The Dialogic® D/41JCT-LS Media Board is a 4-port analog converged communications board that supports voice, fax, and software-based speech recognition processing in a single PCI or PCI Express slot, providing four (4) 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

<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT or H.100 bus connectivity</td>
<td>Enables an application to switch calls to or from other resources</td>
</tr>
<tr>
<td>Supports Continuous Speech Processing (CSP)</td>
<td>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.</td>
</tr>
<tr>
<td>Supports up to four (4) channels of DSP-based on-board fax</td>
<td>Reduces the number of boards per system</td>
</tr>
<tr>
<td>Separate models available with Universal PCI or PCI Express edge connector</td>
<td>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</td>
</tr>
<tr>
<td>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</td>
<td>Allows for a beneficial tradeoff between disk storage and voice quality</td>
</tr>
<tr>
<td>Telcordia CLASS, UK CLI, Japanese Caller ID, and other international protocols</td>
<td>Supports international Caller ID capability via on-hook audio path</td>
</tr>
<tr>
<td>Advanced outbound call progress analysis</td>
<td>Monitors outgoing call status quickly and accurately</td>
</tr>
</tbody>
</table>
## Technical Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of ports</td>
<td>4</td>
</tr>
<tr>
<td>Maximum boards per system</td>
<td>8</td>
</tr>
<tr>
<td>CT Bus loads per board</td>
<td>1</td>
</tr>
<tr>
<td>Maximum CT Bus loads per system</td>
<td>20</td>
</tr>
<tr>
<td>Analog network interface</td>
<td>4 on-board loop start interface circuits</td>
</tr>
<tr>
<td>Resource sharing bus</td>
<td>CT Bus</td>
</tr>
<tr>
<td></td>
<td>H.100</td>
</tr>
<tr>
<td>Control processor</td>
<td>80C186 @ 34.8 MHz</td>
</tr>
<tr>
<td>Digital signal processor</td>
<td>Freescale DSP56303 @ 100 MHz, with 128Kx24 private SRAM</td>
</tr>
<tr>
<td>Supported operating systems</td>
<td>Linux, Windows: Details at <a href="http://www.dialogic.com/systemreleases">http://www.dialogic.com/systemreleases</a></td>
</tr>
<tr>
<td>CSP</td>
<td>Yes</td>
</tr>
<tr>
<td>FAX</td>
<td>Yes</td>
</tr>
<tr>
<td>Signaling</td>
<td>Analog loop start</td>
</tr>
</tbody>
</table>

### Host Interface — PCI and PCI Express

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus compatibility</td>
<td>PCI: Complies with PCI-SIG Bus Specification, Rev. 2.2</td>
</tr>
<tr>
<td></td>
<td>PCIe: Complies with PCI-SIG PCI Express Base Specification, Rev. 1.1; x1 or higher compatible</td>
</tr>
<tr>
<td>PCI Bus speed</td>
<td>33 MHz maximum</td>
</tr>
<tr>
<td>PCI Bus mode</td>
<td>Target mode operation only</td>
</tr>
<tr>
<td>Shared memory</td>
<td>32 KB page</td>
</tr>
<tr>
<td>Interrupt</td>
<td>PCI: 1 IRQ (INTA) shared by Dialogic® JCT Media Boards</td>
</tr>
<tr>
<td></td>
<td>PCIe: Legacy INTA emulation shared by Dialogic® JCT PCIe Media Boards</td>
</tr>
<tr>
<td>I/O ports</td>
<td>None</td>
</tr>
</tbody>
</table>

### Physical Dimensions

- Standard-height, full-length form factor
- 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)

### Power Requirements — PCI

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>+5 VDC</td>
<td>750 mA maximum</td>
</tr>
<tr>
<td>+12 VDC</td>
<td>200 mA maximum</td>
</tr>
<tr>
<td>–12 VDC</td>
<td>100 mA maximum</td>
</tr>
</tbody>
</table>

### Power Requirements — PCI Express

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>+12 VDC</td>
<td>450 mA maximum</td>
</tr>
</tbody>
</table>

### Environmental Requirements — PCI and PCI Express

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating temperature</td>
<td>+32°F (0°C) to +122°F (+50°C)</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>–4°F (–20°C) to +158°F (+70°C)</td>
</tr>
<tr>
<td>Humidity</td>
<td>8% to 80% noncondensing</td>
</tr>
</tbody>
</table>
**Telephone Interface**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trunk type</td>
<td>Loop start</td>
</tr>
<tr>
<td>Impedance</td>
<td>600 Ohms nominal</td>
</tr>
<tr>
<td>Ring detection</td>
<td>15 V rms minimum, 13 Hz to 68 Hz, (each configurable by parameter*)</td>
</tr>
<tr>
<td>Loop current range</td>
<td>20 mA to 120 mA</td>
</tr>
<tr>
<td>Echo return loss</td>
<td>Configurable by software parameter</td>
</tr>
<tr>
<td>Crosstalk coupling</td>
<td>Less than –70 dB at 1 kHz channel to channel</td>
</tr>
<tr>
<td>Receive signal/noise ratio</td>
<td>70 dB referenced to –15 dBm</td>
</tr>
<tr>
<td>Frequency response</td>
<td>200 Hz to 3400 Hz ±3 dB (transmit and receive)</td>
</tr>
<tr>
<td>Connector</td>
<td>4 RJ-11 type</td>
</tr>
</tbody>
</table>

**Reliability**

- **Estimated MTBF**
  - Per Telcordia Method 1
  - PCI: 274,000 hours
  - PCI Express: 230,000 hours

**Approvals, Compliance, Warranty**


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† 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.

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**Springware/JCT Technical Specifications**

**Facsimile**

- **Fax compatibility**
  - ITU-T G3 compliant (T.4, T.30)
  - 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)
  - 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
  - Direct transmission of text files
  - Windows fonts supported
  - Page headers generated automatically
- **Error correction**
  - Detection, reporting, and correction of faulty scan lines
- **Image widths**
  - 1728 pixels
  - 2048 pixels
  - 2432 pixels
Dialogic® D/41JCT-LS Media Board

Datasheet
JCT Media Boards

Image scaling
Automatic horizontal and vertical scaling between page sizes

Polling modes
Normal
Turnaround

Image resolution
Normal (203 pels/in. × 98 lines/in.; 203 pels/2.54 cm × 98 lines/2.54 cm)
Fine (203 pels/in. × 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 +2.5 dBm0 nominal, configurable by parameter**

Automatic gain control
Application can enable/disable
Above –18 dBm0 results in full-scale recording, configurable by parameter**

Silence detection
–40 dBm0 nominal, software adjustable**

Transmit level (weighted average)
–9.5 dBm0 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
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
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)
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 dBm0 to –3 dBm0 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 frequency 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 dBm0 per tone, nominal, configurable by parameter**

Pulse Dialing

- **10 digits**: 0 to 9
- **Pulsing rate**: 10 pulses/s, nominal 20 pulses/s for Japan, configurable by parameter**
- **Break ratio**: 60% nominal, configurable by parameter**
**Analog Caller Identification**

Applicable standards
- Telcordia TR-NWT-000030
- Telcordia TR-NWT-000031
- Telcordia TR-NWT-001188
- TAS T5 PSTN1 ACLIP: 1994 (Singapore)

Modem standard
- Bell 202 or V.23, serial 1200 bits/sec (simplex FSK signaling)

Receive sensitivity
- $-48 \text{ dBm} \rightarrow -50 \text{ dBv} \rightarrow -1 \text{ dBm}$

Noise tolerance
- Minimum $18 \text{ dB SNR}$ over $0$ to $-48 \text{ dBm}$ dynamic range

Data formats
- Single Data Message (SDM) and Multiple Data Message (MDM) formats via API calls and commands

Line impedance
- AC coupled $600 \text{ Ohm}$ (@ $1.8 \text{ kHz}$) 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: $0 \text{ dBm} = 0$ corresponds to a level of $+3 \text{ dBm}$ at tip-ring analog point. Values vary depending on country requirements; contact your account manager.

**Ordering Information**

Please see the Ordering Information tab for this product.
www.dialogic.com

For a list of Dialogic offices and locations, please visit: https://www.dialogic.com/contact.aspx

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These performance results were measured using specific computer systems and/or components within specific lab environments and under specific system configurations. Any difference in system hardware, software design, or configuration may affect actual performance. The results are furnished for informational use only and should not be construed as a commitment by Dialogic. Dialogic assumes no responsibility or liability for any errors or inaccuracies.

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