IMX-4T1

T1 Inverse Multiplexer

FEATURES

- Provides inverse multiplexing to transmit a single high speed data channel over up to 4 T1 links
- Data rates from 1.472 to 5.888 Mbps, with automatic rate fallback
- Sync data port interfaces: V.35, RS-530, V.36/RS-449, X.21 or HSSI
- Optional full remote Ethernet bridge for data port
- Complies with:
  - ITU Rec. G.703, G.704
  - AT&T TR-62411
  - ANSI T1.403
  - AT&T ACCUNET Fractional T45 Service
- Several system and data port timing options
- Compensates for differential delay of up to 64 msec
- Built-in BERT (V.52) and remote/local loopbacks
- Control via front panel or ASCII terminal

DESCRIPTION

- The IMX-4T1 Inverse Multiplexer enables splitting and transmitting a high speed data channel of up to 5.888 Mbps, over up to four T1 links. IMX-4T1 spans the bandwidth gap between T1 and T3, providing increased bandwidth where services higher than T1 are either not available or are too expensive.
- IMX-4T1 can be ordered with either 2 or 4 T1 links. For long range applications, a built-in CSU for each of the links is available.
- Differential delays of up to 64 msec between the T1 lines are tolerated. IMX-4T1 compensates for such delays, and the original stream is reconstructed. The end-to-end delay of the IMX-4T1 is not more than the maximum differential delay between the links.
- The automatic rate fallback feature ensures that the logical channel remains open even if individual T1 links fail, by automatically dropping to the next lower rate. When failed links are recovered, IMX-4T1 automatically returns to the original rate.
- IMX-4T1 provides immediate connection to installed applications. The user data port is available with the following sync data interfaces: V.35, RS-530, V.36/RS-449, X.21 or HSSI. The data rate can be any multiple of 1.472 Mbps, up to a total of 5.888 Mbps.
- An Ethernet Bridge port can be ordered instead of a sync data port interface. The Ethernet bridge port option allows direct connection to LAN and provides self learning and extensive packet filtering. The Ethernet bridge has 10BaseT (UTP) interface, and fully complies with IEEE 802.3.
- The Ethernet bridge uses an Enhanced Tinygram compression algorithm, enabling it to utilize bandwidth more efficiently and thus reduce the required number of T1 lines.
- Two user-selectable clock modes are available for the sync type data port:
  - DCE: IMX-4T1 provides both TX and RX clocks to user DTE.
  - External-DCE: IMX-4T1 provides RX clock to user while receiving TX clock from user.

  Note: Ethernet port operates in DCE only
- System timing options include:
  - Internal clock: the internal oscillator is the source for T1 links.
  - Loopback: the T1 transmit clock is derived from one of the T1 receive clocks.
  - Station clock: the T1 transmit clock is the source for framed/unframed all “1”s or G.703 compatible.
- Setup, control, status, alarms and diagnostic information are provided via the front panel LCD display or an ASCII terminal/Telnet.
- Diagnostics capabilities include:
  - Local/remote data port loopback
  - Local/remote T1 links loopback
  - V.52 BERT.

  Diagnostics can be executed via the front panel or ASCII terminal (connected to supervisory port).

  IMX-4T1 also supports the T1 network loopback per AT&T 62411 (in-band code activated), with statistical diagnostic capability according to AT&T PUB 54016.
- The supervisory port supports dial-in/dial-out for remote out-of-band configuration and monitoring (dial-in), as well as for alarm reporting (dial-out).

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- Compliance is provided for ACCUNET Fractional T45 Service (AT&T), which allows choosing new transmission speeds higher than T1 rates.

SPECIFICATIONS

- **T1 Interface**
  Number of links: 2 or 4
  Compliance:
  ITU Rec. G.703, G.704;
  AT&T TR-62411, PUB 54016
  Data rate: 1.544 Mbps
  Line code: AMI or B8ZS
  Framing: D4 or ESF
  Signal levels:
  Receive level:
  0 to -34 dB with CSU
  0 to -10 dB without CSU
  Transmit level:
  0 dB, -7.5 dB, -15 dB with CSU
  3V (±10%) soft-adjustable to be measured at 0 to 655 feet with or without CSU
  Impedance: 100Ω
  Connectors: 8-pin RJ-48C
- **Sync Data Port**
  Data rate: n x 1.472 Mbps (where n = 1 to 4), up to 5.888 Mbps
  Interfaces and connectors:
  – V.35 with 34-pin connector
  – RS-530 with 25-pin connector
  – V.36/RS-449 with 37-pin connector (using RS-530 port, via supplied conversion cable)
  – X.21 with 15-pin connector
  – HSSI with 50-pin SCSI-2 connector
  Timing: DCE or External-DCE
- **Ethernet Bridge Port**
  LAN table:
  10,000 address, self learning
  Filtering and forwarding:
  15,000 pps
  Buffer: 256 frames
  Compliance:
  conforms to IEEE 802.3/Ethernet
  Interface: 10BaseT (UTP)
  Connector: shielded RJ-45
  Speed:
  10 Mbps, full duplex (LAN side)
  Operation: full/half duplex
  Compression:
  Enhanced Tinygram algorithm

GENERAL

- **System Timing**
  – Loopback timing (from any T1 link)
  – Internal timing (± 32 ppm)
  – Station clock timing
- **Station Clock**
  Bit rate: 1.544 Mbps
  Line code: AMI or B8ZS
  Impedance: 100Ω
  Pulse shape: ITU G.703
  Connector: 8-pin RJ-48C
  Format: framed/unframed all "1"s
- **T1 Differential Delay**
  Up to 64 msec
- **Diagnostics**
  – Local/remote loopbacks for data port and T1 links
  – Bert V.52, built-in
  – Code activated network loopback per AT&T 62411 (ANSI T1.403)
- **Statistics and Alarms**
  Full statistical diagnostics ANSI T1.403-1989
  Local support of ESF diagnostics according to AT&T PUB 54016
  Alarm buffer size: 100 events
- **Alarm Response**
  Received impairment on T1
  T1 response: Yellow alarm
- **Supervisory Port**
  Interface: V.24/RS-232, async
  Connector: 9-pin D-type, female
  Speed: 300-9600 bps, autobaud
- **Front Panel Controls**
  LCD (2 rows x 16 characters)
  Push-buttons (Cursor, Scroll, Enter)
- **Indicators**
  T1 (per link): Red and Yellow alarms
  Data port: TD, RD
  TEST
  Ethernet 10BaseT port:
  Link, Collision, RX and TX
- **Physical**
  Height: 4.4 cm / 1.7 in (1U)
  Width: 43.2 cm /17.0 in
  Depth: 24.2 cm / 9.5 in
  Weight: 2.3 kg / 5.0 lb
- **Power Supply**
  115/230 VAC, 18.5W
- **Environment**
  Temperature: 0-45°C / 32-113°F
  Humidity: Up to 90%, non-condensing

ORDERING

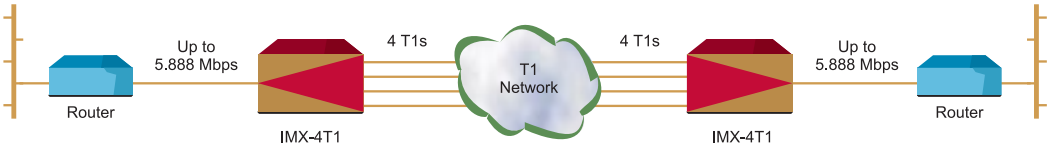
IMX-4T1/#/*/%
T1 Inverse Multiplexer

\# Specify number of T1 links
2 for 2 T1 links
4 for 4 T1 links

* Specify data port interface
V35 for V.35 interface
530 for RS-530 interface
V36 for V.36/RS-449 interface (via supplied conversion cable)
X21 for X.21 interface
HSSI for high speed serial interface
ET for Ethernet port (UTP interface)

% Specify **CSU** for built-in CSU (default is without CSU)

APPLICATION



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