Datasheet

Intel® Dialogic® Integrated Station Interface Boards

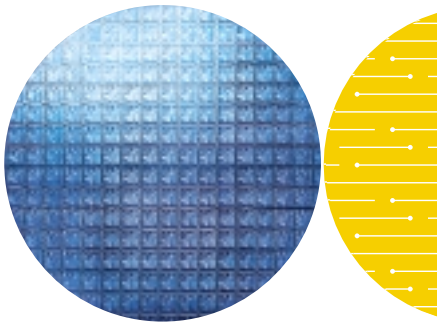
Analog Station Interface Boards with Conference and Voice Resources

Intel® Dialogic® DISI16R2, Intel® Dialogic® DISI24R2, and Intel® Dialogic® DISI32R2 are next-generation building blocks for converged communications systems. These boards are single-slot PCI solutions that connect analog telephone devices directly to converged communications platforms to create affordable, small- to mid-size, server-based PBXs, telemarketing systems, and call centers.

Intel in Communications

Features and Benefits

- Single-slot PCI solution can connect up to 32 analog telephone devices directly to converged communications platforms
- Provides tone detection and generation resources to every station for non-blocking call flow
- Call conferencing resource supports up to 16 conferees in flexible configurations of 2 to 16 parties per conference
- Enhanced conferencing features include coach-pupil mode, volume controls, and active-talker identification
- Voice play and record resources are configured on a one-to-one port-to-resource ratio for high availability
- Frequency shift keying (FSK) station signaling enables Caller ID delivery and message-waiting-indicator control
- Off-hook FSK signaling allows messaging implementations to Caller ID Type 2 devices, such as Caller ID on Call Waiting
- Provides programmable ring cadence options
- Supports power ringing with automatic ring trip, without additional external circuitry
- Station status event detection allows collection of call traffic statistics via an application for cost-effective management of call setup and call termination
- Programmable channel gain provides volume control from the application and enables line-level matching from different devices
- Allows use of affordable 2500-type phones and off-the-shelf analog feature phones with message waiting lights and Caller ID capability (Bellcore, UK, and Japanese variants supported)
- Support for Intel® native R4 interfaces provides backward compatibility with existing applications and minimal code translation
- CT Bus interface (H.100) makes system size and capability scaleable with other interface and resource boards
- Supports SCbus mode for backward compatibility with older Intel products
- Support for Windows* NT* and Windows 2000* operating systems
- International approvals for deployment in Asia, Europe, Japan, and North America



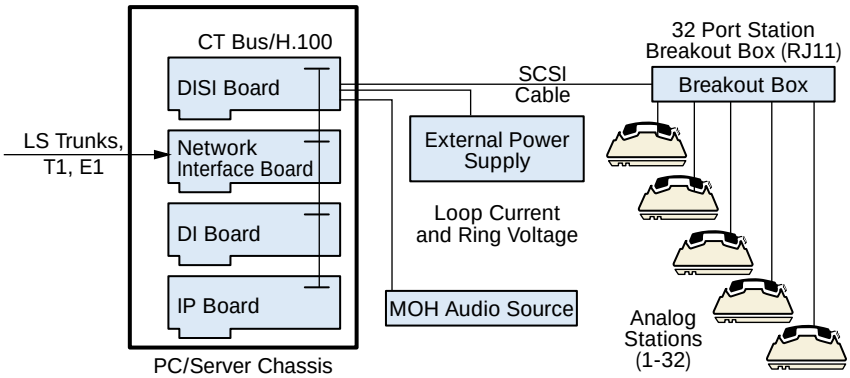


Figure 1. Integrated Station Interface Board Configuration

Integrated station interface boards from Intel are highly reliable and cost effective, and offer an optimized mix of analog station interfaces and resources on which to build highly scalable systems.

DISI16R2, DISI24R2, and DISI32R2 are full-size, single-slot PCI boards, which are based on DM3 architecture. They provide connectivity for up to 16, 24, or 32 station interfaces and include conferencing, voice play/record, tone detection and generation, and Caller ID capabilities. DM3 architecture allows access to independent, high-performance, firmware-based network protocol and media processing resources that can be operated and integrated on compatible hardware platforms.

Like other station interface boards from Intel, the DISI16R2, DISI24R2, and DISI32R2 are designed as integrated solutions with media resources and station interfaces available on one board. These boards can be combined with other network interface and resource hardware from Intel to create a complete solution.

Configurations

The DISI16R2, DISI24R2, and DISI32R2 can be connected with other integrated, network interface, and resource boards from Intel via a CT Bus in scalable trunk and station switching configurations. The boards are also compatible with IP boards from Intel, and can be used to enable converged Voice over Internet Protocol (VoIP) applications. See Figure 1 for a sample configuration.

Functional Description

The DISI16R2, DISI24R2, and DISI32R2 are based on the DM3 architecture, which provides a consistent set of system services and interfaces. This allows other DM3-compatible resources, such as player, recorder, tone generator, signal detector, conferencing, and call control, to execute in this environment.

See Figure 2 for a block diagram. The control processor is an ARM core-based ASIC. In addition to the core, the control processor includes various on-chip peripherals, (such as timers, interrupt controllers, etc.), an on-chip 0 wait state SRAM, a SDRAM controller, an onboard bus controller, a PCI control unit that provides a seamless interface to a PCI I/F device, and a data mover that assists in moving data between the SDRAM, SRAM, and DSP memories, and the PCI I/F.

Software executes on the control processor. Functionality includes initialization, configuration, inter-processor communication, and switching. The primary (controlling) component for DM3 resources typically executes on the control processor, interacting with DSP sub-components to realize full resource functionality.

Each board includes three (3) Motorola 563xx DSPs. The DSP subsystems include SRAM, and in some cases, DRAM. The DSPs supply direct PCM connections to the CT Bus ASIC that provides PCM switching between the SCbus/CT Bus (H.100) and the PCM connections to the loop start and analog station interfaces.

Applications

- Automatic call distributor (ACD)
- Server-based PBX
- Inbound and outbound telemarketing
- Customer service
- Help desks
- Teleconferencing/conferencing bridge

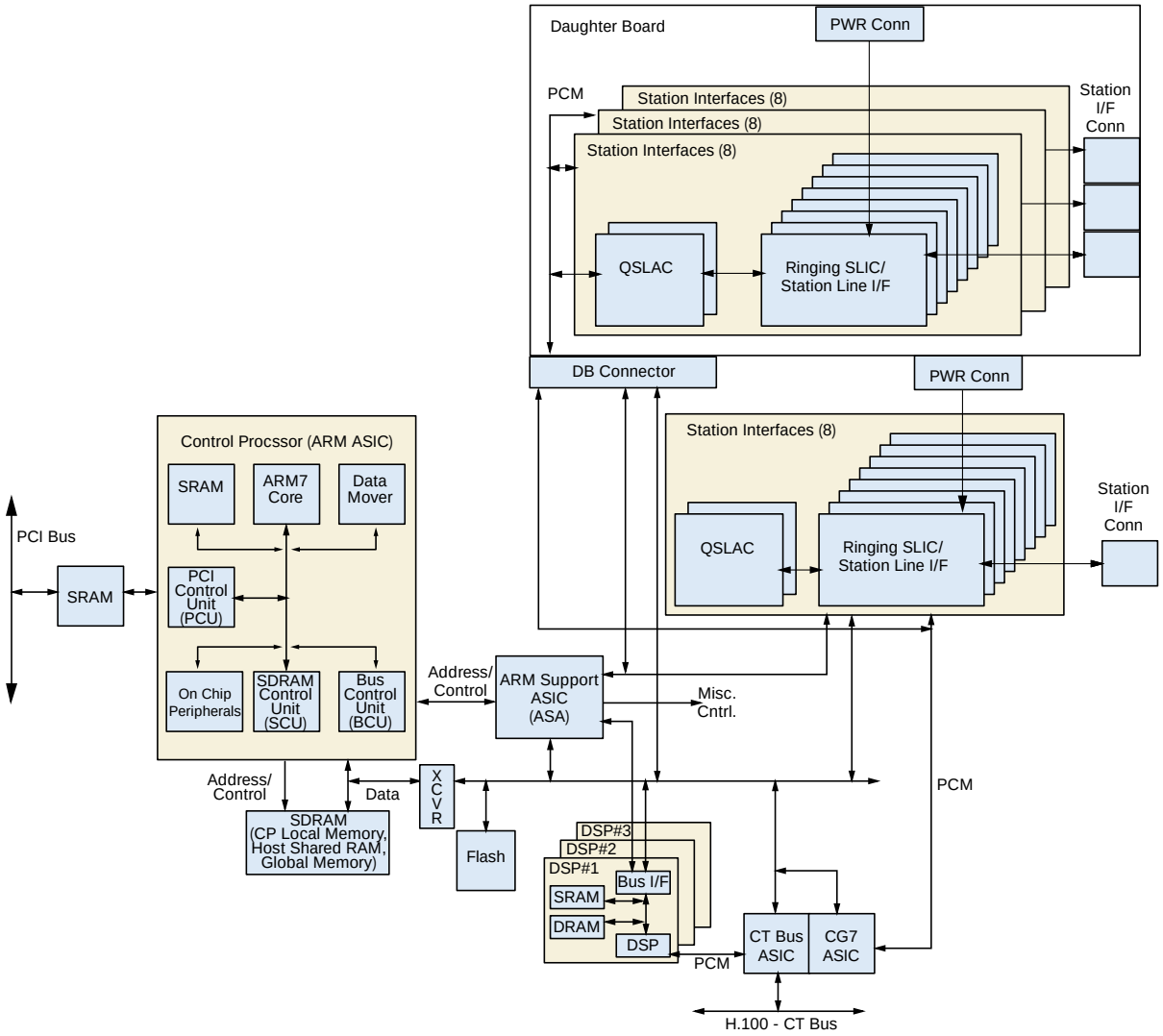


Figure 2. Integrated Station Interface Board Block Diagram

The CT Bus ASIC (CT812) delivers full master/slave H.100 capabilities as well as full SCbus master/slave capabilities. The CT Bus ASIC is connected to the loop start and analog trunk interfaces via the CG7 ASIC, which provides gain control as well as A-law to µ-law conversion capabilities.

DISI16R2, DISI24R2, and DISI32R2 support 16, 24, and 32 analog station interfaces respectively.

Up to eight quad subscriber line audio circuits (QSLAC) connected to up to 32 ringing subscriber line interface circuits (SLIC) are used to interface to the analog station interface tip and ring pairs. The QSLACs provide the required analog to digital and digital to analog conversions. The SLIC provides support for many BORSCHT (battery, overvoltage, ringing, supervision, coder/decoder, hybrid, and test) functions, and includes current limiting, on-hook audio path, tip and ring reversal/generation, and loop-current detection. The SLIC also provides thermal shutdown protection. Power (–24 VDC) for the analog station loop current and power (–70 VDC) for ringing is provided via a cable exiting from the card bracket.

The ARM Support ASIC (ASA) contains miscellaneous control and connection logic that allows the various subsystems to perform in a controlled and integrated manner.

Software Support

The DISI16R2, DISI24R2, and DISI32R2 are currently supported by system software and development kit version 5.1.1 FP1 or greater. The boards are backward compatible with native R4 MSI APIs to minimize the development work required to transition current applications to these advanced station interface products.

Technical Specifications†

Analog station interfaces	DISI16R2: 16 DISI24R2: 24 DISI32R2: 32
Fixed Voice resources	16, 24, 32
Sharable Conference resources	16
CLASS signaling	Frequency shift keying (FSK)
Resource sharing bus	CT Bus/H.100
Control microprocessor	ARM7 TDMI
Digital signal processors	(3) DSP: Motorola 56311 @ 150 MHz, each with 150 MIPS minimum
Form factor	PCI long card
Maximum boards per system	8

Host Interface

Bus compatibility	PCIU
Bus speed	33 MHz
Bus mode	32-bit to 16-bit conversion in target mode
Shared memory	128 KB page
Operating system	Windows NT/Windows 2000

Power Requirements (from Host PCI Slot)

	DISI32R2	DISI24R2	DISI16R2
+5 VDC	3.5 A maximum	3.1A maximum	2.7A maximum
+12 VDC	5mA maximum	5mA maximum	5mA maximum
–12 VDC	20mA maximum	20mA maximum	20mA maximum

Station Interface

Signaling type	Loop start originate
Loop current range	25 ± 5 mA
Open loop voltage	20.5 ± 1 VDC
External power supply	1 required per board
Ring frequency	20 Hz
Ring amplitude	40 Vrms @ 20 Hz minimum into 4 REN
2-wire return loss	25 dB
Maximum loop length	3500 feet using 24 AWG
Connectors	68-pin SCSI to RJ-11 breakout box

Audio Input Interface

Input impedance	1000 Ohms, AC coupled
Maximum input level	600 mVpp
Connector	1/8-inch mini-phone jack

Conferencing

Conference resources	16
Conference size	2 to 16 conferees
Number of conferences	Up to 5
Features	Automatic gain control, dynamic create/destroy, dynamic add/delete, echo cancellation, coach/pupil mode DTMF volume control, tone clamping, active talker notification

Technical Specifications†

Environmental

Operating temperature	0º C to +50º C
Storage temperature	–20º C to +70º C
Humidity	8% to 80% non-condensing

Cooling Conditions for Maximum Operating Temperatures

50° C	1.8 CFM per board
40° C	1.2 CFM per board
30° C	.9 CFM per board

Safety, EMI and Telecom Certifications

United States	Safety: UL standard 1950 3rd edition EMI: U.S. CFR 47(FCC) part 15, subpart B, Class A equipment Telecom: FCC Part 68
Canada	Safety: CSA Std C22.2 No. 950 1995 EMI: CSA Std C108.8 Class A limits Telecom: CS-03
Europe**	Safety: EN60950 (1992) Second edition with Amdts No. 1-4, 11 EMI: EN 55 022, CISPR 22 – Class B Limits, EN55024 (immunity)
Australia**	Safety: Austel TS-001, AS 3260 with amendments 1, 2, 3, 4 EMI: AS 3548 Telecom: TS-004
International**	Safety: IEC60950 (1991) 3rd edition with Amdts. 1-4 EMI: CISPR 22 - Class A limits, CISPR 24 (immunity)
Japan**	EMI: VCCI Class A
Warranty	Intel® Telecom Products Warranty Information at http://www.intel.com/network/csp/products/3144web.htm

MSI Global Power Module†

The MSI Global Power Module generates –24 and –70 volts to power the integrated station interface loop. One power module is required per board when station modules are used. The power module connects to a pre-wired power cable attached to the board.

Connectors

Input connector	Standard North American AC input
Output connector	6-pin female mini-DIN
Internal fusing	Not user replaceable

Power Requirements

Input voltage	90 to 265 VAC, 47 to 63 Hz
Output voltage	–24 VDC: 1.0 A –70 VDC: 300 mA
Output ripple	100 mV (peak-to-peak main)
Percent regulation	± 2.5% for –24 V ± 7.5% for –70 V
Operating temperature	0º C to +50º C
Size	6.5 inches long, 3.75 inches wide, 2.17 inches high
Warranty	18 months standard

Safety Certifications

UL:	1950 3rd edition File No: E148586
TUV:	EN60950 File No: B970624072005
CE:	CUL (CSA 950) File No: E160908
DENAN:	PS-E MEL 080801-NC 4339

Telephone Interface Adapter and Cable

The DISI16R2, DISI24R2, and DISI32R2 boards use a 68-pin SCSI connector to provide physical analog station interfaces. The DI/SI Breakout Box includes a 68-pin SCSI cable to connect the DISI boards to a 32-port RJ-11 patch panel.

Accessories	Item Market Name	Description
MSI Global Power Module	MSISCGBLPWRMOD	External station power supply; supports up to 32 stations; supports one board
DI/SI Breakout Box	DISIBOBKIT	68-pin SCSI connector from DISI board break-outs to (32) RJ-11 jacks; 68-pin cable included

System Hardware Requirements

- PC or server with Intel® Pentium® processor and full-size PCIU card slots that are 32-bit, 33 MHz, and 5 V/3.3 V signaling compatible
- Additional system hardware requirements based on requirements for Windows NT and Windows 2000 operating systems
- Additional system hardware requirements based on application requirements

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