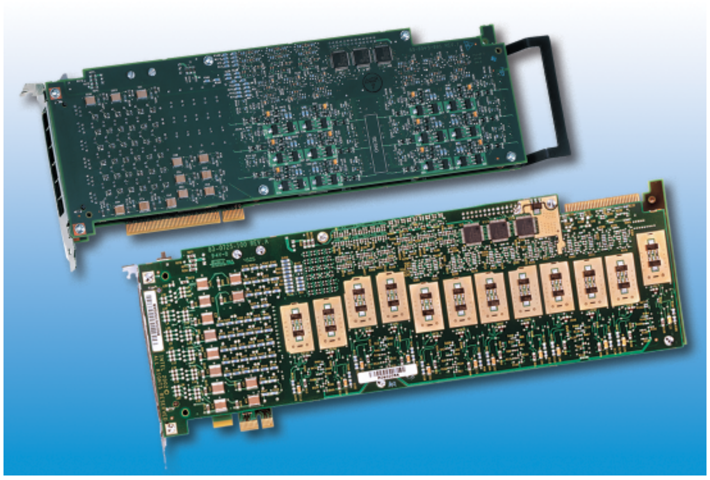
SANGOMA

**Datasheet**
JCT Media Boards

# Dialogic® D/120JCT-LS Media Boards by Sangoma



The Dialogic® D/120JCT-LS Media Board is a 12-port analog PCI or PCI Express board well-suited for developing advanced communications applications that require multimedia resources. This high performance, scalable product supports voice, fax, and software-based speech recognition processing in a single PCI or PCI Express slot, providing 12 analog telephone interface circuits for direct connection to analog loop start lines.

Dialogic® JCT Media Boards – including this model - can be used by developers to provide small- and medium-sized enterprise Computer Telephony (CT) applications that require high-performance voice and fax processing. Among the features and benefits of this model, and other Dialogic® JCT Media Boards, are the following. They use Digital Signal Processor (DSP) voice processing technology, making them well-suited for server-based CT systems under Windows and Linux. They also provide a powerful platform for creating sophisticated Interactive Voice Response (IVR) applications for the small and medium-sized enterprise market segments. Their Caller ID support lets applications, such as IVR, receive calling party information via a telephone trunk line; Caller ID is supported for North America (CLASS protocol), the United Kingdom (CLI protocol), and in Japan (CLIP protocol). Features such as fax and software-based speech recognition processing enable unified messaging applications. They also provide Automatic Gain Control (AGC), so even a weak telephone signal can be recorded and replayed with clarity.

| Features | Benefits |
|---|---|
| **Supports G.726 bit exact and GSM coders** | Enables implementation of unified messaging applications that meet VPIM standards |
| **Supports Continuous Speech Processing (CSP)** | Provides a flexible speech processing technology, which, when coupled with efficient drivers, off-loads critical real-time signal processing in speech-enabled applications to on-board DSPs. Reduces system latency, increases recognition accuracy, and improves overall system response time for high-density speech solutions. |
| **A-law or μ-law voice coding at dynamically selectable data rates, 24 kbit/s to 64 kbit/s, selectable on a channel-by-channel basis** | Allows for a beneficial tradeoff between disk storage and voice quality |
| **Telcordia CLASS, UK CLI, Japanese Caller ID, and other international protocols** | Supports an international Caller ID capability via on-hook audio path |
| **A variety of country-specific approvals** | Expands an application's ability to serve several global market segments at no extra cost |
| **Separate models available with Universal PCI or PCI Express edge connector** | Universal PCI form factor compatible with 3.3 V and 5.0 V bus signals; and PCI Express form factor compatible with x1 lane configuration or higher. |
| **Supports up to four (4) channels of DSP-based on-board fax** | Reduces the number of boards per system |

## Technical Specifications

| | |
|---|---|
| Number of ports | 12 |
| Maximum boards per system | 8 (Linux and Windows). Number may be limited by application and system performance 1 |
| CT Bus loads per board | 20 |
| Maximum CT Bus loads per system | On-board loop start interface (12) |
| Analog network interface | CT Bus |
| Resource sharing bus | Intel 80486 GXSF running at 32.768 MHz with 2 MB SDRAM |
| Control microprocessor | Freescale DSP56303 @ 100 MHz, with 128Kx24 private SRAM |
| Digital signal processor | Linux, Windows: Details at https://wiki.sangoma.com/display/DVC/Dialogic+Voice+Cards |
| Supported operating systems | Yes |
| CSP | Yes |
| FAX | Analog loop start |
| Signaling | |
| **Host Interface — PCI** | Complies with PCI-SIG Bus Specification, Rev. 2.2; Universal slot (5 V or 3.3 V) |
| Bus compatibility | 33 MHz maximum |
| Bus speed | |
| Bus mode | 32-bit |
| Shared memory | 32 KB to 64 KB page |
| Interrupt | 1 IRQ (INTA) shared by Dialogic® JCT PCI Media Boards |
| I/O ports | None |

### Physical Dimensions — PCI

Standard-height, full length form factor
12.28 in. (31.2 cm) long
4.2 in. (10.67 cm) high

### Power Requirements — PCI

| | |
|---|---|
| +5 VDC | 1.2 A typical; 1.4 A maximum |
| +12 VDC | 235 mA typical; 285 mA maximum |
| –12 VDC | 80 mA typical; 100 mA maximum |

### Host Interface — PCI Express

| | |
|---|---|
| Bus compatibility | Complies with PCI-SIG PCI Express Base Specification, Rev. 1.1; x1 or higher compatible |
| Bus speed | 2.5 GHz maximum per direction |
| Shared memory | 32 KB to 64 KB page |
| Interrupt | Legacy INTA emulation shared by Dialogic® JCT PCIe Media Boards |
| I/O ports | None |

### Physical Dimensions — PCI Express

Standard-height, full length form factor
12.28 in. (31.2 cm) long
4.2 in. (10.67 cm) high

### Power Requirements — PCI Express

| | |
|---|---|
| +3.3 VDC | 1.12 A typical, 1.4 A maximum |
| +12 VDC | 800 mA typical, 900 mA maximum |

### Environmental Requirements — PCI and PCI Express

| | |
|---|---|
| Operating temperature | +32°F (0°C) to +122°F (+50°C) |
| Storage temperature | -4°F (–20°C) to 158°F (+70°C) |
| Humidity | 8% to 80% noncondensing |

### Telephone Interface†

| | |
|---|---|
| Trunk type | Loop start<br>Ground start for inbound applications with AC ringing |
| Impedance | 600 Ohms nominal |
| Ring detection | 40 Vrms to 130 Vrms, 15.3 Hz to 68.0 Hz (each configurable by parameter*) |
| Loop current range | 20 mA to 60 mA, (Euro) 20 mA to 120 mA, polarity insensitive |
| Echo return loss | 17 dB minimum (at country impedance) |
| Crosstalk coupling | >–75 dB |
| Speech digitization | 64 kbit/s, μ-law PCM |
| Frequency response | 300 Hz to 3400 Hz ±3 dB (transmit and receive) |
| Connector | RJ14; 6 jacks (each jack supports 2 channels) |

### Reliability

| | |
|---|---|
| Estimated MTBF | Per Telcordia Method<br>PCI: 154,000 hours<br>PCI Express: 154,000 hours |

### Approvals, Compliance and Warranty

| | |
|---|---|
| Country-specific safety and telecom approvals | https://portal.sangoma.com |
| Warranty information | https://www.sangoma.com/warranties |

† *Average speech mandates +16 dB peaks above average and preserves –13 dB valleys below average.*

* *Analog levels: 0 dBm0 corresponds to a level of +3 dBm at tip-ring analog point. Values vary depending on country requirements; contact your Dialogic account manager*

## Springware/JCT Technical Specifications

### Facsimile

| | |
|---|---|
| Fax compatibility | ITU-T G3 compliant (T.4, T.30)<br>ETSI NET/30 compliant |
| Maximum data rate | 14.4 kbit/s (v.17) send |
| 9.6 kbit/s (v.29) receive | |
| Variable speed selection | Automatic step-down to 12,000 bit/s, 9600 bit/s, 7200 bit/s, 4800 bit/s, and lower |
| Transmit data modes | Modified Huffman (MH)<br>Modified Read (MR) |
| Receive data modes | MH, MR |

| | |
|---|---|
| File data formats | Tagged Image File Format-Fax (TIFF-F) for transmit/receive MH and MR |
| ASCII-to-fax conversion | Host-PC-based conversion<br>Direct transmission of text files<br>Windows fonts supported<br>Page headers generated automatically |
| Error correction | Detection, reporting, and correction of faulty scan lines |
| Image widths | 1728 pixels<br>2048 pixels<br>2432 pixels |
| Image scaling | Automatic horizontal and vertical scaling between page sizes |
| Polling modes | Normal<br>Turnaround |
| Image resolution | Normal (203 pels/in. x 98 lines/in.; 203 pels/2.54 cm × 98 lines/2.54 cm)<br>Fine (203 pels/in. x 196 lines/in.; 203 pels/2.54 cm × 196 lines/2.54 cm) |
| Fill minimization | Automatic fill bit insertion and stripping |

## Audio Signal

| | |
|---|---|
| Receive range | –40 dBm to –7 dBm nominal, configurable by parameter** |
| Automatic gain control | Application can enable/disable<br>Above –22 dBm results in full-scale recording, configurable by parameter** |
| Silence detection | –40 dBm nominal, software adjustable** |
| Transmit level (weighted average) | –9.5 dBm nominal, configurable by parameter** |
| Transmit volume control | 40 dB adjustment range, with application-definable increments, capped according to country-specific regulations |

## Frequency Response

| | |
|---|---|
| 24 kbit/s | 300 Hz to 2600 Hz ±3 dB |
| 32 kbit/s | 300 Hz to 3400 Hz ±3 dB |
| 48 kbit/s | 300 Hz to 2600 Hz ±3 dB |
| 64 kbit/s | 300 Hz to 3400 Hz ±3 dB |

## Audio Digitizing

| | |
|---|---|
| 13 kbit/s | GSM 6.10 @ 8 kHz sampling |
| 24 kbit/s | 4-bit OKI ADPCM @ 6 kHz sampling |
| 32 kbit/s | 4-bit OKI ADPCM @ 8 kHz sampling |
| 32 kbit/s | G.726 @ 8 kHz sampling |
| 48 kbit/s | G.711 μ-law PCM @ 6 kHz sampling |
| 64 kbit/s | G.711 μ-law PCM @ 8 kHz sampling |
| Digitization selection | Selectable by application on function call-by-call basis |
| Playback speed control | Pitch controlled<br>Available for 24 kbit/s and 32 kbit/s data rates<br>Adjustment range: ±50%<br>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 | –38 dBm0 to –3 dBm0 per tone, configurable by parameter** |
| Minimum tone duration | 40 ms, can be increased with software configuration |
| Interdigit timing | Detects like digits with a >40 ms interdigit delay<br>Detects different digits with a 0 ms interdigit delay |
| Twist and frequency variation | Meets Telcordia LSSGR Sec 6 and EIA 464 requirements |
| Noise tolerance | Meets Telcordia LSSGR Sec 6 and EIA 464 requirements for Gaussian, impulse, and power line noise tolerance |
| Cut-through | Local echo cancellation permits 100% detection with a >4.5 dB return loss line |
| Talk-off | Detects less than 20 digits while monitoring Telcordia TR-TSY-000763 standard speech tapes (LSSGR requirements specify detecting no more than 470 total digits)<br>Detects zero (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 | Programmable, default set at –6 dBm0 to –3 dBm0 per tone |

## 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 | Programmable within –43 dBm to –3 dBm per tone |

## MF Signaling

| | |
|---|---|
| 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 dBm0 to –3 dBm0 per tone |
| Acceptable twist | 6 dB |
| Acceptable freq. variation | Less than ±1 Hz |

## Call Progress Analysis

Busy tone detection
Ring back tone detection
Positive voice detection
Positive answering machine detection
Fax/modem detection
Intercept detection
Dial tone detection before dialing

## Tone Dialing

| | |
|---|---|
| DTMF digits | 0 to 9, *, #, A, B, C, D per Telcordia LSSGR Sec 6, TR-NWT-000506 |
| Frequency variation | Less than ±1 Hz |
| Rate | 10 digits/s maximum, configurable by parameter** |
| Level | –4.0 dBm per tone, nominal, configurable by parameter** |

### Pulse Dialing

| | |
|---|---|
| 10 digits | 0 to 9 |
| Pulsing rate | 10 pulses/s, nominal<br>20 pulses/s for Japan, configurable by parameter** |
| Break ratio | 60% nominal, configurable by parameter** |

### Analog Caller Identification

| | |
|---|---|
| Applicable standards | Telcordia TR-NWT-000030<br>Telcordia TR-NWT-000031<br>Telcordia TR-NWT-001188<br>TAS T5 PSTN1 ACLIP: 1994 (Singapore) |
| Modem standard | Bell 202 or V.23, serial 1200 bits/sec (simplex FSK signaling) |
| Receive sensitivity | –48 dBm (–50 dBv) to –1 dBm |
| Noise tolerance | Minimum 18 dB SNR over 0 to –48 dBm dynamic range |
| Data formats | Single Data Message (SDM) and Multiple Data Message (MDM) formats via API calls and commands |
| Line impedance | AC coupled 600 Ohm (@ 1.8 kHz) termination during Caller ID on-hook detection interval |
| Message formats | ASCII or binary SDM, MDM message content |

### Analog Display Services Interface (ADSI)

FSK generation per Telcordia TR-NWT-000030

CAS tone generation and DTMF detection per Telcordia TR-NWT-001273

*** Analog levels: 0 dBm0 corresponds to a level of +3 dBm at tip-ring analog point. Values vary depending on country requirements; contact your account manager*

## Ordering Information

Please see the Models tab for this product.

# ABOUT SANGOMA

Sangoma Technologies Corporation is a trusted leader in delivering globally scalable Voice-Over-IP telephony systems, both on-site and cloud-based. As the communication landscape evolves and businesses invest in new strategies to provide effective communications, Sangoma Technologies is your trusted partner; delivering Unified Communications solutions for SMBs, Enterprises, OEMs, Carriers, and service providers.

Founded in 1984, Sangoma Technologies Corporation is publicly traded on the TSX Venture Exchange (TSX VENTURE: STC).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