Sangoma Telephony Card
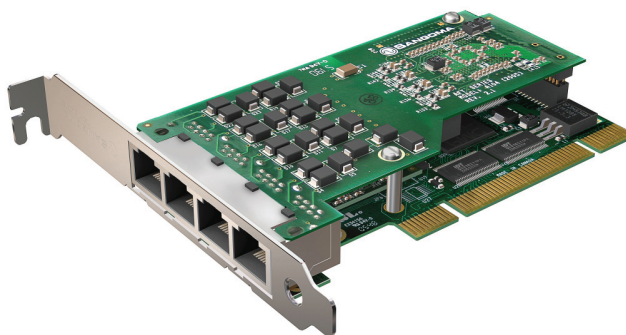## A104 Four-Port T1/E1/J1 Card

The Sangoma A104 Card: Four ports of optimized voice and data over T1, E1, and J1 available with Telco-grade hardware echo cancellation.

Part of Sangoma's award-winning Advanced Flexible Telecommunications product line, the A104 uses the same high-performance PCI or PCI Express interface that is providing superior performance in critical systems all over the world.

The A104 supports up to 120 voice calls or 8.192 Mbps of full-duplex data throughput over four T1, E1, or J1 lines.

Take advantage of hardware and software improvements, as soon as they become available—like all cards in Sangoma's AFT family, the A104 is field upgradable with crash-proof firmware.

Choose the Sangoma A104D and A104D-X cards with Octasic®'s DSP hardware and certified algorithms to achieve carrier-grade echo cancellation and Voice Quality Enhancement functions on your open source or even proprietary telephone system.

A104 4-port T1/E1/J1 card shown with available PCI Interface.

RJ45 T1/E1 Pinouts

Pin	Signal	Pin	Signal
1	RTIP	4	TTIP
2	RRING	5	TRING

Technical Specifications

- Four T1/E1 ports with a single PCI or PCI-Express interface optimized for high performance voice and data applications.

- Mix T1 channel banks and E1 networks with full channel synchronization. TDM clocking mode lets network timing to be passed from a network-connected DS0 to any or all of the other ports, so both T1 and E1 are supported simultaneously.

- Support for Asterisk®, Yate™, CallWeaver™ and FreeSwitch™ PBX/IVR Projects, as well as other open source and proprietary PBX, Switch, IVR, or VoIP gateway applications.

- All of Sangoma's AFT products use the same base PCI interface card. Fully compatible with all commercially available motherboards—proper PCI-standard interrupt sharing without manual tuning.

- Dimensions: 2U Form factor: 120 mm x 55 mm for use in restricted chassis. Includes high-quality, tested RJ45 cables and short 2U mounting clips for installation in 2U rack-mount servers.

- Intelligent hardware: Downloadable FPGA programming with multiple operating modes. Add new features related to voice and/or data when they become available.

- Autosense compatibility with 5V and 3.3V PCI busses.

- Line decoding: HDB3, AMI, B8ZS.

- Framing: CRC-4, Non CRC4, ESF, SF, D4T1/E1. Also compatible with Japan's J1.

- A104-X and A104D-X PCI Express: 1 Lane PCI Express bus.

- Power: 800 mA peak, operational 300 mA max at +3.3 V or 5 V.

- Temperature range: 0–50 °C.

- 32-bit bus master DMA data exchanges across PCI interface at 132 Mbytes/sec for minimum host processor intervention.

- Ring buffer DMA handling for minimum host intervention and guaranteed data integrity on high volume systems.

Because it must work!

SANGOMA

- Supports Robbed Bit Channel Associated Signaling (CAS) and ISDN PRI.

- T1/E1 and fractional T1/E1, multiple channel HDLC per line for mixed data/TDM voice applications.

- Optimized per channel DMA streams and hardware-level HDLC handling unload the host CPU.

- Uses raw bitstream interfaces to support arbitrary non-standard line protocols, such as non-byte aligned monosynch or bisynch.

- WANPIPE® routing stack is completely independent of TDM voice application for total system reliability.

- WANPIPE® supports certified, field-tested, and reliable Frame Relay, PPP, HDLC, and X.25.

Optional DSP Hardware Echo Canceller Daughterboard

- G.168–2002 echo cancellation in hardware.

- 1024 taps/128 ms tail per channel on all channel densities.

- DTMF decoding and tone recognition.

- Voice quality enhancement: Octasic® music protection, acoustic echo control, and adaptive noise reduction.

- Does not increase the physical size of the card, and no additional slot is required.

Operating Systems

- Windows® 2000, Windows® XP, Windows® 9x, Windows® ME.

- Linux (all versions, releases and distributions from 1.0 up).

- FreeBSD.

- Solaris.

T1/E1 Status Alarms

- RED: Telco Red Alarm Condition.

- OOF: Out of Frame.

- LOS: Receive Loss of Signal.

- AIS: Alarm Indication Signal.

- RAI: Remote Alarm Indication (Yellow Alarm).

Line Protocols

Voice CAS, MFC/R2, PRI, ATM, Frame Relay, X.25, HDLC, PPP, SS7, Transparent bit-stream, BSC.

Higher Level Protocols

IP/IPX over Frame Relay/PPP/HDLC/X.25, X.25 over Frame Relay (Annex G), BSC over X.25, SNA over X.25, PPPoE, PPPoA, IP over ATM.

Certification

- FCC Part 15 Class A, FCC Part 68, CISPR 22, EN 55022, Class A, CIPSR 24, AFIC-2016, IEC 60950.

- Technical certifications in Russia, Malaysia and Australia.

Diagnostic Tools

WANPIPEMON, SNMP, System logs.

Warranty

Lifetime warranty on parts and labour. Plus a 30-day no questions asked return policy.

Production Quality

ISO 9002

Contact Information

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