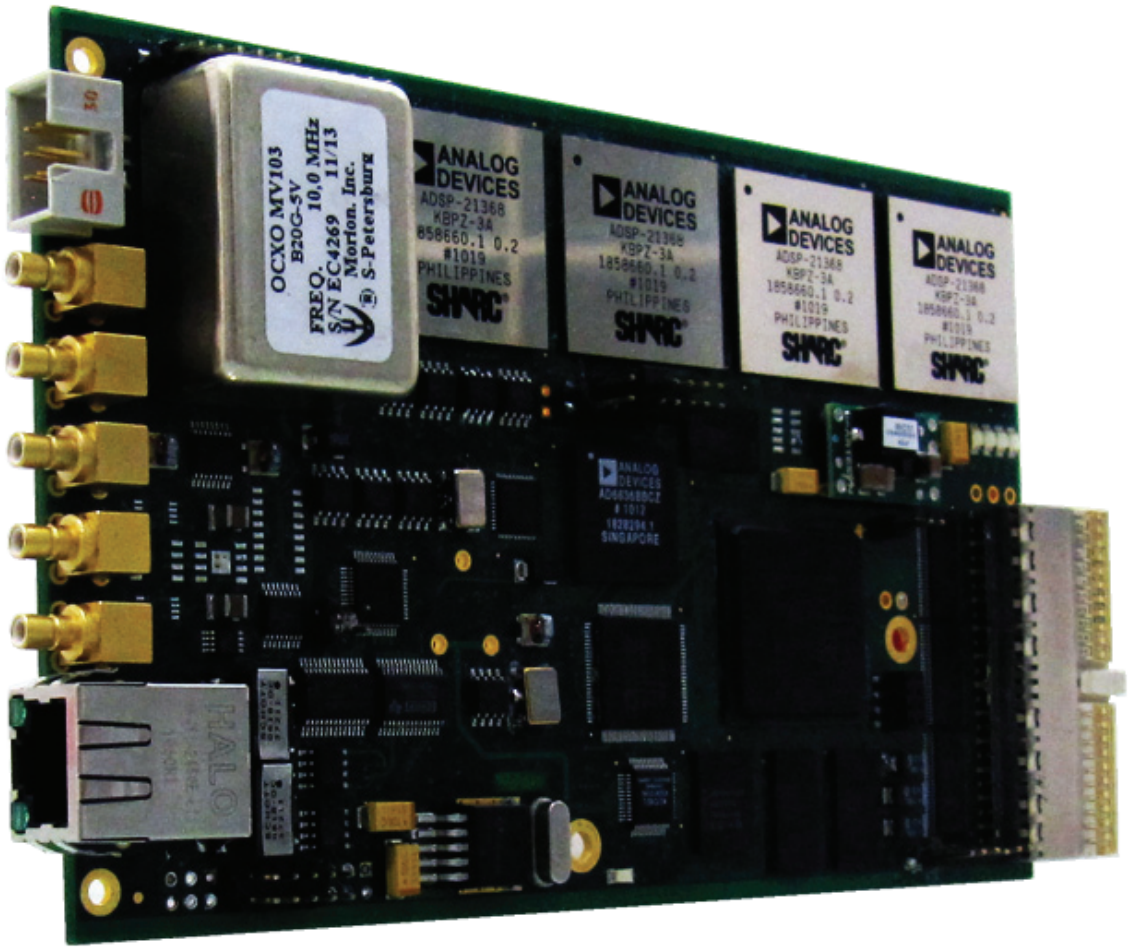
Digital Instruments

cPCI-ACC

General Purpose Acquisition System on cPCI



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cPCI-ACC

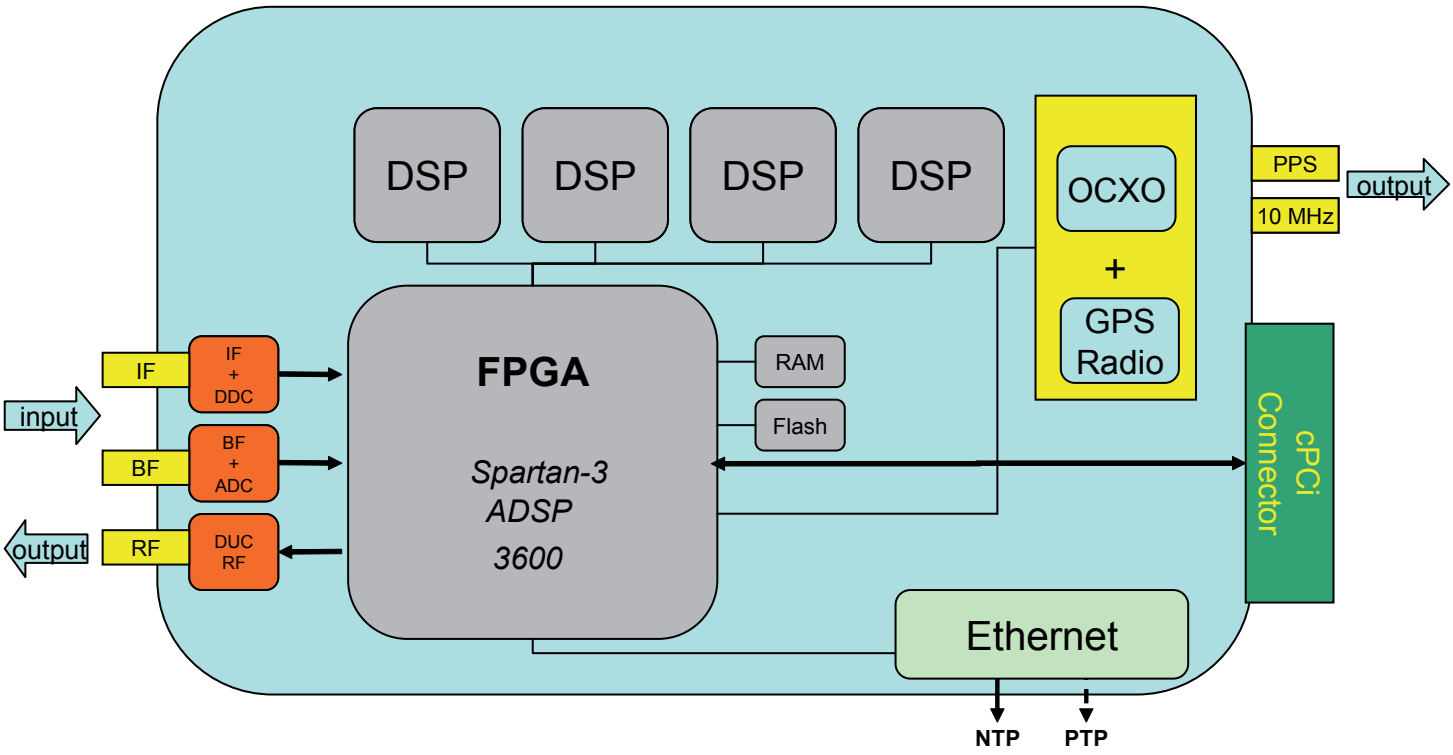
General Purpose Acquisition System on cPCI

Overview

CPCI-ACC is high performance real time processing card on cPCI standard.
On the board there are 4 DSPs working in a systolic cluster and a FPGA for hardwired processing and microprocessor activity. Conversion is made through IF Analog to Digital path, where analog signal is sampled from AD at 150MPs/s.

BF Analog signal is sampled too, using a 2.5MPs/s converter at 16 bits. RF signal is generated from DDS where inside there is a 1GHz NCO allowing the users to generate a wide spectrum of modulations, using I/Q datapath coming from FPGA/DSPs. A wide range of applications are permitted.
A FPGA based microprocessor is developed using Microblaze ™ XILINX core, able to manage all the parts on the board. A full compliant cPCI bus standard allow the users to dialogue with more than one board over a cPCI backplane. (Microprocessor unit is needed). GPS receiver and a high stability OCXO guarantee that all the processing write inside FPGS/DSPs are synchronous or time referenced via a built-in NTP server.

In the next hardware release the physical interface will be able to comply with the PTP protocol and enable the timestamping of real time events occurring in the host O.S. or triggered on the external SMB connectors.



Features

· IF input (SMB),
· BF input (SMB),
· PPS output (SMB),
· 10 MHz output (SMB),
· RF output (SMB),
· 4x user signals outputs (TTL),
· 4x user leds,
· cPCI connector,
· A/D AD6640-150 MS/s 14bits (IF),
· AD 6636 DDC, Digital Programmable VGA (IF),
· A/D ADS1602, Digital Programmable VGA (BF),
· D/A AD9957 DUC- 1Gs/s (RF),
· Digital Programmable VGA (RF),
· Microblaze soft processor implemented on a Spartan-3ADSP 3400 running uClinux,
· 4x SHARCs processors Analog Devices ADSP-21368-DSP with 128 Mb x 32 parallel RAM,
· 10 MHz sine wave (possibly square wave) high stability single oven OCXO,
· GPS Receiver: 12 Channels L1 1575.42 MHz,
· Tracking: correlation up to 12 satellites

I/O Parameters
1 IF input (SMB)
1 BF input (SMB)
1 PPS output (SMB)
1 10 MHz output (SMB)
1 RF output (SMB)
4 user signals outputs (TTL)
4 user leds
1 cPCI connector

IF Analog Processing
A/D AD6640-150 MS/s 14bits,
AD 6636 DDC, Digital Programmable VGA

BF Analog Processing
A/D ADS1602, Digital Programmable VGA

RF Analog Processing
D/A AD9957 DUC- 1Gs/s,
Digital Programmable VGA

Digital Processing
1 Microblaze soft processor implemented on a Spartan-3ADSP 3400 running uClinux
4 x SHARCs processors Analog Devices ADSP-21368-DSP with 128 Mb x 32 parallel RAM

SDRAM memory
1 GB DDR2 SDRAM
2 Independent 512 MB banks
Max. bandwidth per bank: 2 GB/s
Auto refresh capable
Flash: 16 MB

Host & cPCI backplate interfaces
cPCI - IP core included
LEDs
Micro JTAG header
Additional cPCI backplane I/O possible

API
API for 64-bit Linux
Runtime FPGA programming, hardware control and application communication

Application development software
Support multiple design flows including VHDL and Verilog
Compatible with Xilinx ISE and all major synthesis design flows
Access to micro JTAG header via backplane for Chipscope and iMPACT

OCXO & GPS
10 MHz sine wave (possibly square wave) high stability single oven OCXO.
GPS Receiver: 12 Channels L1 1575.42 MHz
Tracking: correlation up to 12 satellites

PTP Section
Protocol: PTP 1588-2008 (PTPv2)
optional IEEE 1588-2002 (PTPv1)
Role: Grandmaster clock source (GPS) or slave
Timestamping: Hardware
Precision: < 1 us

NTP Section
Protocol: NTP version 4
Role: Grandmaster clock source (GPS)
Timestamping: Software
Stratum: 1
Precision: < 10 ms

Form factors
Standard full-height, full-lenght cPCI
Height: 101 mm
Lenght:160 mm

Electrical
On-card power derived from 3.3 V, 5 V and 12 V
FPGA power dissipation is application dependent
6-pin GPU-style header for applications that need more power. Please contact Digital Instruments for more informations

Environmental
Cooling: Air convection
Operation T: 0-50 Celsius
Storage T: -20 - 80 Celsius
Relative humidity: 45 to 95% (non condensing)

Quality
Manifactured to IPC610- Cla 2 standard
Designed and Supplied to ISO9001:2000 certification
ROHS compliant.