BYB2B)

Features/Functions

- Conforms to appropriate industry standards
- Accepts up to 35 dB of loss
- B8ZS or ZCS line coding
- Faceplate Jacks for monitoring T1 span current and voltage
- Meets TR-1089* standards for lightning and AC power crosses

* Bellcore Technical Reference TR-NWT-001089 Issue 1, October 1991, and all Revision and Supplements, "Electromagnetic Compatibility and Electrical Safety Generic Criteria for Network Telecommunications Equipment," Bell Communications Research.

Description

This data sheet describes the BYB2B T1/DSX line interface unit (LIU) (COMCODE 108053695, BYB2B) and is intended for the end-user of the unit. The BYB2B T1/DSX LIU replaces the BYB2 T1/DSX LIU and the BYB7 digital signal translator (DST).

The BYB2B T1/DSX line interface unit is used in *SLC*-2000 multi-services distant terminal (MSDT) to interface either a DSX or T1 signal. The BYB2B T1/DSX LIU can be used in place of the *SLC* Series 5 Carrier System BYB1B optical unit (OU) in those applications where the user interfaces to a DSX or T1 metallic facility from the remote terminal (RT) to the MSDT.

CAUTION:
Under no circumstances should the signal lines be run to outside plant cables or equipment when the BYB2B is optioned for the DSX mode. The DSX mode of operation is intended for inside plant applications only.

The BYB2B T1/DSX line interface unit can be used in a DSX mode of operation. In this mode, the BYB2B LIU interfaces to a standard DSX-1 signal whose line length is within 655 feet (200 meters) of the DSX cross-connect point. This mode is typically used to connect a MSDT to DSX compatible equipment co-located in the same cabinet or in the central office (CO).

The BYB2B T1/DSX LIU can also be placed in the T1 mode of operation. This T1 mode is used in those applications in which an outside plant T1 span is used to connect the RT to the MSDT. In this mode the T1 interface is configured as a power looping line interface unit. This mode is commonly used to terminate a repeater span that is powered from the central office.

The circuit pack consists of independent T1 and DSX interfaces, with common clock recovery and scrambler/descrambler sections. In the DSX mode of operation, the signal is transformer coupled to a DS1 transceiver device.

In the T1 mode of operation, the signal is passed through a secondary surge protection before being transformer coupled to a T1 interface device which can resolve signals that are either - 26 dB or - 35 dB below the DSX level. The sensitivity (26 dB / 35 dB) is selected via a jumper block (P202). In this mode the BYB2B T1/DSX LIU functions as a power looping line interface unit. In addition, the BYB2B LIU can be provisioned to respond to the network loopback code via a jumper block (P201). This feature can be used for fault isolation. Front panel jacks are provided to facilitate measurement of the T1 span voltage and current. The T1 section also contains a transmit attenuator pad to compensate for various lengths of cable.

Figure 1 shows the faceplate diagram for the BYB2B T1/DSX line interface unit and switch layout. Table 1 lists the environmental specifications. Table 2 lists the power drain requirements. Table 3 lists the transmit pad settings. Table 4 lists the equalization option settings and Table 5 lists the edge connections for the BYB2B T1/DSX LIU.

Table 1. Environmental Specifications

A. Temperature Range (Ambient) 1. Operating, per TR-NWT-000057*: in Lucent Technologies cabinet mounted RT, outside ambient temperatures of -40° F with no solar load to +115° F with maximum solar load and maximum power dissipation. Lucent Technologies cabinets are designed to assure 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.
B. Relative Humidity 1. Operating, per TR-NWT-000057. For outside ambient temperature 84° F or less, relative humidity of 5% to 95%. For ambient temperatures above 84° F, the relative humidity is limited to that corresponding to a specific humidity of 0.024 pounds of water per pound of dry air. 2. Storage, per TR-NWT-000057: ambient temperatures 84° F or less, 10% to 95%. For ambient temperatures above 84° F, the relative humidity is limited to that corresponding to a specific humidity of 0.024 pounds of water per pound of dry air.

* Bellcore Technical Reference TR-NWT-000057, Issue 2, January 1993, and all Revisions and Supplements, "*Functional Criteria For Digital Loop Carrier Systems*," Bell Communications Research

Table 2. Power drain for BYB2B LIU

Supply	Maximum Value
+5 Volts dc	750 mW

Installation and Testing

There are several settable switches on this unit. Procedures for setting the switches are shown in Table 3 BYB2B LIU (T1 Mode) Transmit Pad Settings versus Inserted loss and Table 4 BYB2B T1/ LIU (DSX MODE) Equalization Option Settings.

Faceplate Features and Options

The BYB2B T1/DSX line interface unit faceplate and circuit board switch locations are shown in Figure 1. The following jacks are located on the faceplate are as follows:

+ V, - I Jacks: These jacks are used to monitor the T1 loop voltage and current. The voltage is measured between the + V jack and frame ground. The current is measured by measuring the voltage between the + V and - I jacks.

The switch options for the BYB2B T1/DSX line interface unit are as follows:

- **TRANSMIT PAD** option: These four switches S301 / S302 (TRANS- 1, 2, 3, 4) select the amount of loss inserted in the transmit path to meet route-junction and end section requirements. Refer to Table 3 for transmit pad settings versus inserted loss.

Table 3. BYB2B T1/DSX LIU (T1 Mode) — Transmit Pad Settings versus Inserted loss

Transmit Pad (S301/S302) Settings versus Inserted loss				
TRANS-				Inserted loss (dB)
1	2	3	4	
OFF	OFF	OFF	ON	22.5
OFF	OFF	ON	OFF	15.0
OFF	ON	OFF	OFF	7.5
ON	OFF	OFF	OFF	0.0

T1 Mode Setup	
Switches	**Settings**
S1	Set to the T1 position
S201	Use B/Z switch to select coding option.
S303	Set transmit level according to Table 3 transmit pad settings.

- **T1 / DSX** option: This switch S1 is used to select either the T1 or the DSX mode of operation.
- **B8ZS/ZCS** option: This switch S201 (B/Z) selects between per-channel zero code suppression (position Z) and the bipolar with 8 zero substitution (position B) line code. This switch is used to set the line code used for both the DSX and T1 modes of operation.

- **EQUALIZATION** option: These three switches S303 (TRANS- 0, 1, 2) select the amount of pre-equalization based on the distance between the bank and the DSX-1 cross-connect. This switch is used to compensate for various cable lengths to the DSX cross-connect when the BYB2B LIU is used in the DSX mode. Refer to Table 4 for equalization option settings.

Table 4. BYB2B T1/DSX LIU (DSX MODE) — Equalization Option Settings

EQUALIZATION OPTION (S303) SETTINGS			
TRANS-			DISTANCE TO DSX-1*
2	1	0	FEET
OFF	OFF	ON	0 to 132
OFF	ON	OFF	133 to 265
OFF	ON	ON	266 to 398
ON	OFF	OFF	399 to 532
ON	OFF	ON	533 to 655

* These distances are for ABAM cable used in the central office. Refer to 915-710-115 for calculation for other types of cable used for collocated RT and T1 extension applications.

DSX Mode Setup	
Switches	**Settings**
S1	Set to the DSX position
S201	Use B/Z switch to select coding option.
S303	Set line build out according to Table 4 equalization option settings.

- **Jumper Block** options: These two jumper blocks P201 / P202 can be configured to enable / disable network loopback and sensitivity in the T1 mode as follow:

  a. **Network Loopback Feature**: When the BYB2B LIU is configured in the T1 mode, network loopback can be enabled by use of a jumper option. When network loopback is enabled, the BYB2B LIU will place itself in loopback mode after receiving the network loopback code 00001 for 5 seconds, at an error rate < 10^{-3}. When network loopback code 001 is received for 5 seconds with an error rate < 10^{-3}, the unit will exit loopback mode and return to normal operation. In loopback mode, the T1 signal that is present on the receive pair, (T / R) is passed thru the T1 transceiver device and output on the transmit pair (T1 / R1).

To enable the network loopback, place the jumper block on P201 between the center pin and the pin to the right of the center pin. To disable the network loopback, place the jumper block on P201 between the center pin and the pin to the left of the center pin.

b. **T1 Receive Sensitivity**: When the BYB2B LIU is configured in the T1 mode, the amount of receive sensitivity can be set to either 26 dB or 36 dB. Typically, when operating with a shorter T1 span, full equalizer gain is not needed. Setting the receive sensitivity to 26 dB will improve the noise margin on shorter T1 span. For full span T1 line circuits, the 36 dB setting should be used.

To set the receive gain to 26 dB, place the jumper block on P202 between the center pin and the pin to the right of the center pin. To set the receive gain to 36 dB, place the jumper block on P202 between the center pin and the pin to the left of the center pin.

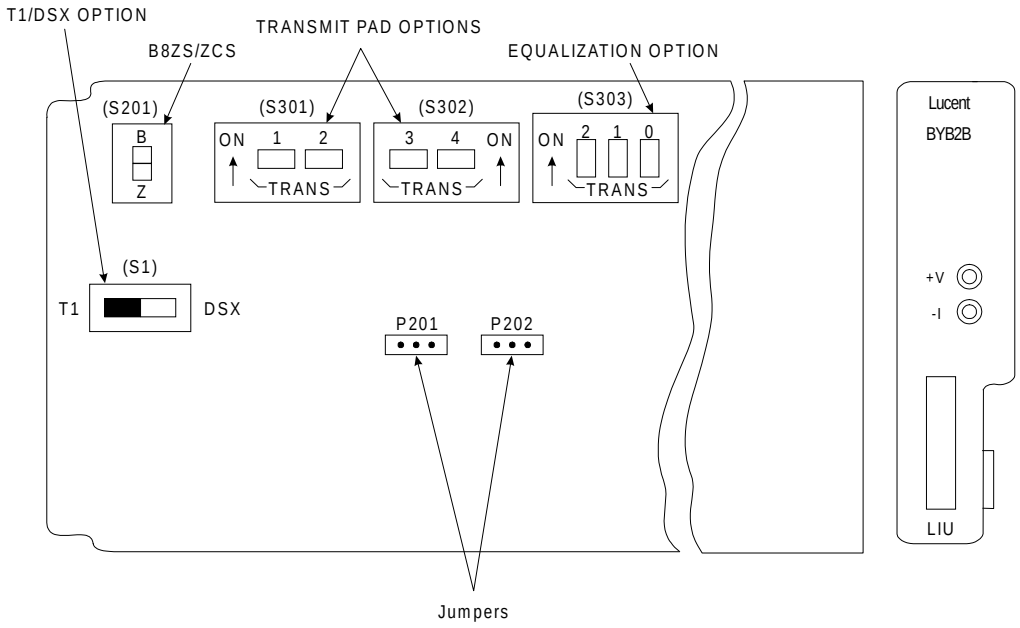

Figure 1. BYB2B LIU Faceplate Diagram and Switch Layout

Table 5. Edge Connections For BYB2B Line Interface Unit

Finger	Function
1	Frame Ground
2, 11	Circuit Ground
3, 10	+5 Volts dc
8	R1 (receive)
9	T1 (receive)
17	R (transmit)
18	T (transmit)

References

The following documents provide additional information about the use of this circuit pack in the *SLC Series 5 Carrier System*:

363-205-010	*SLC Series 5 Carrier System Applications and Planning Guide*
915-710-115	*SLC Series 5 Carrier System Application Engineering Practice*

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. Call the Lucent Technologies Regional Technical Assistance Center at 1-800-225-RTAC.

Ordering Information

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