

# Dialogic® TX 5000 Series SS7 Boards

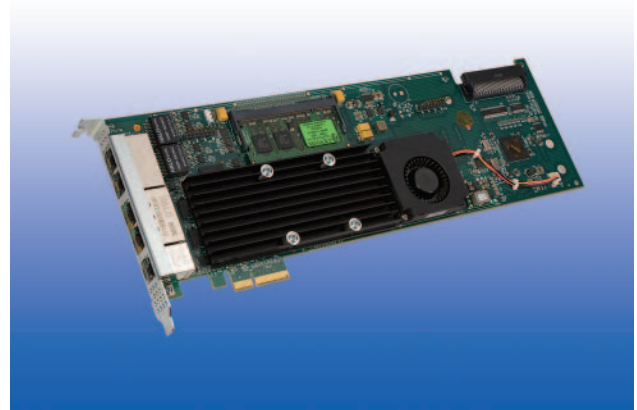
Datasheet

SS7 Network Interface  
Boards

The Dialogic® TX 5000 Series SS7 Boards offer a range of throughput capacity and signaling protocol support with Dialogic® NaturalAccess™ Software. The TX 5000 Series architecture combines TDM connectivity and transport with the SS7 protocol layers required for higher level application interface.

## Products Discussed in This Datasheet

- Dialogic® TX 5020E PCI Express SS7 Network Interface Board
- Dialogic® TX 5500E PCI Express SS7 Network Interface Board



## Features

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

**Uses Dialogic® NaturalAccess™ Software**

**H.100 bus interface**

**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

Provides integration with other H.100 products, including the 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 5000 board if temperature exceeds safe operating limits

## PCI Express Hardware

The TX 5500E and the TX 5020E are full length, full height form factor boards, requiring a single x4 PCI Express slot. The design includes an H.100 interface for connecting H.100 bus timeslots to both the SS7 signaling resources and external interfaces to accommodate different configurations.

## Onboard Protocol Execution

The TX 5000 Series boards are available with either the MTP layer or the MTP, ISUP, TUP, and BICC layers running on the board processors. Models are available to support SS7 link capacities from 4 to 128 low-speed links or up to 4 high-speed links.

## Multiple Network Interfaces

The TX 5000 Series boards provide up to four digital trunk interfaces, which are software-configurable to support T1 or E1 connections. They also provide a 10/100Base-T Ethernet interface, which is used for redundancy.

For network interfaces, all channels from the primary rate digital trunk interfaces can either be terminated locally on the TX 5000 Series board or switched onto the H.100 bus for processing by other H.100-compliant products.

## H.100 Provides Open Architecture and Vendor Independence

The H.100 bus and switching feature provides flexibility, openness, and vendor independence, with access to other resources, such as voice and call processing and speech recognizers.

## Redundancy

When deploying two boards from the TX 5000 Series in a redundant configuration, one of the onboard Ethernet interfaces 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 significantly improves SS7 signaling performance.

Redundancy protects against signal-ing 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 going to each board. Link-level redundancy is managed automatically at the MTP level. Higher level check-point-ing is implemented by the application for total redundancy.

## Technical Specifications

### Dialogic® TX 5000 Series SS7 Boards — Product-Dependent Features

Feature	TX 5500E	TX 5020E
SS7 channelized links (64/56/48Kbps)	4, 64, 128	4, 16, 32
HSL Q703	4	0, 4
Performance		
Message Signaling Units per second	15,000	2,100
Calls per second	1,900	240
Transactions per second	3,800	510

**Note:** Stated performance achieved using a single board in a multi-core computer (2.2 GHz)

### Dialogic® TX 5020E and TX 5500E PCI Express SS7 Network Interface Boards

Form factor	PCI Express
Host interface	PCI Express Base Specification: 1.1 PCI Express Bus: 4 lanes (x4) PCI Express Bus data rate: 2.5 Gbps per lane Mechanical: PCI Express standard-height/full-length form factor On-board Processors and Memory Main processor: Freescale MPC8568E SoC (PowerQUICC III) Memory: 512 MB DDR2 memory
TDM bus full-duplex connections	Connectivity between T1/E1 trunks, communications processors, and H.100 bus 128 full-duplex connections to H.100 1,024 local connections Switchable access to any of 4,096 bi-directional timeslots for up to 2,048 full-duplex calls
PSTN network connectivity	4 trunks Software-configurable as either T1 (1.544 Mbps) or E1 (2.048 Mbps) Trunk impedance: configurable as 120 ohms or monitor mode high impedance Trunk connectors: RJ-45 TDM bus: H.100 bus interface
Ethernet connectivity	Single 10/100Base-T Ethernet interface for redundancy
Monitoring	HiZ
Environment	Operating temperature: 0° C to +50° C 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 <a href="http://www.dialogic.com/systemreleases">http://www.dialogic.com/systemreleases</a>

## 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

## Technical Specifications *(continued)*

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
Power requirements	24 W, 1.2 A maximum @ 12.0 V, 2.2. A maximum @ 3.3 V

### Regulatory Compliance

#### Equipment type: NFT104P2

##### EMC

Country	Standard
US	FCC Part 15 Class A with shielded Telecom cables and STP Ethernet cables
Canada	ICES-003 Issue 4 Class A with shielded Telecom cables and STP Ethernet cables
EU	EN55024:1998 A1:2001/A2:2003 EN55022:1994 A1:1995/A2:1997 Class A with shielded Telecom cables and STP Ethernet cables

##### Safety

Country	Standard
US	UL 60950-1, First Edition
Canada	CAN/CSA 22.2 Number 60950-1-03
EU	EN60950:2000

##### Telecom

Country	Standard
US	FCC Part 68, TIA-968-A
Canada	CS03
EU	TBR 12/A1, TBR 13 ITU-T G.703 and ITU-T G.704 for 75 ohms and 120 ohms

Hazardous substances	RoHS compliance information at <a href="http://www.dialogic.com/rohs">www.dialogic.com/rohs</a>
Country-specific approvals	See the global product approvals database at <a href="http://www.dialogic.com/declarations">www.dialogic.com/declarations</a>

### Reliability/Warranty

Estimated MTBF	790,000 hours to Bellcore SR-332
Warranty	See Warranties at <a href="http://www.dialogic.com/ca-en/warranties/default.htm">www.dialogic.com/ca-en/warranties/default.htm</a>

## Ordering Information

Product	Order Code	Description
<i>TX 5020E Moderate-Performance SS7 PCI Express Boards</i>		
TX 5020E	83213	TX 5020E /4 std links/MTP only
TX 5020E	83215	TX 5020E /4 std links/full stack; SIGTRAN
TX 5020E	83285	TX 5020E /16 std links/MTP only
TX 5020E	83210	TX 5020E /16 std links/full stack; SIGTRAN
TX 5020E	83216	TX 5020E /32 std or 4 HS links/MTP only
TX 5020E	83214	TX 5020E /32 std or 4 HS links/full stack; SIGTRAN
<i>TX 5500E High-Performance SS7 PCI Express Boards</i>		
TX 5500E	83293	TX 5500E/4 std links/MTP only
TX 5500E	83292	TX 5500E/4 std links/full stack; SIGTRAN
TX 5500E	83284	TX 5500E /64 std or 4 HS links/MTP only
TX 5500E	83283	TX 5500E /64 std or 4 HS links/full stack; SIGTRAN
TX 5500E	83212	TX 5500E /128 std or 4 HS links/MTP only
TX 5500E	83209	TX 5500E /128 std or 4 HS links/full stack; SIGTRAN



[www.dialogic.com](http://www.dialogic.com)

**Dialogic Inc.**  
926 Rock Avenue  
San Jose, California 95131  
USA

Dialogic and NaturalAccess are registered trademarks or trademarks of Dialogic Inc. and its affiliates or subsidiaries ("Dialogic").

Dialogic's trademarks may be used publicly only with permission from Dialogic. Such permission may only be granted by Dialogic's legal department at the address provided above. The names of actual companies and products mentioned herein are the trademarks of their respective owners.

Dialogic encourages all users of its products to procure all necessary intellectual property licenses required to implement their concepts or applications, which licenses may vary from country to country. None of the information provided in this Datasheet other than what is listed under the section entitled Technical Specifications forms part of the specifications of the product and any benefits specified are not guaranteed. No licenses or warranties of any kind are provided under this product brief.

Dialogic may make changes to specifications, product descriptions, and plans at any time, without notice.

Copyright© 2011 Dialogic Inc. All rights reserved.

02/11 11538-02