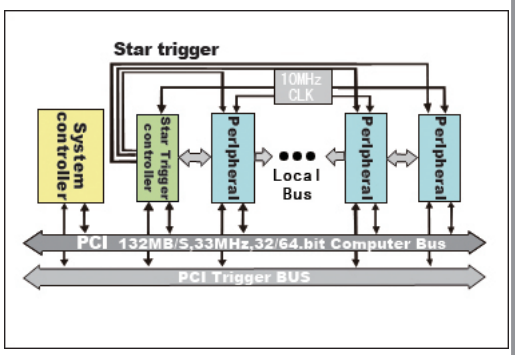
PXI-based test & measurement

Scheme Combination Sample 1: Synchronous high-speed multi-channel acquisition solution

The development of technology makes the design and experimentof the test system more complex and the testing tasks which test engineers have faced become more difficult and challenging. The application of acoustics, vibration, noise and dynamic pressure need engineers to handle hundreds of channels accurately and synchronously.

Art Technology launched a 144-channel simultaneous sampling, analysis and display system. It is a unique high-precision, multi-channel and low-cost combination. The system is built on the basis of advanced synchronization techniques in the normative industrial measurement platform. It can achieve a high-level trigger by using a backplane trigger bus (PXI Trigger Bus). Installing 9 PXI-8008 which is 14-bit resolution and 16-channel, in a PXI chassis to achieve the application of synchronous sampling with a high channel number.

※ 9 PXI8008 boards
※ 144 channels synchronously
※ The maximum sampling rate is 80KS/s/ch
※ Backplane trigger bus control
※ The master card and slave card be triggered synchronously
※ Continuous Acquisition
※ Firm design being adapted to the industrial environment
※ 35M/s data throughput

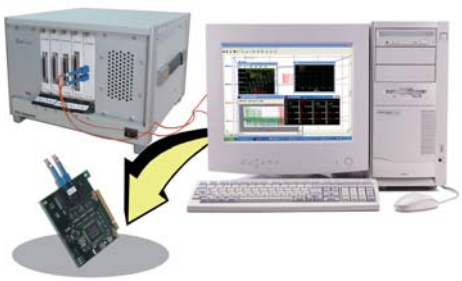


Scheme Combination Sample 2: Remote data monitoring and control based on the optical fiber communication

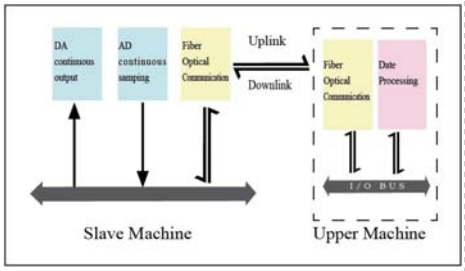
In fields of test, measurement and industrial automation applications, the following situations need to extend the signals basicly.

1) Owing to poor testing conditions, such as low temperature, hard bump and shaking, users would like to separate the controller from the chassis.
2) Users would like to have the equipment to be expanded and use the trigger function of PXI that the PC can not provide;
3) Use one controller to operate the board with overload chassis capacity;
4) Users want to use a PC or a server-level computer as a PXI controller to strengthen the computing power or to meet other special applications.

Art Technology launched the remote data measurement and control system which are based on optical fibers as transmission medium to meet the fourth requirement above-mentioned. The slave machine collects and pre-process, and then upload the data through the optical fiber . The scheme use two opticalfibers communicational cards to achieve the data exchanging between the PC and the PXI platform. PC transfers continuous data to the slave machine and the data quantity is about 200K/S. The slave machine uses a PXI2155 to acquire 12-channel synchronous data. PXI2155 pre-processes the data and then uploads them to the host computer. Its fiber-optic connectivity solutions for the card are transparent to software programs. The fiber-optic card drive realizes specific functions, provides data buffer interface to the users. The features of the entire system are as followings: remote monitoring and control, high-speed transmission and high processing power.



※ The use of fiber-optic cable communication
※ The highest transmission speed 10M/bps
※ 12-channel synchronous analog input,
※ 2-channel synchronous analog output
※ The maximum sampling rate up to 100KS/s/ch
※ The maximum update rate up to 100KS/s/ch
※ DMA master mode
※ AD for data acquisition, DA continuous output
※ Continuous processing capability

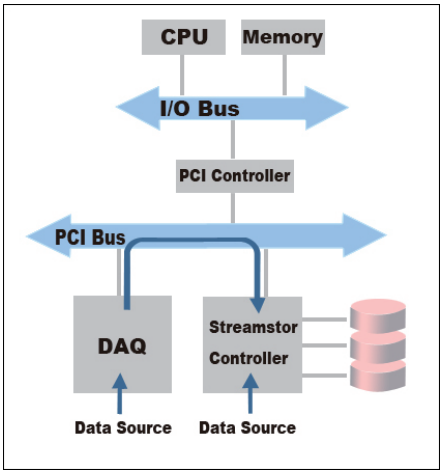


Scheme Combination Sample 3: Mass data acquisition and Rea-time stream-to-disk

One of the basic purposes of the stream-to-disk: to store the original data for future analysis, testing and storage. Stream-to-disk is needed in many typical applications, such as multi-channel data acquisition system, RF/IF signal recording and playback, digital protocol testing, continuous occurred wave and collision test.

Data have to go through I/O bus, memory and CPU in the traditional structure of data acquisition. The process limits the storage and read speed to a certain extent. And the multi-threading character of the CPU has increased the possibility of data loss and the system instability. The Mass Data Acquisition and real-time Stream-to-Sisk System, which are developed by Art Technology, is a drive -level streaming solution. Use eight 24-bit, 8 channel PXI-8996 synchronous signal acquisition board for the completion of data collection. Data from the equipment cache can be written into the disk directly. The continued storage speed in this scheme is up to 50MB/s

※ 8 PXI8996 boards
※ 8-channel synchronous
※ 24-bit AD resolution
※ The maximum sampling rate up to 192KS/s/ch
※ High sampling rate and large data collection phase coexistence block
※ Drive-level streaming technology
※ 64-channel parallel acquisition, real-time recording, real-time disk
※ 50M/S trans-bus storage speed



PXI-7651 Overview

Feature:

PXI-7651 meets the PXITM2.2 Bus standard, the design is based on PXI test system.

It provides a lot of interfaces, including Ethernet, USB and COM ports for connecting test equipment.

PXI-7651 CPU chip is soldered directly on the PCB, to enhance the reliability in the shock and vibration environments.

Specification:

CPU: Intel Atom N270

Up to 1.60GHz

Secondary cache: 512KB 1MB

Memory: DDR2 667 MHz/ ch

Max Capacity 2GB

Slot 1×200 pins SODIMM

Display: VRAM Shared system memory, up to 224MB SDRAM

VGA support up to SXGA 1400×1050 @ 60Hz

Ethernet: 1000 Mbps

Controller GbE LAN1:Inter 82567V

Interface RJ-45

IDE: 1 channel

External Interface: 1-ch VGA

1-ch Ethernet

4-ch USB (Comply with USB2.0standard)

2-ch RS232

Internal interface: 1-ch IDE

1-ch SATA

PXIC-7306

- Number of Slots: 6
- Number of System Slots: 1
- Number of PXI Peripheral Slots: 5
- Industrial Grade Power: 500W (AC)
- Accepts both 3U and Compact PCI Modules: Yes
- 4U height rackmount or desktop installation
- Compatible with PXI, Rev2.2 specifications
- Compatible with IEEE 1101.10 formal standard
- Meet the PICMG2.0 specification
- Cooling fan with a strainer
- Operating Temperature:0~50℃
- Relative Humidity: 10%~90%

PXIC-7310

- Number of Slots: 10
- Number of System Slots: 1
- Number of PXI Peripheral Slots: 9
- Industrial Grade Power: 500W (AC)
- Accepts both 3U and Compact PCI Modules: Yes
- 4U height rack mount or desktop installation
- Compatible with PXI, Rev2.2 specifications
- Compatible with IEEE 1101.10 formal standard
- Meet the PICMG2.0 specification
- Cooling fan with a strainer
- Operating Temperature:0~50℃
- Relative Humidity: 10%~90%

PXIC-7314

- Number of Slots: 14
- Number of System Slots: 1
- Number of PXI Peripheral Slots: 13
- Industrial Grade Power: 500W (AC)
- Accepts both 3U and Compact PCI Modules: Yes
- 4U height rackmount or desktop installation
- Compatible with PXI, Rev2.2 specifications
- Compatible with IEEE 1101.10 formal standard
- Meet the PICMG2.0 specification
- Cooling fan with a strainer
- Temperature, voltage and fan monitoring LED
- Operating Temperature:0~50℃
- Relative Humidity: 10%~90%
- Size: 258mm*448mm*177mm (L*W*H)

PXIC-7318

- Number of Slots: 18
- Number of System Slots: 1
- Number of PXI Peripheral Slots: 17
- Industrial Grade Power: 500W (AC)
- Accepts both 3U and Compact PCI Modules: Yes
- 4U height desktop installation
- Compatible with PXI, Rev2.2 specifications
- Compatible with IEEE 1101.10 formal standard
- Meet the PICMG2.0 specification
- Cooling fan with a strainer
- Operating Temperature:0~50℃
- Relative Humidity: 10%~90%