

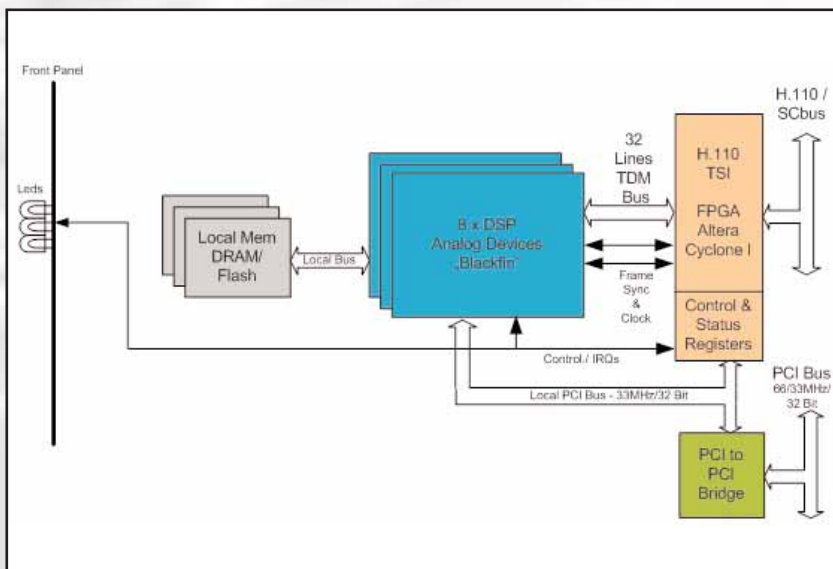
Telecommunication PMC Module



NPMC-DSP

The NPMC-DSP is a multi-purpose telecommunication resource board in PMC (PCI Mezzanine Card) form factor. The NPMC-DSP is targeted at applications in telecom environments with extensive need for voice or data computation. The module is designed to process standard telecom algorithms like voice/data compression/decompression or DTMF detection/generation. Being capable of handling individual timeslots within a TDM stream selected from the H.110 backplane the NPMC-DSP is an ideal solution for any voice/data application in any signalling or VoP solution such as in ISDN, SS7, ATM, VoIP or 3G environments.

Technical Data



Overview

The NPMC-DSP is a multi-purpose telecommunication resource board in PMC (PCI Mezzanine Card) form factor. The NPMC-DSP is targeted at Telecom applications with extensive need for voice or data computation. The module is designed to process standard telecom algorithms, i.e. voice and data compression and decompression or DTMF detection and generation. The module is capable of handling individual timeslots within a TDM stream selected from the H.110 backplane. The design is optimized for handling in parallel as many timeslots (TDM data) as possible. The TDM data streams are supplied by a standard H.110 backplane interface located on the PMC multi-purpose I/O connectors.

PCI Interface

The NPMC-DSP is a P1386.1/Draft 2.0 compatible PMC module that can be plugged onto any VME, cPCI or other carrier board offering a PMC extension slot. The PCI-to-local-bus bridge directly interconnects the PCI bus to the local bus and the onboard devices. The NPMC-DSP is PCI Rev. 2.2 compatible (32bit).

Backplane TDM Access

The onboard H.110 bus controller is realized by a highly flexible and progressive FPGA design, incorporated in a Cyclone I FPGA from Altera. It offers access to the backplane TDM bus supporting the complete H.110 bus (PTMC configuration type 5) or the SCSA bus subset on the PMC multi-purpose I/O connectors P13/P14.

Thus the onboard DSPs have to all 32 TDM streams, each being clocked at up to 8MHz and thus providing up to 4096 timeslots of 64kbps bandwidth each. Due to the FPGA design of the

H.110 controller subchanneling or superchanneling is possible as well.

DSP resources

The NPMC-DSP is equipped with eight ADSP-BF535P Blackfin CPUs from Analog Devices, running at a core frequency of 350MHz.

Each of the DSPs has 32MB of individual SDRAM as well as up to 4MB individual FLASH aside to ensure a most flexible and individual utilization of its resources.

Due to its internal design the Blackfin DSP is a very powerful processing engine with 700 MMACs (max.) and 3.5MIPS per TDM channel. Special coding algorithms that are often used in telecom environments, i.e. G.711, are built-in features.

Beside special DSP cores from N.A.T. Analog Devices and other third parties offer cores for most commonly used applications including

- Multi-Rate Filter
- FFT
- Convolutional Encoders
- QAM, BPSK and QPSK modulation
- Image Processing

in order to name just few.

The NPMC-DSP is highly flexible and thus suitable for any voice/data application in any signalling or VoP solution such as in ISDN, SS7, ATM, VoIP or 3G environments.

PCI Interface and Compliance

PCI Rev. 2.2, 33MHz/32bit

H.110 Bus (and subsets thereof)

H.110 (PTMC conf. type 5) or SCSA subset, integrated in a Cyclone I FPGA from Altera

DSPs

Eight ADSP-BF535P Blackfin DSP from Analog Devices, 350MHz core frequency, 700 MMACs, 3.5 MIPS per TDM channel

Memory

32 MB SDRAM and 1-4MB FLASH per DSP

Indicator LEDs

4 software programmable LEDs and 1 status indicator LED per DSP at the front panel

Host Operating System Support

OK-1, VxWorks, LINUX, dependent on application

Power Consumption

3.3V 0.8A (typ.) 5V 1.0A (typ.)

Environmental

Temperature (operating):
0°C to +60°C with forced air cooling
Temperature (storage):
-40°C to +85°C
Relative Humidity:
10% to 90% at +55°C
(non-condensing)

Standard Compliance

P1386 and P1386.1/Draft 2.a
PICMG 2.15 configuration type 5

Applications

- voice and data compression and deflating
- voice and data encryption and decryption
- DTMF detection and generation
- VoP
- special handling of signalling protocols (i.e. SS7, 3G TFO, etc.)

N.A.T.

Gesellschaft für Netzwerk- und Automatisierungs-Technologie mbH
Kamillenweg 22 • 53757 Sankt Augustin, Germany • Phone: +49-22 41/39 89-0
Fax: +49-22 41/39 89-10 • sales@nateurope.com • www.nateurope.com

