

High-Speed Data Recording in Sensor Systems

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ABSTRACT

Many embedded sensor applications today include a range of subsystems for real-time signal acquisition, processing, recording and storage. Because each of these subsystems have different characteristics and limitations the design of a balanced and efficient sensor application can be difficult. This can be particularly true when pairing signal acquisition to recording and storage subsystems. This paper has been written to assist designers in understanding the issues, constraints and options associated with delivering sensor recording and storage subsystems in an embedded environment. In it we provide an overview of the components and interfaces found in such systems; as well as a detailed discussion regarding recording and storage components and the criteria for selecting them. Specific areas of coverage will include:

1. Definition and examples of sensor subsystems including:
 - a. Sensors
 - b. Signal Conditioning
 - c. Data Acquisition
 - d. Signal processing
 - e. Display and Control
 - f. Data Recording
2. Definition and features of component interconnects including:
 - a. Front Panel Data Port (FPDP) I & II
 - b. Serial Front Panel Data Port (SFPDP)
 - c. Fibre Channel
 - d. RACEway
 - e. Star Fabric
 - f. InfiniBand
 - g. Rapid IO
3. Detailed look at data recording technology and options
4. Considerations for selecting storage devices and media
5. Sensor application examples