

98 Channel ACP with TPD Caddy Installed

**What TPD is:** Throughput To Disk means streaming time histories to a disk drive located in the ACP. The Time Histories are continuous and contiguous on the TPD – GAP FREE; or under user control in segments. Simultaneously, you can produce and store resultant data to the host.

**Implementation:** With the addition of a proprietary Fast SCSI port added to the MDSP3 middle processor in the ACP, as many as 6 ea 70+ GBytes disk store up to 98 channels of data sampled up to 51.2KS/s; up to 40 channels/ACP may be stored at 102.4KS/s. The data format is extremely dense for optimum efficiency and transportability. All ACP's in the system can store to their TPDs at will.

**The Drives:** The large ACP shown at left may house 1 drive internally and up to 5 additional drives in the caddy shown on top of the ACP. The external drives may be swapped, allowing rapid expansion for sequential tests, without waiting to download the disks to the host or archival storage.

**Playback:** Data stored on the TPD may be selected as the source for the data stream fed to a variety of application packages. The analysis processes offered by those software products can then be performed upon the TPD data. Sine Analysis for Sine data, Transient Capture for transient data, etc.

**Applications Supporting TPD:** *MISO and MIMO Random* record and play back FFT results via Random Analysis feature. Time Data can be viewed and processed via Signal. *Signal* and *Transient Capture* support time history storage and play back. In addition both may employ TPD files from *MISO and MIMO Random*, for spectral analysis. *Sine Analysis* will process data stored by *Signal* allowing Tracking Filtered analysis of raw time histories while preserving the original time history. *MISO Sine Control* stores complex data rather than time histories. This permits H(f) pairings to be re-established for additional analysis of original data. Analysis of TPD data leaves the files intact.

**Storage:** TPD files are very dense and may be converted to formats suitable for post-test use. JAGUAR permits the storage of the dense file to the host as intermediate storage. The user may also choose to translate and store, at the push of a button, in I-deas™ ATI format, MatLab® ASCII or MatLab® Binary formats. Time History Analysis may also be performed with *IMPAXSD* directly on TPD files

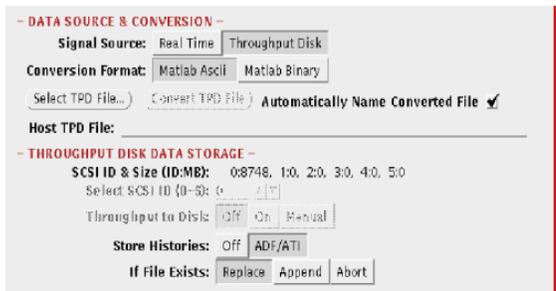
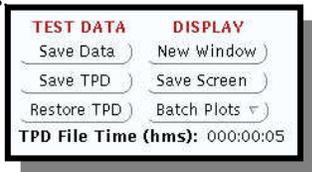


Two Disk TPD Caddy

**Benefits:** Storing time data during the test and archiving the files permits the lab to analyze the data with the clarity of vision time brings, years after the initial test was run, perhaps employing different choices for H(f) calculations, based upon new life experiences for the test article. No external signal conditioning beyond what you use for your original acquisition is required.

**TPD and Archive:** Cost effective, simple to use, and well integrated into the system architecture makes operation straightforward and reliable.

**Operates Like an Instrument:** Simple push button operation in each supported application. With simple button operation, the TPD storage may be started and stopped during acquisition without disrupting the test. Start/stop storage as needed during testing so you store data when you want to.



jaguar

**General Description**

The Throughput Disk (TPD) features for Jaguar Systems provide an extra level of flexibility and convenience for users who are interested in continuously storing all of the acquired test data as quickly as possible. The TPD data may be used for post-test data reduction by the Jaguar, converted to other formats or archived for long term storage. Additionally, Jaguar TPD offers the unique capabilities of real-time processing and display features that allow you to fully document the test event as the data is being stored to the TPD hard drives. Depending on the application, you may store raw time history files or processed data to the TPD. You may manually store selected segments of a test to TPD and then convert the saved data into single or multiple files using the Signal Analysis application. The TPD features are also supported for large channel count applications (up to 588 input channels) where a Jaguar system may be configured with multiple Acquisition & Control Peripherals (ACP). Each ACP supports independent TPD controllers and drives for no reduction in test bandwidth or storage bandwidth. The multiple ACPs support simultaneous synchronized sampling and storage for the full channel count.

**Jaguar Applications**

Signal Analysis	Stores time histories to TPD. Replays time histories from TPD that were stored to TPD by Signal Analysis, Transient Capture and Random applications. All processing and display features are available during storage and replay modes. Acquisition control includes: start, stop, resume, pause/reverse and "quick look". Pause allows TPD storage to continue while reviewing averaged data; reverse & quick look available for replay.
Transient Capture	Stores time histories to TPD. Replays time histories from TPD that were stored to TPD by Signal Analysis, Transient Capture and Random applications. All processing and display features are available during storage and replay modes.
Random Control & Analysis	Stores time histories to TPD (including MIMO Random & Random Acoustic). Replays data from TPD that was stored to TPD by Signal Analysis, Transient Capture and Random applications. All frequency domain processing and display features are available during storage and replay modes.
Swept Sine Control	Stores and replays complex sine (frequency domain) data. All frequency domain processing and display features are available during storage and replay modes.
Swept Sine Analysis	Stores and replays complex sine (frequency domain) data. Also performs swept sine analysis of time histories replayed from TPD (stored to TPD by Signal Analysis at 12,800 samples/sec or higher). All frequency domain processing and display features are available during storage and replay modes.

**TPD Hardware**

Controller	SCSI host adapter attaches to the ACP MDSP3 RISC processor.
Drives	72 GB SCSI 10K RPM drives. Up to 6 drives may be connected to each ACP (SCSI ID 0 through 5).
Disk enclosures	External table-top enclosures for 2 to 6 drives.
Removable cartridges	Drives are mounted in removable cartridges (supplied with the enclosures) to allow quick and easy replacement of drives or removal of drives for storage in a secure environment.
Internal drives	One drive may be optionally mounted inside the ACP chassis.

**TPD Setup (application dependent)**

Signal source	Selection of "Real Time" enables the TPD storage features. Selection of "Throughput Disk" enables the replay features.
Storage mode	Off, on and manual. Manual mode is supported by Signal Analysis, Transient Capture and Random to allow a scope preview mode and help minimize the amount of storage.
Replay mode	Review TPD data with all display and triggering features. May use any available frame size for replay for the Signal Analysis application.
Input channels	All active input channels may be stored; 1-38 for the standard ACP, 1-98 for the large ACP and 1-588 for the 6 ACP configuration.
Sampling rate	Up to 102.4K samples/sec with selectable reduction. Signal Analysis "raw file system" mode supports up to 50 channels/ ACP at 102.4K samples/sec and up to 98 channels/ ACP for 51.2K samples/sec and lower. Other applications support 80-90 channels/ACP for 51.2K samples/sec continuous TPD storage. 256 to 32,768 samples in power of 2 steps. 50 Hz to 40,000 Hz full bandwidth ranges.
Frame size	
Frequency range	

**TPD Triggering Applications**

Modes	Signal Analysis and Transient Capture triggering features may be used during replay of data from the TPD.
Sources	Free-run, automatic and manual.
Level	Any or all Input channels may be selected, logical OR determines trigger.
Slope	± 0% to 100% of full scale.
Delay	Positive, negative or either.
	± 0% to 100% of frame length

**TPD Save/Restore**

Save to host	Archive data from the ACP TPD drives to the Jaguar host drive (up to 6 MB/sec).
Restore to TPD	Transfer the data back to the TPD for processing and display (up to 6 MB/sec).
Data conversion	Use Signal Analysis to convert time domain data directly to Matlab ASCII (spreadsheet) or binary (.mat) formats. Converted files may be displayed via Data Review and scan forward or backward through the file using frame sizes from 256 to 32,768.

**Data Formats**

TPD storage	Interleaved "packed" channel data. Requires appx. 2.2 bytes of space for each acquired sample of input data.
TPD replay	Data is read and "unwound" via an SD application prior to converting into other formats.
Export TPD data	Transfer TPD data to 3 <sup>rd</sup> party binary formats including Matlab and I-DEAS ADF/ATI.
TPD header	Typically includes the Test ID from the setup file, elapsed and remaining test time or TPD storage time, date and time stored, channel count, sensitivity, etc.

**Throughput Rates**

Write rate	Typically 5 MB/sec to 11 MB/sec sustained rate for each ACP. A six ACP configuration supports an aggregate rate of 66 MB/sec.
Read rate	Depends on the sample rate, number of channels and processing functions selected by the user. During replay, the data is read from the TPD disks, preprocessed by the ACP and transferred to the host for further processing, display and conversion to other formats as selected by the user.



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