**T1 Communication Systems - A Brief Primer**

The T1 line is the most widely used switched digital communication circuit used in America today. T1s are used for connecting phone and computer networks to public switched network infrastructures. Each T1 is equivalent to 24 64Kbps communication channels. Each channel utilizes two 100 Ohm shielded twisted pairs; one for transmit (TX) and one for receive (RX). Some T1 equipment uses two 75 Ohm coaxial connections for the TX and RX channels. Baluns are used to bridge the gap between 75 Ohm coaxial and 100 Ohm twisted pair.

Note: An E1 circuit is the European equivalent of the American T1. The infrastructure uses 120 Ohm shielded twisted pairs so 75/120 baluns would be used in European applications.

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**T1 - E1 Differences**

<table>
<thead>
<tr>
<th>USA Standard</th>
<th>75 to 100 Ohms Shielded Twisted Pair (RX/64很喜欢 Typical)</th>
<th>75 Ohms (BNC Typical)</th>
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<tbody>
<tr>
<td>E1 Standard</td>
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**75 to 100 or 120 Ohm Transmission Baluns for Telecommunication Applications**

75/100 and 75/120 Ohm impedance matching baluns allow users to use inexpensive shielded twisted pair cabling in place of expensive coaxial cabling. They are especially useful in telecommunication applications for patching at the distribution frame. Units meet CCITT Recommendation G703 and are great for American or European applications. Choose from multiple coaxial connector types as well as Krone IDC or compression IDC termination styles.

- ACK2010: 75 to 120 Ohm Balun, 1.6/5.6 Plug (Screw Type) / Krone IDC
- ACK3010: 75 to 120 Ohm Balun, 1.6/5.6 Jack / Krone IDC
- ACK8010: 75 to 120 Ohm Balun, BNC Plug / Krone IDC
- ACK9010: 75 to 120 Ohm Balun, BNC Bulkhead Jack / Krone IDC
- ACC2060: 75 to 120 Ohm Balun, 1.6/5.6 Plug (Screw Type) / Compression IDC
- ACC3060: 75 to 120 Ohm Balun, 1.6/5.6 Jack / Compression IDC
- ACC8060: 75 to 120 Ohm Balun, BNC Plug / Compression IDC

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**Mini Transmission Balun Electrical Specifications**

- Impedance Match: 75 to 100 or 120 Ohms ± 10 measured at 70 MHz.
- Insertion Loss: <0.9 dB, range measured 0.2 MHz to 70 MHz.
- Return Loss: <15 dB, range measured 1 MHz to 70 MHz.

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**75 to 100/120 Ohm E1/T1 G.703 Dual Balun - Two BNC Jacks to RJ45**

These units allow bi-directional connectivity between coaxial and twisted pair E1/T1 cabling. Dual 75 Ohm coaxial connections connect to shielded 120 Ohm RJ45 jack for easy connecting to terminated UTP/STP cabling.

- ACD220-US: Dual BNC Jack / RJ45 Balun, 75 to 100 Ohm
- ACD221: Dual BNC Jack / RJ45 Balun, 75 to 120 Ohm
- ACD220-USCARD: Balun Card, Dual BNC Jack / RJ45, 75 to 100 Ohm
- ACD221-CARD: Balun Card, Dual BNC Jack / RJ45, 75 to 120 Ohm

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**E1/T1 G.703 Balun Panel - Twenty Dual Baluns in a 19” Rack Panel**

The ACD2200 series is an innovative idea for converting multiple E1/T1 connections from 75 Ohm coaxial to 120 Ohm twisted pair. Each dual balun circuit is built into a balun card which is then mounted to the rack panel. Balun cards are available with dual BNC connectors and one shielded RJ45 connector. Extra cards can be purchased for easy replacement in the future.

- ACD220-US: 20 Port Balun Panel, Dual BNC Jack / RJ45, 75 to 100 Ohm
- ACD221: 20 Port Balun Panel, Dual BNC Jack / RJ45, 75 to 120 Ohm
- ACD220-USCARD: Balun Card, Dual BNC Jack / RJ45, 75 to 100 Ohm
- ACD221-CARD: Balun Card, Dual BNC Jack / RJ45, 75 to 120 Ohm

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**What is a balun?**

The term balun (pronounced “bal-un”) is derived from the function of the passive device that converts between a BALanced and UNbalanced electrical signal. Common types of baluns convert 100 Ohm twisted pair (balanced) to 75 Ohm coaxial (unbalanced).

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For more useful information go to.... www.L-com.com/Resources