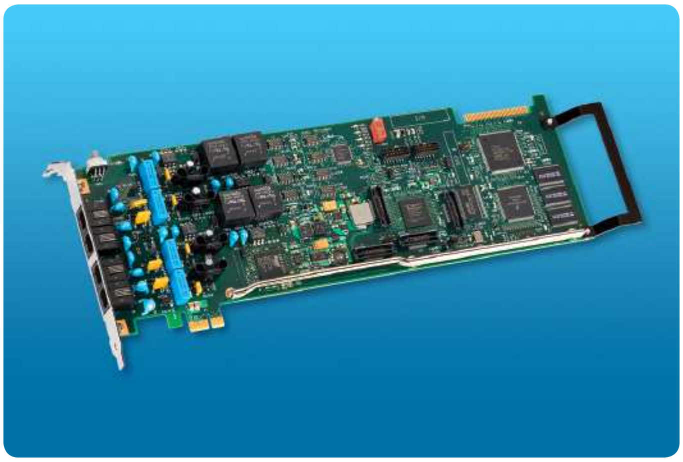
# Dialogic® VFX/41JCT-LS Media Board by Sangoma



The Dialogic® VFX/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 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 | Benefits |
|---|---|
| **Supports up to four (4) channels of enhanced on-board fax** | Reduces the number of boards per system |
| **Supports Continuous Speech Processing (CSP)** | Provides a flexible speech processing technology, which, when coupled with efficient drivers, offloads 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. |
| **Available in PCI Express form factor** | PCI Express form factor compatible with x1 lane configuration or higher |
| **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 |
| **Advanced outbound call progress analysis** | Monitors outgoing call status quickly and accurately |

## Technical Specifications

| | |
|---|---|
| Number of ports | 4 |
| Maximum boards per system | 8 |
| CT Bus loads per board | 1 |
| Maximum CT Bus loads per system | 20 |
| Analog network interface | 4 on-board loop start interface circuits |
| Resource sharing bus | CT Bus<br>H.100 |
| Control processor | 80C186 @ 34.8 MHz |
| Digital signal processor | Freescale DSP56303 @ 100 MHz, with 128Kx24 private SRAM |
| Supported operating systems | Linux, Windows: Details at https://wiki.sangoma.com/display/DVC/Dialogic+Voice+Cards |
| CSP | Yes |
| FAX | Yes |
| Signaling | Analog loop start |

### Host Interface

| | |
|---|---|
| Bus compatibility | Complies with PCI-SIG PCI Express Base Specification, Rev. 1.1; x1 or higher compatible 32 KB |
| Shared memory | page |
| Interrupt | Legacy INTA emulation shared by Dialogic® JCT PCIe Media Boards |

### 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

| | |
|---|---|
| +12 VDC | 450 mA maximum |

### Environmental Requirements

| | |
|---|---|
| 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 |
| Impedance | 600 Ohms nominal |
| Ring detection | 15 Vrms minimum, 13 Hz to 68 Hz, (each configurable by parameter*) |
| Loop current range | 20 mA to 120 mA |
| Echo return loss | Configurable by software parameter |
| Crosstalk coupling | Less than –70 dB at 1 kHz channel to channel |
| Receive signal/noise ratio | 70 dB referenced to –15 dBm |
| Frequency response | 200 Hz to 3400 Hz ±3 dB (transmit and receive) |
| Connectors | 4 RJ-11 type |

### Reliability

| | |
|---|---|
| Estimated MTBF | Per Telcordia Method 1<br>230,000 hours |

† *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.*

## Approvals, Compliance, Warranty

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

# 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<br>9.6 kbit/s (v.29) receive |
| Variable speed selection | Automatic step-down to 12,000 bit/s, 9600 bit/s, and lower |
| Transmit data modes | API-selectable Modified Huffman (MH)<br>Modified Read (MR)<br>Modified Modified Read (MMR) with Error Correction Mode (ECM) |
| Receive data modes | API-selectable MH, MR, and MMR with ECM |
| File data formats | Tagged Image File Format-Fax (TIFF-F) for transmit/receive MH, MMR, and ASCII text transmit |
| 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 x 98 lines/2.54 cm)<br>Fine (203 pels/in. x 196 lines/in.; 203 pels/2.54 cm x 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<br>Above –18 dBm0 results in full-scale recording, configurable by parameter** |
| Silence detection | –40 dBm 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 |
| 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 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 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 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<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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