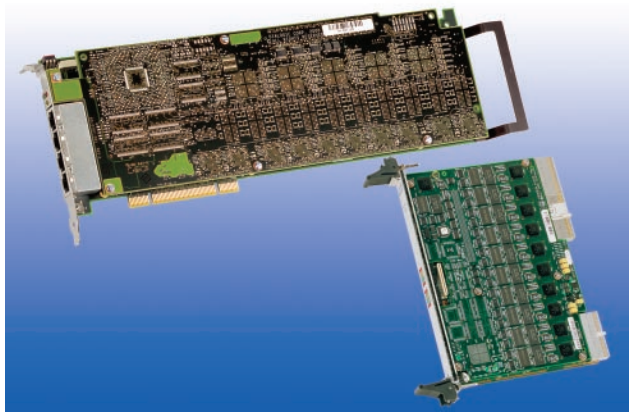
Dialogic® DM3 Media Boards

Datasheet
DM3 Media Boards

The Dialogic® DM3 Media Boards are an integral part of many high-density media server solutions. They provide voice processing and many other standard features including tone signaling, global tone detection, global tone generation, and call progress analysis. These boards are well-suited for many configurations and applications where enhanced media such as speech recognition, fax, and conferencing are not required. These boards can also be combined with other Dialogic® boards (switching, fax, or combined media) to provide enhanced media resources in a single system, thereby providing significant cost savings.



Products Discussed in This Datasheet

- Dialogic® DM/V960-4T1 Voice Board
- Dialogic® DM/V1200-4E1 Voice Board

The boards, available in an H.100 (PCI) compliant universal form factor, are excellent for service providers and large enterprise applications. This flexibility lets developers build single applications for deployment on either industry-standard form factor. Each board provides access to four T-1 (1.544 Mb/s) or E-1 (2.048 Mb/s) digital network interfaces, and up to 120 ports of voice and telephony signal processing.

Features	Benefits
Four T-1 or E-1 digital network interfaces with internationally approved CAS and ISDN PRI	Lets applications connect to a variety of signaling networks worldwide, facilitating faster time-to-market with global deployment
Available with either full- or half-density voice resources	Offers ability to choose different boards with either 1:1 or 1:2 voice to network interface ratio, which may be suitable in certain environments such as inbound call centers, providing fewer wasted resources and considerable board savings
Built on the industry-standard telephony bus — ECTF H.100	Lets applications expand through access to other communication boards, such as IP telephony, ATM, HDSI, and SS7, as well as combined media resource boards such as the Dialogic® DM/V3600BP Media Board

Technical Specifications

Maximum boards per system	Application, call traffic, and CPU dependent
CT Bus	ECTF H.100 compliant CT Bus, offering onboard switching access to 4096 bidirectional 64 kb/s DS-0 time slots 68-pin ribbon cable connector
Digital interfaces	4 T-1 or 4 E-1
Control processor	Intel i960C
Digital signal processors	Motorola 56303; 6 DSPs @ 100 MHz each
Control processor memory	8 MB
DSP memory	256 K word DRAM local to each DSP 128 K word SRAM local to each DSP
Baseboard global memory	32-bit wide DRAM accessible to all signal processors and control processor
Cache prompts	4 MB to 8 MB
Supported operating systems	Windows®; Linux. Details at http://www.dialogic.com/systemreleases
CSP	No
Signaling	ISDN PRI CAS robbed-bit (T1); R2MF (E1)

Host Interface

Bus compatibility	Rev 2.2 of PCI Bus Specification
Bus mode	Target and DMA master mode operation
Host interface memory	512 KB
Support	3.3 V or 5 V signaling environment (universal connectivity)

Platforms

Form factors	Universal PCI long card, single-slot width 12.3 in. (31.24 cm) long (without edge retainer) or 13.3 in. (33.78 cm) long (with edge retainer) 0.79 in. (2 cm) wide (total envelope) 3.87 in. (9.83 cm) high (excluding edge connector)
Network connectors	4 RJ-48C on rear bracket

Power Requirements

Configuration	+5 VDC	+12 VDC	–12 VDC	+3.3 VDC
DM/V960-4T1-PCI	19.25 W	0.360 W	N/A	N/A
DM/V1200-4E1-PCI	19.25 W	0.360 W	N/A	N/A

Environmental Requirements

Operating temperature	+32°F (0°C) to +122°F (+50°C)
Cooling condition per maximum operating temperature	+122°F (+50°C) — 2.3 CFM per board +104°F (+40°C) — 1.5 CFM per board +86°F (+30°C) — 1.1 CFM per board
Storage temperature	–4°F (–20°C) to +158°F (+70°C)
Humidity	8% to 80% noncondensing

Technical Specifications *(continued)*

Telephone Interface	**DSX-1 T-1**
Clock rate	1.544 Mb/s ±32 ppm
Level	3.0 V (nominal)
Pulse width	323.85 ns (nominal)
Line impedance	100 Ohm ±10%
Other electrical characteristics	Complies with AT&T TR62411 and ANSI T1.403-1989
Framing	SF (D3/D4)
	ESF for ISDN
Line coding	AMI
	AMI with B7 stuffing
	B8ZS
Clock and data recovery	Complies with AT&T TR62411 and Telcordia TA-TSY-000170
Jitter tolerance	Complies with AT&T TR62411 and ANSI T1.403-1989
Connectors	RJ-48C
Telephony bus connector	H.100 (PCI) style connector
Loopback	Supports switch-selectable local analog loopback and software selectable local digital loopback
Zero code suppression	Bell ZCS (Jam bit 7)
	GTE ZCS (Jam bit 8)
	Digital Data Service ZCS
	No zero code suppression

Telephone Interface	**CEPT E-1**
Network clock rate	2.048 Mb/s ±50 ppm
Internal clock rate	2.048 Mb/s ±32 ppm
Level	2.37 V (nominal) for 75 Ohm lines
	3.0 V (nominal) for 120 Ohm lines
Pulse width	244 ns (nominal)
Line impedance	75 Ohm, unbalanced
	120 Ohm, balanced
Other electrical characteristics	Complies with ITU-T Rec. G.703
Framing	ITU-T G.704-1988 with CRC4
Line coding	HDB3
Clock and data recovery	Complies with ITU-T Rec. G.823-1988
Jitter tolerance	Complies with ITU-T Rec. G.823, G.737, G.739, G.742-1988
Connectors	RJ-48C
Telephony bus connector	H.100 (PCI) style connectors
Loopback	Supports switch-selectable local analog loopback and software selectable local digital loopback

Technical Specifications *(continued)*

Approvals and Compliance

Hazardous substances	RoHS Compliance Information at http://www.dialogic.com/rohs
Safety and EMC	
Canada	ICES-003 Class A
	ULc 60950 File E96804
Europe	EN60950
	EN55022
	EN55024
Japan	VCCI Class A
United States	FCC Part 15 Class A
	UL 60950 File E96804
International	IEC60950
	CISPR 22
	CISPR 24
Telecom Approvals	
United States	EBZUSA-31207-XD-T
Canada	IC:885-7969A
European Union	DoC 01/10/2003
Country-specific approvals	See the Product Declarations & Global Approvals list at http://www.dialogic.com/declarations/ or contact your Authorized Distributor

Reliability/Warranty

Estimated MTBF	Per Telecordia Method I Case I
	87,000
Warranty	Warranty information at http://www.dialogic.com/warranties

Audio Signal

Usable receive range	–40 dBm0 to 0 dBm0 nominal, configurable by parameter*
Automatic gain control	Application can enable/disable output level, configurable by parameter*
Silence detection	–40 dBm nominal, software adjustable*
Transmit level (weighted average)	–12.5 dBm nominal, configurable by parameter*
Transmit volume control	40 dB adjustment range, with application-definable increments and legal limit cap

Frequency Response

24 kb/s	300 Hz to 2600 Hz ±3 dB
32 kb/s	300 Hz to 3400 Hz ±3 dB
64 kb/s	300 Hz to 3400 Hz ±3 dB

Technical Specifications *(continued)*

Audio Digitizing

24 kb/s	OKI ADPCM @ 6 kHz sampling rate
32 kb/s	OKI ADPCM @ 8 kHz sampling rate
48 kb/s	G.711 PCM (µ-law for T-1 and A-law for E-1) @ 6 kHz sampling rate
64 kb/s	G.711 PCM (µ-law for T-1 and A-law for E-1) @ 8 kHz sampling rate
64 kb/s	Linear PCM, 8 kHz sampling rate, 8-bit resolution (88 kbps) VOX and WAVE**
128 kb/s	Linear PCM, 8 kHz sampling rate, 16-bit resolution (128 kbps) VOX and WAVE**
88 kb/s	Linear PCM, 11 kHz sampling rate, 8-bit resolution (88 kbps) VOX and WAVE**
176 kb/s	Linear PCM, 11 kHz sampling rate, 16-bit resolution (176 kbps) VOX and WAVE**
Digitization selection	Selectable by application on function call-by-call basis
Playback speed control	Pitch controlled Available on the following 8 kHz coders: OKI ADPCM, G.711 PCM, Linear Adjustment range: ±50% Adjustable through application or programmable DTMF control

DTMF Tone Detection

DTMF digits	0 to 9, *, #, A, B, C, D per Telcordia LSSGR Sec. 6
Dynamic range	(T-1) –36 dBm to +3 dBm per tone, configurable by parameter* (E-1) –39 dBm to 0 dBm per tone, configurable by parameter*
Minimum tone duration	32 ms; can be increased with software configuration
Interdigit timing	Detects like digits with a >45 ms interdigit delay Detects different digits with a 0 ms interdigit delay
Acceptable twist and frequency variation	(T-1) Meets Telcordia LSSGR Sec 6 and EIA 464 requirements (E-1) Meets ITU-T Q.23 recommendations*
Noise tolerance	Meets Telcordia LSSGR Sec 6 and EIA 464 requirements for Gaussian, impulse, and power line noise tolerance
Cut-through	(T-1) Local echo cancellation permits 100% detection with a >4.5 dB return loss line (E-1) Digital trunks use separate transmit and receive paths to network Performance dependent on far-end handset's match to local analog loop
Talk-off	Detects less than 10 digits while monitoring Telcordia TR-TSY-000763 standard speech tapes (LSSGR requirements specify detecting no more than 470 total digits) Detects 0 digits while monitoring MITEL speech tape #CM 7291

Global Tone Detection

Tone type	Programmable for single or dual
Maximum number of tones	Application-dependent
Frequency range	Programmable within 300 Hz to 3500 Hz
Maximum frequency deviation	Programmable in 5 Hz increments
Frequency resolution	±5 Hz. Separation of dual frequency tones is limited to 62.5 Hz at a signal-to-noise ratio of 20 dB
Timing	Programmable cadence qualifier, in 10 ms increments
Dynamic range	(T-1) Default set at –36 dBm to +3 dBm per tone, programmable (E-1) Default set at –39 dBm to +0 dBm per tone, programmable

Technical Specifications *(continued)*

Global Tone Generation	
Tone type	Generate single or dual tones
Frequency range	Programmable within 200 Hz to 4000 Hz
Frequency resolution	1 Hz
Duration	10 ms increments
Amplitude	(T-1) –43 dBm0 to –3 dBm0 per tone nominal, programmable (E-1) –40 dBm0 to +0 dBm0 per tone nominal, programmable
MF Signaling (T-1)	**R1**
MF digits	0 to 9, KP, ST, ST1, ST2, ST3 per Telcordia LSSGR Sec 6, TR-NWT-000506 and ITU-T Q.321
Transmit level	Complies with Telcordia LSSGR Sec 6, TR-NWT-000506
Signaling mechanism	Complies with Telcordia LSSGR Sec 6, TR-NWT-000506
Dynamic range for detection	–25 dBm to +3 dBm per tone
Acceptable twist	6 dB
Acceptable freq. variation	Less than ±1 Hz
MF Signaling (E-1)	**R2**
MF digits	All 15 forward and backward signal tones per ITU-T Q.441
Transmit level	–8 dBm0 per tone, nominal, per ITU-T Q.454; programmable
Signaling mechanism	Supports the R2 compelled signaling cycle and non-compelled pulse requirements per ITU-T Q.457 and Q.442
Dynamic range for detection	–35 dBm to –5 dBm per tone
Acceptable twist	7 dB
Acceptable freq. variation	Less than ±1 Hz
Call Progress Analysis	
Busy tone detection	Default setting designed to detect 74 out of 76 unique busy/congestion tones used in 97 countries as specified by ITU-T Rec. E., Suppl. #2 Default uses both frequency and cadence detection Application can select frequency only for faster detection in specific environments
Ring back detection	Default setting designed to detect 83 out of 87 unique ring back tones used in 96 countries as specified by ITU-T Rec. E., Suppl. #2 Uses both frequency and cadence detection
Positive voice detection accuracy	>98% based on tests on a database of real-world calls in North America
Positive voice detection speed	Detects voice in as little as 1/10th of a second
Positive answering machine detection	Standard
Fax/modem detection	Preprogrammed
Intercept detection	Detects entire sequence of the North American tri-tone Other intercept tone sequences can be programmed
Dial tone detection before dialing	Application enable/disable Supports up to three different user-definable dial tones Programmable dial tone drop out debouncing (when not part of regulatory approval)

Technical Specifications *(continued)*

Tone Dialing

DTMF digits	0 to 9, *, #, A, B, C, D per Telcordia LSSGR Sec 6, TR-NWT-000506, ITU-T Q.23
Frequency variation	Less than ±1 Hz
Rate	10 digits/s, configurable by parameter*
Level	(T-1) –4.0 dBm per tone, nominal, configurable by parameter*
	(E-1) –7.5 dBm per tone, nominal, country-specific*

Protocols

T-1 CAS	E&M (wink start, immediate start), loop start, ground start; feature group A, B, and D
T-1 ISDN	NI-2, 4ESS, 5ESS, DMS100, DMS250, INS1500, Q.Sig
E-1 CAS	Many country-specific MFC-R2 variants
	For more details, refer to the latest Dialogic® Global Call Protocol Package release notes
E-1 ISDN	NET5, DPNSS, DASS2,Q.Sig

Additional Components

Multidrop CT Bus cables (CBLCTB3DROPQ, CBLCTB4DROPQ, CBLCTB8DROPQ, CBLCTB12DROPQ, CBLCTB16DROPQ)

Ordering Information

Product Code	Order Code	Description
DMV9604T1PCIW	882-692	96-port Digital T1, voice, PCI
DMV12004E1PCIW	882-691	12-port Digital E1, voice, PCI
DMV12004E1PCIWCN	882-742	12-port Digital E1, voice, PCI, for China

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* Configurable to meet country-specific PTT requirements. Actual specification may vary from country to country for approved products.
** Supported on select media loads.

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