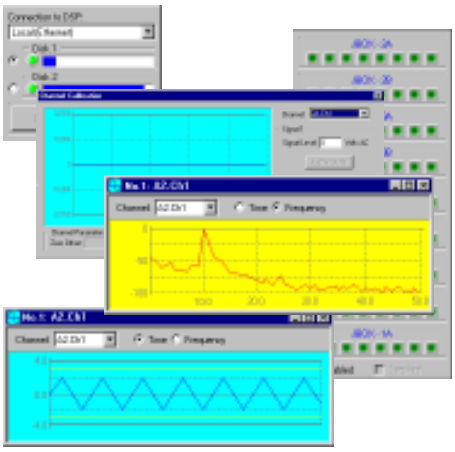
System 2423

Ruggedized, Portable Data Acquisition System for Real-time Acquisition and Remote Monitoring



DSP*Con*'s System 2423 is a ruggedized multichannel data acquisition system that provides real-time acquisition to disk and/or tape, as well as remote monitoring via packet radio.

The System 2423 is a turnkey system that measures temperature, vibration, shock and also records 1553 data as well as GPS time code. It allows for simple in-the-field setup, calibration and operation using a Graphical User Interface (GUI) running on a host PC. The GUI includes controls to start and stop recording, monitor A/D channel status and data, and calibrate the system. A/D sampling rates, system calibration, and sensor information are all adjustable via the GUI and stored in MS Excel spreadsheets and MS Access database tables.

Features

- Ruggedized, mobile data acquisition system provides on board mission-critical data acquisition and analysis.
- Multifunctional, System 2423 measures temperature, vibration and shock while recording 1553 data and GPS time code
- Dual-redundant architecture ensures minimal error in data collection
- Packet radio communication offers a wireless command and control option, adding to the system's mobility
- Removable hot-swapable disk storage for easy archiving

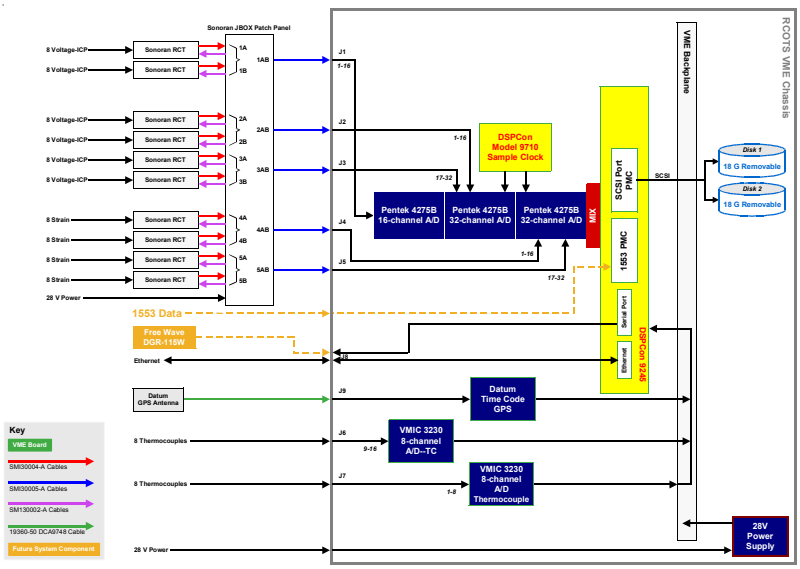
Applications

DSP*Con*'s System 2423 is ideal for applications in which the data acquisition system is subject to a great deal of vibration or shock. Specifically, because of its robust, dual-redundant and rugged construction, System 2423 can be used in on-board acquisition and analysis in:

- Helicopters
- Combat vehicles
- Automotive crash testing

In addition, System 2423 can withstand severe temperatures, making it ideal for:

- Underground earthquake prediction data acquisition
- Volcanic behavior data acquisition



System Block Diagram

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System 2423

Ruggedized, Dual-Redundant, Robust Data Acquisition and Analysis for On-board Applications

Hardware

- A host computer
- A ruggedized VME Chassis
- Two 360G Removable Disk Storage Units
- Ten Remote Conditioner/Transmitter (RCT) 81-S Signal Conditioners
- A GPS Antenna
- A DSP*Con* Model 9710 Sample Clock
- Three 32-channel A/D Converters
- A Time Code GPS
- An 8-channel A/D Thermocouple
- A DSP*Con* Model 9245 DSP with SCSI Controller
- JBOX Patch Panel
- 3.0 Gflop DSP Coprocessor

How System 2423 Works

The system's Remote Conditioner/Transmitters (RCTs) provide signal conditioning for the accelerometer and strain gauge sensors. The RCTs are connected, via the junction box, to the DDAs housed in the VME chassis.

A GPS antenna that is used for determining position and time information is connected directly to the VME chassis.

A DSP*Con* Model 9245 board controls the data acquisition portion of the system and it reads data from each of the data sources in the system, including the A/Ds, the thermocouple boards, and the GPS/Timecode receiver. The 9245 DSP board formats and routes the sampled data to one of two real-time disk drives housed within the VME chassis. During all operations, the 9245 continuously sends status messages and data to the host controlled PC via a 10/100 Mbit Ethernet.

Software

System 2423 comes equipped with two independent software packages. The first is the DSP software which resides in the FLASH memory of the VME boards and starts at power-up. This DSP software allows the system to perform the assigned task. The second software runs on the Host PC and is a supplementary tool used to configure, setup and utilize the results of the data acquisition. This host PC software utilizes information received from the DSP and gives commands to the DSP. It also receives packets of measurements from the DSP for future processing and graph displays.

Three host PC applications are provided with the system. A control GUI used to monitor and control the data acquisition, the Safety Screen application and a data-dump utility to extract/archive data recorded on the disks. The safety screen application is an option which allows for simultaneous observation of the channels being monitored by the main application.