

## Understanding The KDX-T1 Card

Through time division multiplexing, the KDX-T1 card increases the efficiency and economy of the KDX-500 system by providing up to 24 channels on two twisted pairs while only using 2 FPU slots in the KDX-500 system.

This multiplexing allows two-way voice and data communications at 1.544 Mbps with the Central Office.

When the KDX-T1 is installed, the KDX-500 supports the following signaling protocols.

- Loop Start (with ANI)
- E&M
- DID (Future Release)

Loop Start will support Centrex type features such as hook flash and pause. Dialing can be DTMF or Pulse.

E&M and DID will support wink start and delay start. Dialing can be DTMF or Pulse.

*Note: The KDX-T1 card has been engineered to work with or without a customer supplied CSU (Channel Service Unit).*

## Installing the KDX-T1 card

Turn the AC power off and remove the cover(s) from the KDX-500 system.

Using Figure 1 below locate where you will be installing the KDX-T1 card. You can install the T1 card in FPU slots 2 or 4 in the main KSU and/or FPU slots 1,3,5 and 7 in any one of the 3 expansion KSU's.

*Note: The slots to the immediate right of the T1 card **cannot be used.***

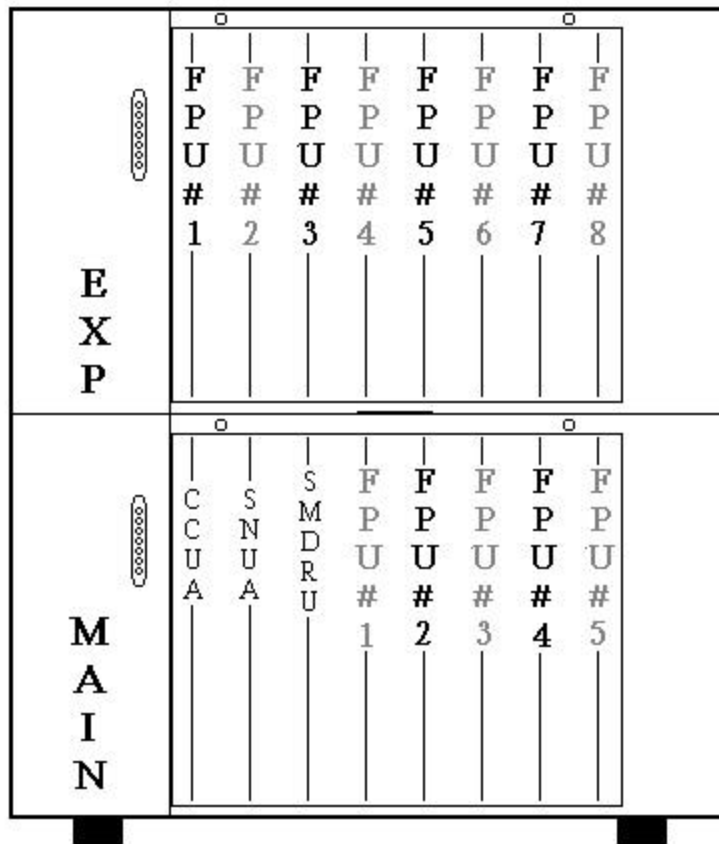


Figure: 1

If the KDX-T1 is installed in the wrong slot the Central Processor will not recognize the card.

It is recommended that FPU #4 in the main and/or FPU #7 in the expansion(s) be used for the KDX-T1 location. This will reduce the amount of switch cables needed for your installation.

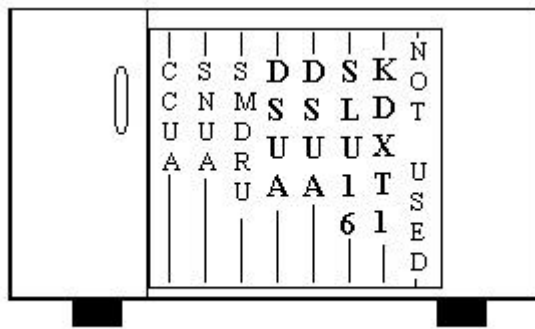
*Note: Up to 4 T1 cards may be installed per KDX-500 system.*

## Typical KDX-500 card configurations

The examples below show typical configurations and how the system assigns the T1 channels.

When the central processor identifies a KDX-T1 card it automatically treats it as if there are 3 COU-A cards installed.

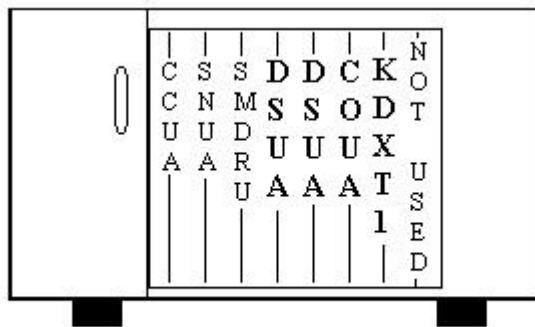
### **Example 1:**



KDX-T1 card installed in FPU #4 = T1 Channels are C.O. ports 1 – 24 in system programming.

*Note: FPU #5 cannot be used.*

### **Example 2:**



COU-A card installed in FPU #3 = C.O. ports 1 – 8 in system programming.

KDX-T1 card installed in FPU #4 = T1 Channels are C.O. ports 9 – 32 in system programming.

*Note: FPU #5 cannot be used.*

## KDX-500 SNU-A Jumper settings

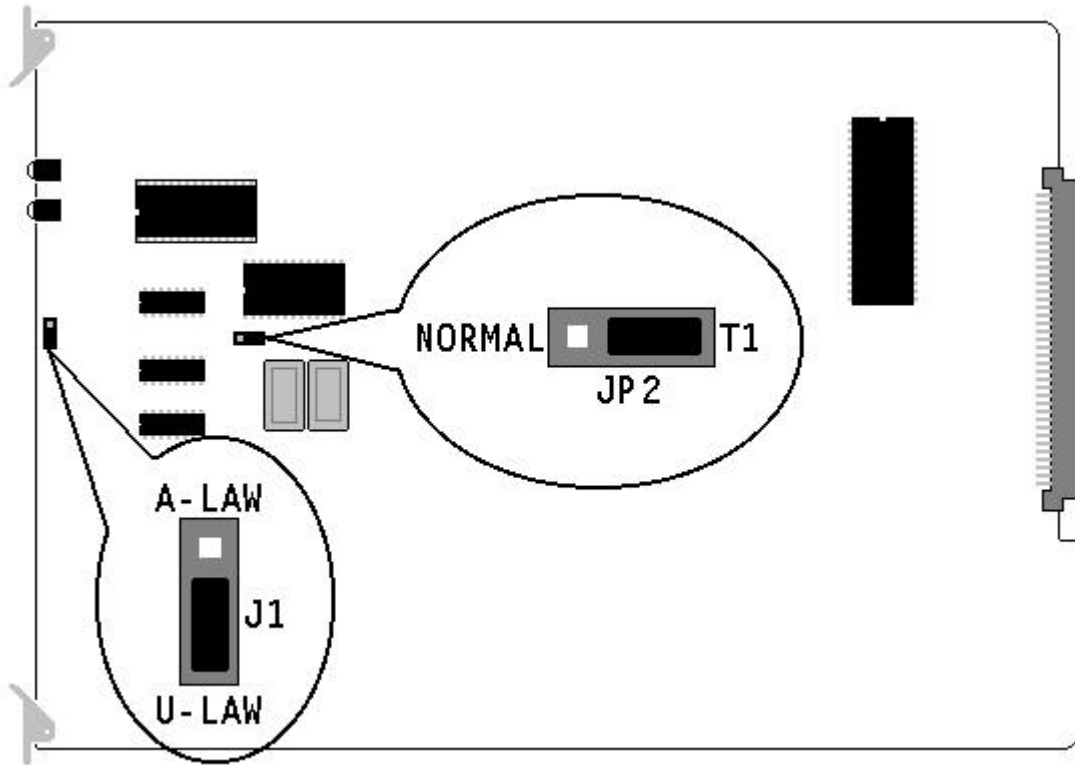


Figure: 2

Before installing the KDX-T1 card the J1 and JP2 jumpers on the SNU-A card must be set to the proper setting.

J1 should be set in the U-Law position.  
JP2 must be in the T1 position.

## KDX-T1 Connections and Description

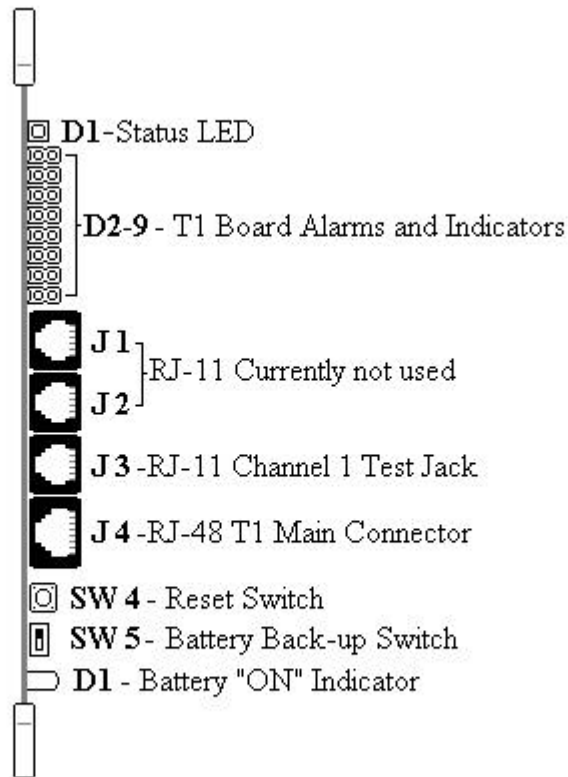


Figure: 3

D1- Status LED should flash under normal operation.

D2-9- T1 Board Alarms and Indicators should not light or flash under normal operation. See T1 Alarms and Indicators for detailed description.

J1-J2 – Currently not supported.

J3- RJ-11 Test Jack can be used to test incoming and outgoing calls using channel 1.

J4- RJ-48 T1 main interface jack used to connect the T1 card to the Telco.

SW 4- Reset switch used to reset the T1 card, all calls will be dropped during reset.

SW5- Battery Back-up ON/OFF switch.

D1- Battery "ON" indicator, when LED is on the Memory will be retained during power loss.

## KDX-T1 Dip Switch Location and Description

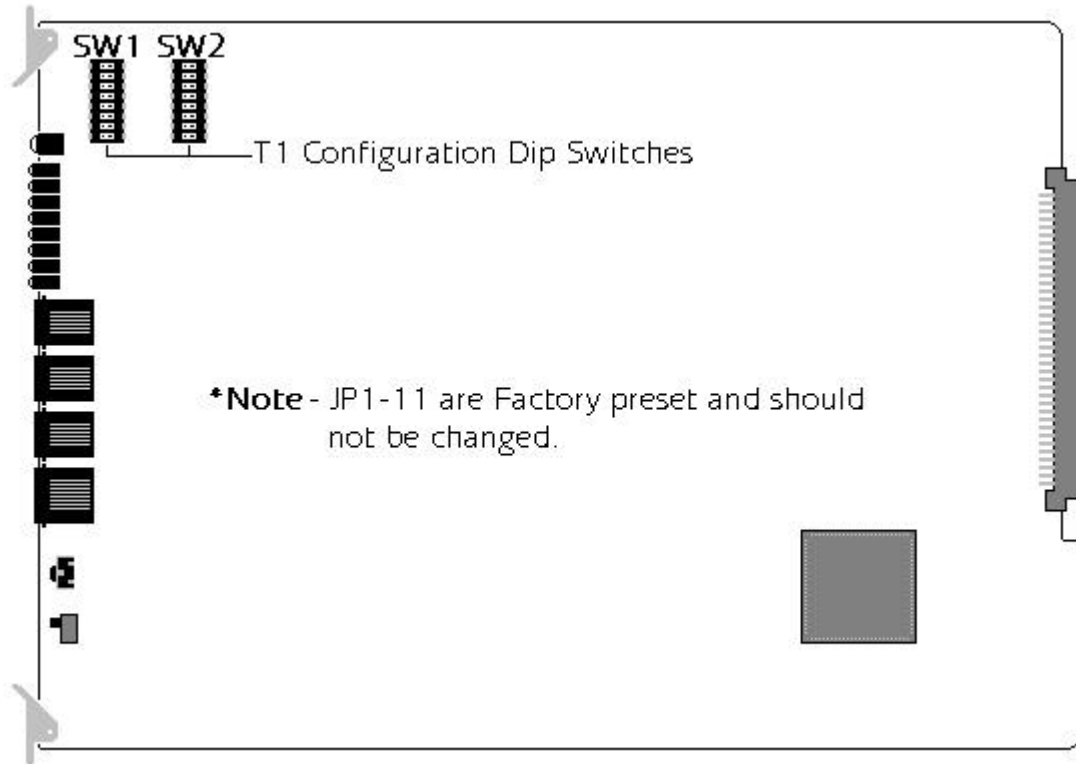


Figure: 4

SW1- Currently not used and should remain in the “OFF” position.  
SW2- Used to setup Signaling parameters, see Dip Switch settings for proper configuration.

## KDX-T1 Dip Switch Settings

### **SW-1**

Currently not supported

### **SW-2 1- 8**

<b>Switch Position</b>	<b>ON</b>	<b>OFF</b>
Dip 1	ESF Framing	D4 Framing
Dip 2	B8ZS Line Coding	AMI Line Coding
Dip 3	Fixed Delay Dialing	Wink Dialing
Dip 4	Loop Start Signaling	Wink Start Signaling
Dip 5	FXS	FSO
Dip 6	See next table	See next table
Dip 7	See next table	See next table
Dip 8	See next table	See next table

### **SW-2 6-8**

Dip 6	Dip 7	Dip 8	Line Build Out	Application
OFF	OFF	OFF	0 to 133 Feet	DSX-1/0 dB CSU
OFF	OFF	ON	133 to 266 Feet	DSX-1
OFF	ON	OFF	266 to 399 Feet	DSX-1
OFF	ON	ON	399 to 533 Feet	DSX-1
ON	OFF	OFF	533 to 655 Feet	DSX-1
ON	OFF	ON	-7.5 dB	CSU
ON	ON	OFF	-15 dB	CSU
ON	ON	ON	-22.5 dB	CSU

## Typical Dip Switch Settings for most installs

### D4 AMI Loop Start FXS

1	2	3	4	5	6	7	8
OFF	OFF	OFF	ON	ON	OFF	OFF	OFF

### D4 B8ZS Loop Start FXS

1	2	3	4	5	6	7	8
OFF	ON	OFF	ON	ON	OFF	OFF	OFF

### ESF AMI Loop Start FXS

1	2	3	4	5	6	7	8
ON	OFF	OFF	ON	ON	OFF	OFF	OFF

### ESF B8ZS Loop Start FXS

1	2	3	4	5	6	7	8
ON	ON	OFF	ON	ON	OFF	OFF	OFF

### D4 AMI E&M Wink Start

1	2	3	4	5	6	7	8
OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

### D4 B8ZS E&M Wink Start

1	2	3	4	5	6	7	8
OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF

### ESF AMI E&M Wink Start

1	2	3	4	5	6	7	8
ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF

### ESF B8ZS E&M Wink Start

1	2	3	4	5	6	7	8
ON	ON	OFF	OFF	OFF	OFF	OFF	OFF

### D4 AMI E&M Delay Start

1	2	3	4	5	6	7	8
OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF

### D4 B8ZS E&M Delay Start

1	2	3	4	5	6	7	8
OFF	ON	ON	OFF	OFF	OFF	OFF	OFF



## KDX-T1 Alarms and Indicators

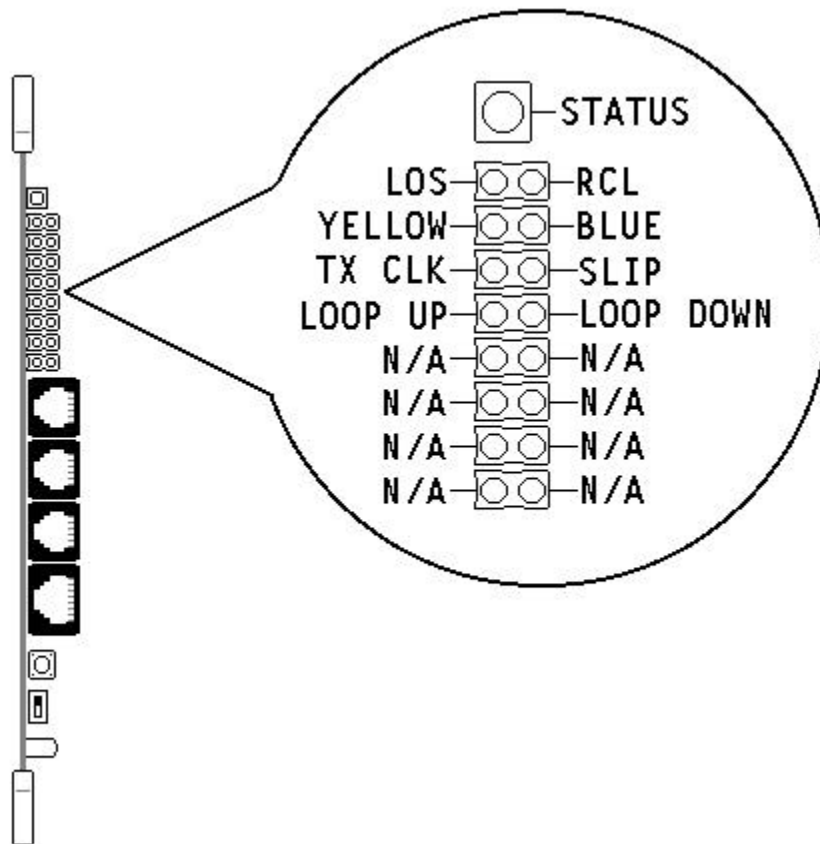


Figure: 5

**STATUS**- Main Status LED should be flashing rapidly under normal operation.

**LOS**- When lit, indicates that the frame bit in the received data cannot be found.

**RCL**- This signal alarm turns on to indicate that the KDX has lost its incoming signal.

**YELLOW**- A yellow alarm indicates the far end has lost synchronization to its incoming signal.

**BLUE**- This alarm indicates that the far end has lost its receive signal (all 1 bits). The purpose of this signal is to maintain the system clocks during a link failure.

**TX CLK**- This alarm indicates Loss of Transmit Clock.

**SLIP**- When lit, indicates a frame slip is detected. This is caused by the transmit clock not being synchronized with the receive clock.

**LOOP UP**- Loop up code detected.

**LOOP DOWN**- Loop down code detected.

**N/A**- Not Assigned

## Connecting the T1 Trunk to the KDX-T1

Normally, the KDX-T1 card is connected to the Telco via a network interface box. The box is usually small with an 8-pin modular telephone jack for connecting to the customer premise T1 equipment (KDX-T1). Use a data-grade cable (Cat-5) with an 8-pin modular plug for connection to the KDX-T1 card.

Make straight-through connections to pins 1,2,4 and 5 when using these plugs on both ends. See KDX-T1 pin locations below.

### FRONT VIEW OF MAIN CONNECTOR ON KDX-T1 CARD

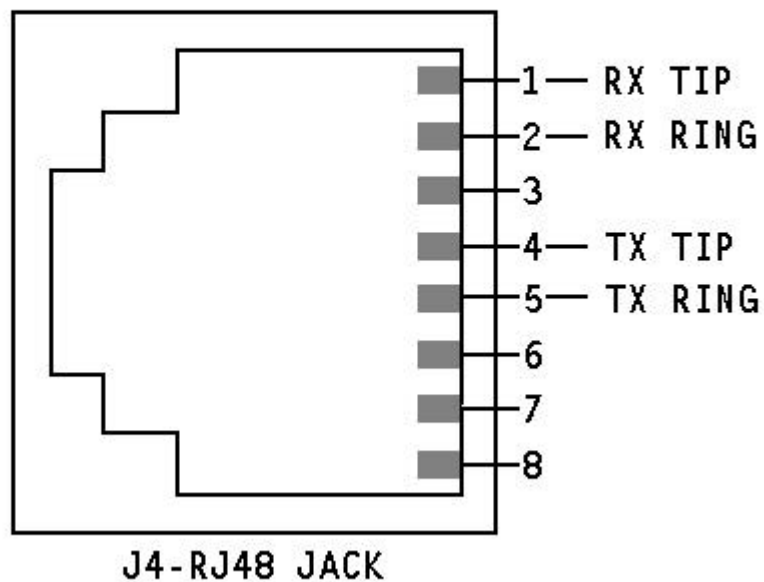


Figure: 6

*Note: The KDX-T1 card has been engineered to work with or without a customer supplied CSU (Channel Service Unit).*