

## Data Acquisition, Storage, and Replay Unit: (DASR-HD-001-02)

Various applications in signal analysis, data storage, signal simulation, and related areas require continuous throughput of high-data-rate over a sustained period. The limitations arise, both through the speed of transfer as well as storage capacity of the recording media. A continuous throughput of 240 MBPS sustained over 60 minutes of recording time (using eight hard disks of 80 GB each, i.e. 640 GB of storage with a 2 TB optional recording time of more than 3 hours) is provided in our hard-disk-based Data Acquisition, Storage, and Replay Unit. This has been achieved using dedicated hardware and not relying on conventional bus structures. Faster throughputs and larger storage capacity can also be provided based on the user's requirements.

The self-contained units are available in either a rack-mounted or in table-top enclosures. They can be integrated with a variety of I/O devices and the data stored in the built-in hard drives can be transferred conveniently to and from the user's terminal via standard interfaces parallel port, Ethernet, or dedicated bus. The software for data transfer is provided. Internet connectivity for control and transfer is available.

### FEATURES

- Continuous throughput up to 240 MBPS (user-selectable variable speed), up to 200 MBPS
- Storage Capacity of 640 GB (can be extended to 2 TB)
- A variety of analog and digital I/O terminals and units are supported
- The transfer of data to and from user terminals can be achieved through parallel ports, Ethernet, or custom bus with convenient, flexible control over parameters (separate files, internet connectivity)
- Faster and larger storage can be configured



### INTERFACES

The basic unit is equipped with a variety of analog and digital I/O with one of two channels. These can be fitted with additional boards for complete, stand-alone applications. Some of the configurations for GPS applications can include the GPS downconverters (single channel, dual channel, or multiple front ends for beamforming). The output channels with a D/A can be used with a GPS upconverter board to provide live RF signals at GPS frequencies. This configuration, in conjunction with our software GPS simulator, provides a live GPS signal simulation for a variety of conditions not possible with conventional simulators.

The digital interface through DIO allows the user to stream digital data to and from the system to user-specified hardware at a maximum speed of 240 MBPS. The user may configure different channels through the DIO interface.

The digital data cannot be accessed through standard computers at such high rates. For ease of communication to and from a PC, Ethernet interfaces are provided. This also allows networking and data transfers through the internet.

## Data Storage and Replay Unit

### APPLICATIONS

- Real-Time Signal Recording (Radio, Radar, Navigation, Communication, Telemetry, Sonar, Imaging, Medical, and Scientific)
- Real-Time Signal Playback (Real-Time simulation)
- Signal Analysis

### FEATURES

- Continuous throughput up to 240 MBPS
- Storage capacity of 640 GB (optional 2 TB)
- Variable clock rate up to 105 MHz/channel (user-programmed)
- Variable Quantization rate 2 to 16 bits/channel
- High precision synchronization (10 picoseconds) between multiple units for high fidelity wavefront processing
- Built-in FPGA for equalization
- Dual Frequency GPS receiver downconverter and upconverter (optional)
- Transfer of data to and from user's terminal using Ethernet or high-speed custom bus
- Convenient, flexible control over parameters
- Modular architecture can be combined for larger throughput and total storage
- High accuracy synchronization between multiple units.
- 80 MHz 16-bit A/Ds - 1 channel (optional)
- 80 MHz 12-bit A/Ds - 2 channels (optional)

### FOR GPS APPLICATIONS THE FOLLOWING CONFIGURATIONS ARE SUGGESTED:

- 1. DASR-HD-001-02** Basic unit with data acquisition and replay @ 120 MBPS; total storage 640 GB.
- 2. DASR-GPS-002-02** Basic unit (as above equipped with Dual Frequency GPS downconverter (GPF-DF-002-01). This allows GPS signal acquisition for dual frequencies at up to 60 MHz sampling rate/per channel (with 8 bits of resolution/per channel). Resulting throughput 120 MBPS. Total storage time 90 minutes (640 GB). The clock rate and sampling bits can be varied. Max clock rate is 105 MHz. Max bit/ch 10 bits. The combination is limited by maximum throughput of 120 MBPS (240 MBPS, optional).
- 3. DASR-GPS-003-02** Similar to dual frequency unit but uses four channel downconverters (GPF-MA-003-01). This allows GPS signal acquisition from four coherent front ends.
- 4. DASR-GPS-004-02** Similar to dual frequency unit (DASR-GPS-002-02). Additionally provides upconversion of D/A signal from the device to GPS band frequencies. This configuration in conjunction with Software GPS Signal Simulator (SGSS-DF-001-01), provides live signal simulation for L<sub>1</sub> and L<sub>2</sub> frequencies. The software simulator allows simulation of conditions that are not possible with conventional hardware simulators.