A102,A102D DUAL (2 PORT) T1/E1/J1

AFT Card (PCI and PCI Express)

Version	Interface	Digital Signal Processor
102	PCI	N/A
102d	PCI	Hardware echo canceller
102-X	PCI Express	N/A
102d-X	PCI Express	Hardware echo canceller

Product Identifier
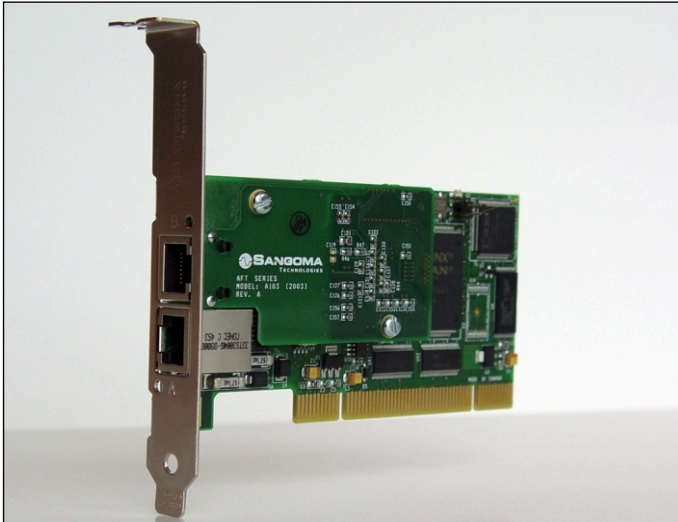
A102 PCI version

A102 PCI Express disassembled

The A102 is the dual port version of Sangoma's family of Advanced, Flexible Telecommunications (AFT) hardware designed for optimum support of voice and data over T1, E1 and J1

Obtainable in both PCI (A102) and PCI Express (A102-X) form factors, The A102 provides up to 8.2 Mbps of full duplex data throughput or 60 voice calls over two T1 and or E1 lines to support high performance PCI-based routing and telephony systems. Advanced clocking features allow E1 and T1 lines to be mixed with full synchronization.

As part of Sangoma's AFT range of products, the A102 makes use of the same high performance PCI interface that has been deployed in large quantities all over the world.

The available A102d and A102d-X cards include Octasic's DSP hardware and certified algorithms providing carrier-grade echo cancellation and Voice Quality Enhancement (VQE) functions.

Like all the Sangoma AFT family, the A102 is field upgradeable to take advantage of hardware and software improvements as they become available.

Technical Specifications

◉ Two T1/E1 ports with a single PCI interface for high performance voice and data applications.

◉ **TDM clocking mode:** Network timing can be passed from a network -connected DS0 to any or all of the other ports. Both T1 and E1 are supported simultaneously, making it possible to mix T1 channel banks and E1 networks with full channel synchronization.

◉ Line decoding: HDB3, AMI, B8ZS. Framing: CRC4, non-CRC4, SF, D4T1/E1.

◉ Support for the **Asterisk™**, **OPAL™ Yate**, **FreeSwitch™** PBX/IVR projects, as well as other Open Source and proprietary PBX/Switch/IVR/VoIP gateway applications.

◉ All Sangoma's AFT products, including the A102 card use the same base PCI interface card, and the same professionally engineered firmware on the same family of Field Programmable Gate Arrays

◉ A102, A102d PCI: Fully PCI 2.2 compliant, compatible with all commercially available motherboards, proper interrupt sharing without manual tuning.

- A102-X, A102d-X PCI Express: 1 Lane PCI Express bus.
- Dimensions: 2U Form factor: 120mm x 55 mm for use in restricted chassis.
- Short 2U compatible mounting clips included for installation in 2U rackmount servers.
- High quality, tested RJ45 cables included.
  Power: 800mA peak, operational 300mA max at +3.3v or 5v.
  Temperature range: 0 – 50C.
  Autosense compatibility with 5v and 3.3v PCI busses.
- Intelligent hardware: Downloadable Field Programmable Gate Array programming with multiple operating modes. Field upgradeable so that new features related to voice and/or data can be added when they become available.
- 32 bit bus master DMA data exchanges across PCI interface at 132Mbytes/sec for minimum host processor intervention.
- Ring buffer DMA handling for minimum host intervention and guaranteed data integrity on high volume systems.
- 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.
- EDAC™ (patent pending) technology will be integrated to drastically reduce the cost of echo cancellation.
- Field upgradeable hardware allows for new TDM-related functions to be added as they become available.
- Raw bitstream interfaces can be used to support arbitrary non-standard line protocols such as non-byte aligned monosynch or bisynch.
- WAN data connection is supported by Sangoma's standard **WANPIPE®** routing stack, and 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 daughterboard on the A102d

- G.168-2002 echo cancellation in hardware
- 1024 taps/128ms tail per channel on all 256 channels
- DTMF decoding and tone recognition
- Voice quality enhancement: Octasic music protection, acoustic echo control and adaptive noise reduction.

RJ 45 E1/T1 Pinouts

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

Operating Systems

Linux (all versions, releases and distributions from 1.0 up). Windows NT/ 2000/ XP, FreeBSD, Open BSD,NetBSD, 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)
OOF

Voice Applications

Asterisk, Yate, OPAL Open PBX/IVR

Line Protocols

Voice CAS, MFC/R2, PIR; 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 (D.T. and TOP), 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-S016, IEC 60950.
Technical certifications in Russia, Malaysia and Australia.

Diagnostic Tools

WANPIPEMON, SNMP, System logs

Production Quality

ISO 9002

Warranty

Five years parts and labour.

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