



Sirrix.PCI2E1

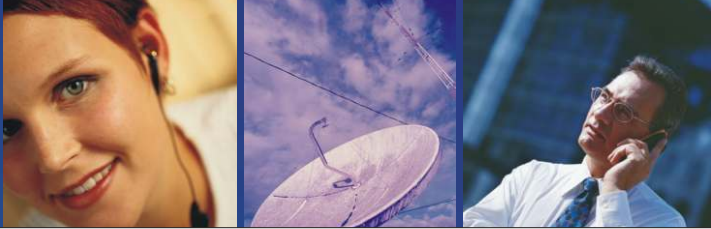
Dualport E1 PCI-Card



Technical Data



Sirrix AG
security technologies



Sirrix.PCI2E1

Dualport E1 PCI-Card with DSP-based echo cancellation

Overview

The Sirrix.PCI2E1 is a PCI-based ISDN interface card. It provides 2 ISDN PRI E1 (Primary Rate Interface, S2M) ports which can be connected to the public network or PBX systems. Sirrix.PCI2E1 is full ISDN compatible and thus, it can be employed for voice applications as well as for data communications.

Hardware Structure

The PRI ports are provided by two Infineon PEF2256H (FALC56) interface circuits. The on board 256 Kbyte SRAM can be used for buffering the B-Channel data between hardware and the software application. The communication with the software is realized by an FPGA using the PCI bus.

The optionally available crypto mechanisms are realized in hardware and included within the FPGA. They allow a zero-delay encryption and decryption of the B-Channels.

PRI Interface Lines

Each E1-Port is independently configurable in NT (clock master) and TE (clock slave) mode.

Moreover the Sirrix.PCI2E1 supports DDI (Direct Dialing In) and MSNs (Multiple Subscriber Number).

Integrated PCM Bus

Using the Sirrix.PCM bus, several cards of the Sirrix.PCI family can be linked to build a fully featured hardware-based ISDN PBX. This provides perfect-quality voice and data transmission with zero-delay.

Hardware Echo Cancellation

The on board Octasic DSP echo cancellation module performs Voice Quality Enhancement (VQE) functions for up to 64 channels.

Conference Bridge

The Sirrix.PCI2E1 includes a hardware conference bridge featuring arbitrarily sized conference rooms with optimized noise reduction and level control. The Sirrix.PCI2E1 card enables an effective communication and a pleasant call experience.

Optical Display

The activation of the E1 ports are indicated on 4 LEDs. An additional LED indicates the status of the FPGA while another LED is freely programmable.

ISDN Facilities Support

Almost all ISDN facilities are supported by Sirrix.PCI2E1. This includes CLIP (Calling Line Identification), CF (Call Forwarding), CW (Call Waiting), Call Hold and Transfer, Advice of Charge (AOC) and AOC During Call (AOCD), etc. These facilities are supported by

our comprehensive ISDN stack implementation which can be used in PBX applications to provide the corresponding facilities.

Possible Applications

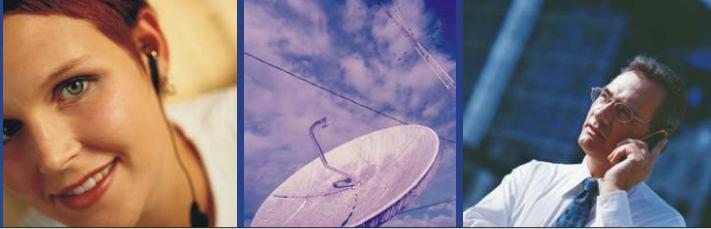
The Sirrix.PCI2E1 can be used, e.g., with the open-source PBX software Asterisk, for which we provide a channel driver.

With Sirrix.PCI2E1, everyone can build flexible, PC-based PBX systems that allow much more facilities than of-the-shelf PBX.

Moreover, Sirrix.PCI2E1 can be used to build ISDN crypto-gateways, Voice-over-IP gateways or least-cost routers.

Requirements

Sirrix.PCI2E1 card can be operated in an arbitrary PCI-based system with 32 Bit PCI 2.1 and Linux kernel 2.6.



Sirrix.PCI2E1

Features

Hardware

- PCI V2.1 Card
174 mm x 106 mm
incl. PCI connector + bracket
- Two E1 ports (ISDN PRI S2M)
1 x RJ45 port each
- Programmable gate array
(FPGA Altera Cyclone II)
- LED (DS1) for display of FPGA status
- Freely programmable LED (DS2)
- 256 KByte SRAM as B-channel buffer for software switching with a depth of 64 Byte
- Sirrix.PCM bus for B-channel switching in hardware across multiple cards (bandwidth 65.536 MBit = 1024-channels)
- Octasic DSP echo cancellation module with conference bridge
- Retrievable serial number
- Transparent encryption with low delay of B-channels with an arbitrary block cipher in the operation modes OFB, CFB, CTR or with another arbitrary stream cipher (cf. Sirrix.Crypt datasheet).

ISDN-Hardware

- E1 ports (PRI S2M)
Infineon PEF2256H FALC56 V2..2
- Each E1 port is configurable in NT (clock master) or TE (clock slave) mode independently.
- Two LEDs for each E1 port for display of the Layer 1 activation state (LED1 + LED2)

ISDN-Stack

- Comprehensive implementation of the DSS1 ISDN stack
- Layer 1: Hardware with kernel module (ITU-T I.431 / ETSI EN 300 011-1)
- Layer 2 and 3: in user space (ITU-T Q.920, Q.921, Q.930, Q.931, Q.932, Q.850 / ETSI EN 300 012, ETS 300 125, ETS 300 102, EN 300 196)
- NT and TE mode in PtP configuration
- Arbitrary number of Layer 2 und 3 instances
- ISDN numbers with arbitrary length, with or without direct dialling in (MSN + DDI, ITU-T Q.951.1, Q.951.2, ETSI EN 300 064-1, EN 300 052-1)
- Display of calling party number (CLIP) (ITU-T Q.951.3, ETSI EN 300 092-1)
- CallerID name can be transmitted by Display Information Element
- Suppression of display of calling party number (CLIR) (ITU-T Q.951.4, ETSI EN 300 093-1)
- Connected Party Number (COLP) (ITU-T Q.951.5, ETSI EN 300 097-1)
- Call forward (CFU, CFNR, CFB, facility protocol) (ITU-T Q.952, ETSI EN 300 207-1)
- Hold and call selection (HOLD) (ITU-T Q.953.2, ETSI EN 300 196-1)
- Call transfer (ECT) (ITU-T Q.952.7, ETSI EN 300 369-1)
- CallWaiting (CW) (ITU-T Q.953.1, ETSI EN 300 058-1)
- Three party conference (3PTY) (ITU-T Q.954.2, ETSI EN 300 188-1)
- Advice of charge (AOCD) in units or currency (ITU-T Q.956.2, ETSI EN 300 188-1)

Additional Features

- Notify Information Element
e. g. during HOLD or 3PTY
- Redirection Party Number Information Element

Applications

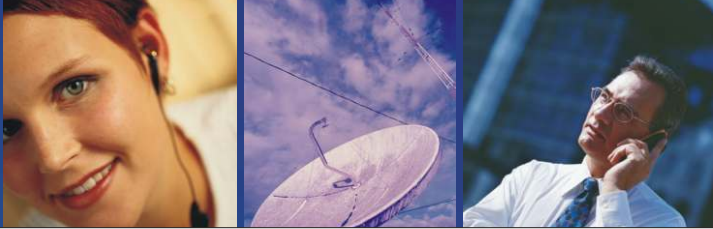
- Software based PBX systems
(e. g. Asterisk)
- ISDN crypto gateways
- VoIP gateway to the public telephone network or VoIP Gateway for internal extensions; channel banks
- Least Cost Router for VoIP or CbC

Scalability

- By interlinking multiple systems, a virtually arbitrary amount of extensions can be served.
- The connection to the public net can be achieved by an arbitrary number of S0- or S2M-ports.

System Requirements

- Arbitrary computer system
- Free 32 Bit PCI 2.1 slot
- Linux with kernel 2.6



Sirrix.PCI2E1

Hardware Overview

