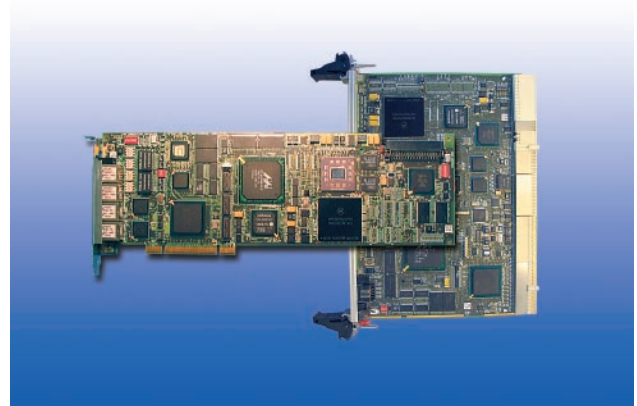


The Dialogic® TX 4000 Series SS7 Boards offer a range of form factor, throughput capacity, and signaling protocol support with Dialogic® NaturalAccess™ Software. The TX 4000 Series architecture combines TDM connectivity and transport with the SS7 protocol layers required for a higher-level application interface.

Products Discussed in This Datasheet:

- Dialogic® TX 4000 PCI SS7 Network Interface Board
- Dialogic® TX 4000/20 PCI SS7 Network Interface Board
- Dialogic® TX 4000C CompactPCI SS7 Network Interface Board
- Dialogic® TX 4000/20C CompactPCI SS7 Network Interface Board



Features

Hardware and protocol software are combined — MTP, ISUP, TUP, and BICC

Uses Dialogic® NaturalAccess™ Software

High-impedance (HiZ) connectivity

H.100/H.110 bus interfaces

Downloadable control software

10/100Base-T Ethernet interface

Two system design options — node redundancy or board redundancy

Onboard temperature sensor

Benefits

Minimizes host loading and simplifies integration

Eases integration with Dialogic® media boards that support NaturalAccess Software

Enables passive signaling traffic monitoring

Allows integration with other H.100/H.110 products, including a combination of data communications and voice streams over the same physical trunk

Reduces host overhead and uses host processing time efficiently when running applications

Allows two separate boards to share a single point code

Helps enable high availability in one or multiple synchronized systems

Promotes safe operation by first sending an alarm and then shutting down the TX 4000 board if temperature exceeds safe operating limits

Onboard Protocol Execution

The TX 4000 Series boards are available with MTP or MTP, ISUP, TUP, and BICC layers of the SS7 stack running on board processors.

Multiple Network Interfaces

The digital trunk interfaces of the TX 4000 Series are software-configurable to support either T1 or E1 connections. The TX 4000 and TX 4000/20 have 4 trunks, and the TX 4000C and TX 4000/20C have 8 trunks. The TX 4000C and TX 4000/20C include either a rear transition card with both digital trunk and Ethernet connectors or a rear transition card with digital trunk connectors with Ethernet connected via the CompactPCI PICMG 2.16 bus.

For network interfaces, all channels from the primary rate digital trunk interfaces can either be terminated locally on the TX 4000 Series or switched onto the H.100/H.110 bus for processing by other H.100/H.110-compliant products.

H.100/H.110 Ensures Open Architecture and Vendor Independence

H.100/H.110 bus and switching provides flexibility, openness, and vendor independence, with access to other resources such as voice and call processing, modem pools, and speech recognition engines. The TX 4000 and TX 4000/20 provide an H.100 bus interface, while the TX 4000C and TX 4000/20C offer an H.110 bus interface.

Redundancy

When deploying two boards from the TX 4000 Series in a redundant configuration, one onboard Ethernet interface is required. The interface supports a dedicated point-to-point link to provide extremely fast data transfer between the two boards. This approach avoids the need to transfer lower-level data over the host computer's bus and can significantly improve SS7 signaling performance.

Redundancy protects against signaling link, board, and node failure. A typical redundant configuration has two boards — one primary and one backup — under a single point code, with active links interfacing to each board. Link-level redundancy is managed automatically at the MTP level. Higher-level check-pointing can be implemented by the application for total redundancy.

Configuration

The TX 4000 Series is available in both PCI and CompactPCI form factors. The TX 4000 Series can run the entire SS7 protocol stack (MTP, ISUP, TUP, and BICC) onboard. Each product requires the appropriate SS7 software runtime license and comes with drivers to support Windows®, Solaris, or Linux operating systems.

Technical Specifications

Dialogic® TX 4000 Series SS7 Boards — Product-Dependent Features

Feature	TX 4000	TX 4000/20	TX 4000C	TX 4000/20C
Form factor	PCI	PCI	CompactPCI	CompactPCI
E1 / T1 interfaces	4	4	8	8
SS7 channelized links (64/56 kbps)	4, 16, 32	4, 16	4, 16, 32	4, 16
HSL Q703	4	4	4	4
Performance				
Calls per second	1,100	150	1,100	150
Transactions per second	2,400	320	2,400	320
TDM bus full-duplex connections	128 H.100		256 H.110	
Host interface	Electrical: PCI bus Rev. 2.2 Mechanical: PCI bus Rev. 2.1 Form factor: Full height, full length PCI universal expansion board: Keyed for 5.0 V and 3.3 V signaling environment Bus speed: 33/66 MHz		Mechanical: PICMG 2.0, Rev 2.1; PICMG 2.16 Bus speed: 33/66 MHz Hot Swap: PICMG 2.1, Rev 1.0	
Power requirements	6.5 A @ 3.3 V, 0.5 A @ 5 V, 0.1 A @ 12 V		6 A @ 3.3 V, 1.25 A @ 5 V, 10 mA @ 12 V	

All Products

TDM bus	1,024 local connections Switchable access to any of 4,096 bi-directional timeslots for up to 2,048 full-duplex calls
Monitoring	HiZ
Environment	Operating temperature: 0 °C to +50 °C @ 200 LFM Storage temperature: -20 °C to +70 °C Relative humidity: 5% to 80%, non-condensing
Available onboard protocols	SS7: MTP2, MTP3, ISUP, TUP, BICC
Operating system support	Windows®, Linux, and Solaris: Details at www.dialogic.com/systemreleases

Technical Specifications *(continued)*

Telephony interface

DSX-1

Interface: Complete interface to T1 trunks (ANSI T1.102, T1.403)

Framing: D4, ESF

Line code: AMI, B8ZS

Zero bits: Selectable B8ZS, jammed bit (ZCS) or no zero code suppression

Alarm signal capabilities:

- Loss of Signaling Multiframe Alignment and Loss of CRC Multiframe Alignment (red)
- Remote Alarm and Remote Multiframe Alarm (yellow)
- Alarm Indication Signal (AIS) (blue)

Counts: Bipolar violation, F(t) error, and CRC error

Loopback: Per-channel and overall under software control

Telephony interface

CEPT E1 G.703/G.704

Interface: Full featured G.703 2048 kbps trunk interface

Framing: CEPT G.704

HDLC/LAPD for generating/terminating a data link

Line code: HDB3 or AMI (in zero code suppression)

Zero bits: Selectable B8ZS, jammed bit (ZCS) or no zero code suppression

Alarm signal capabilities:

- Loss of Frame Alignment (OOF), Loss of Signaling Multiframe Alignment and Loss of CRC Multiframe Alignment (red)
- Remote Alarm, and Remote Multiframe Alarm (yellow)
- Alarm Indication Signal (AIS) (blue)

Counts: Bit error rate, CRC errors slips, line code violations, far-end block errors

Loopback: Per-channel and across channels under software control

Standards

T1 interfaces

Digital multiplexer requirements and objectives: AT&T Pub. 43802, July 82

Service description and interface specifications: AT&T TR 62411, ACCUNET T1.5

Carrier to customer installation DS1 metallic interface: ANSI T1E1/88-001R1, February 88

ANSI T1 Standard for ISDN Primary Rate Interface: T1E1.4/8868 (proposed text) April 88

Primary Rate User-network Interface Layer 1 Specification: ITU-T I.431, June 88

E1 interfaces

G.703: Physical/electrical characteristics of hierarchical digital network

G.704: Synchronous frame structures used at primary and secondary hierarchical levels

G.706: Frame alignment and cyclic redundancy check procedures

G.732: Characteristics of primary PCM multiplex equipment

G.823: Control of jitter and wander within digital networks based on 2,048 kbps hierarchy

ETSI: ETS 300-418, 300-246, 300-247, 300-248

Primary Rate User-network Interface Layer 1 Specification: ITU-T I.431, June 88

Technical Specifications *(continued)*

Regulatory Compliance

Safety	CB Certificate to IEC 60950-1, EN60950-1 UL 60950-1, CSA Certified in File 200040 CAN/CSA-C22.2 No 60950-1, CSA Certified in File 200040
EMC	EN55022, CISPR 22, all Class B FCC 47 CFR Part 15, Subpart B, ICES-003, all Class A EN55024
Telecommunications	TBR12, TBR13 TIA-968-A, TIA-968-A-1, TIA-968-A-2, TIA-968-A-3, TIA-968-A-4, ACTA Product-Labeling number; US: EMCXDNANTX4000 CS-03 Registered number; IC: 776B-TX4000
Hazardous substances	RoHS compliance information at www.dialogic.com/rohs
Country-specific approvals	See the global product approvals database at www.dialogic.com/declarations

Reliability/Warranty

Estimated MTBF	TX 4000, TX 4020: 4.24 years TX 4000C, TX 4020C: 15.36 years
Warranty	Warranty information at www.dialogic.com/warranties

Ordering Information

Dialogic® TX 4000 Series SS7 Boards and software are sold as boards supporting specific numbers of SS7 links that include basic (MTP) or complete software (full stack) modules. There are also products for upgrading the number of SS7 links supported.

Dialogic® TX Series Product	Order Code	Description
TX 4000 PCI	82166	TX 4000 - 4 links/MTP (2 RJ-45s)
	82167	TX 4000 - 16 links/MTP (2 RJ-45s)
	82168	TX 4000 - 32 links/MTP (2 RJ-45s)
	82169	TX 4000 - 4 links/full stack (2 RJ-45s)
	82170	TX 4000 - 16 links/full stack (2 RJ-45s)
	82171	TX 4000 - 32 links/full stack (2 RJ-45s)
TX 4000C cPCI with Rear Ethernet I/O	82182	TX 4000C - 4 links/2L/MTP (1 RJ-21)
	82183	TX 4000C - 16 links/2L/MTP (1 RJ-21)
	82184	TX 4000C - 32 links/2L/MTP (1 RJ-21)
	82185	TX 4000C - 4 links/2L/full stack (1 RJ-21)
	82186	TX 4000C - 16 links/2L/full stack (1 RJ-21)
	82187	TX 4000C - 32 links/2L/full stack (1 RJ-21)
TX 4000C PICMG 2.16 cPCI	82176	TX 4000C - 4 links/2.16/MTP (1 RJ-21)
	82177	TX 4000C - 16 links/2.16/MTP (1 RJ-21)
	82178	TX 4000C - 32 links/2.16/MTP (1 RJ-21)
	82179	TX 4000C - 4 links/2.16/full stack (1 RJ-21)
	82180	TX 4000C - 16 links/2.16/full stack (1 RJ-21)
	82181	TX 4000C - 32 links/2.16/full stack (1 RJ-21)
TX 4000/20 PCI	82214	TX 4000/20 - 4 links/MTP (2 RJ-45s)
	82215	TX 4000/20 - 16 links/MTP (2 RJ-45s)
	82216	TX 4000/20 - 4 links/full stack (2 RJ-45s)
	82217	TX 4000/20 - 16 links/full stack (2 RJ-45s)
TX 4000/20C cPCI with Rear Ethernet I/O	82222	TX 4000/20C - 4 links/2L/MTP (1 RJ-21)
	82223	TX 4000/20C - 16 links/2L/MTP (1 RJ-21)
	82224	TX 4000/20C - 4 links/2L/full stack (1 RJ-21)
	82225	TX 4000/20C - 16 links/2L/full stack (1 RJ-21)

Ordering Information *(continued)*

Dialogic® TX Series Product	Order Code	Description
TX 4000/20C PICMG 2.16 cPCI	82218	TX 4000/20C - 4 links/2.16/MTP (1 RJ-21)
	82219	TX 4000/20C - 16 links/2.16/MTP (1 RJ-21)
	82220	TX 4000/20C - 4 links/2.16/full stack (1 RJ-21)
	82221	TX 4000/20C - 16 links/2.16/full stack (1 RJ-21)
Upgrade Licenses	82172	TX 4000 4000C - 4 links to 16 links license upgrade
	82173	TX 4000 4000C - 4 links to 32 links license upgrade
	82174	TX 4000 4000C - 16 links to 32 links license upgrade
	82175	TX 4000 4000C - MTP to full stack software license upgrade
	82087	TX 4000/20 4000/20C - 4 links to 16 links license upgrade
	82259	TX 4000/20 4000/20C - MTP to full stack software license upgrade
Digital Trunk Connector Cables	83233	Cable, RJ-45 male-to-male, 3' (91cm), ISDN Japan
	83230	Cable, RJ-45 to 2X RJ-48C, 120-ohm, 4" (10cm)
	83232	Cable, RJ-45 to (2) E-75-ohm BNC pairs, 9"(23), shielded, RoHS
Cables for TX 4000C CompactPCI Boards	83225	Cable, RJ-21M-180/RJ-21M-180, 6' (1.8m), shielded, RoHS
	83228	Cable, RJ-21M-180/ RJ-21M-RA, 6' (1.8m), shielded, RoHS
TX 4000C SEP Panel	83252	SEP – 2X (NMS RJ-21 to (8) RJ-48C interface), 1U

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