

# Talon RTR 2756

## Serial FPDP rugged rackmount recorder

### Multichannel serial FPDP data acquisition system

- Records and plays multiple Serial FPDP data streams
- Supports Flow Control, CRC, and Copy/Loop Mode
- Up to 243 TB of front-panel removable solid state storage
- Real-time aggregate recording rates up to 3.2 GB/sec



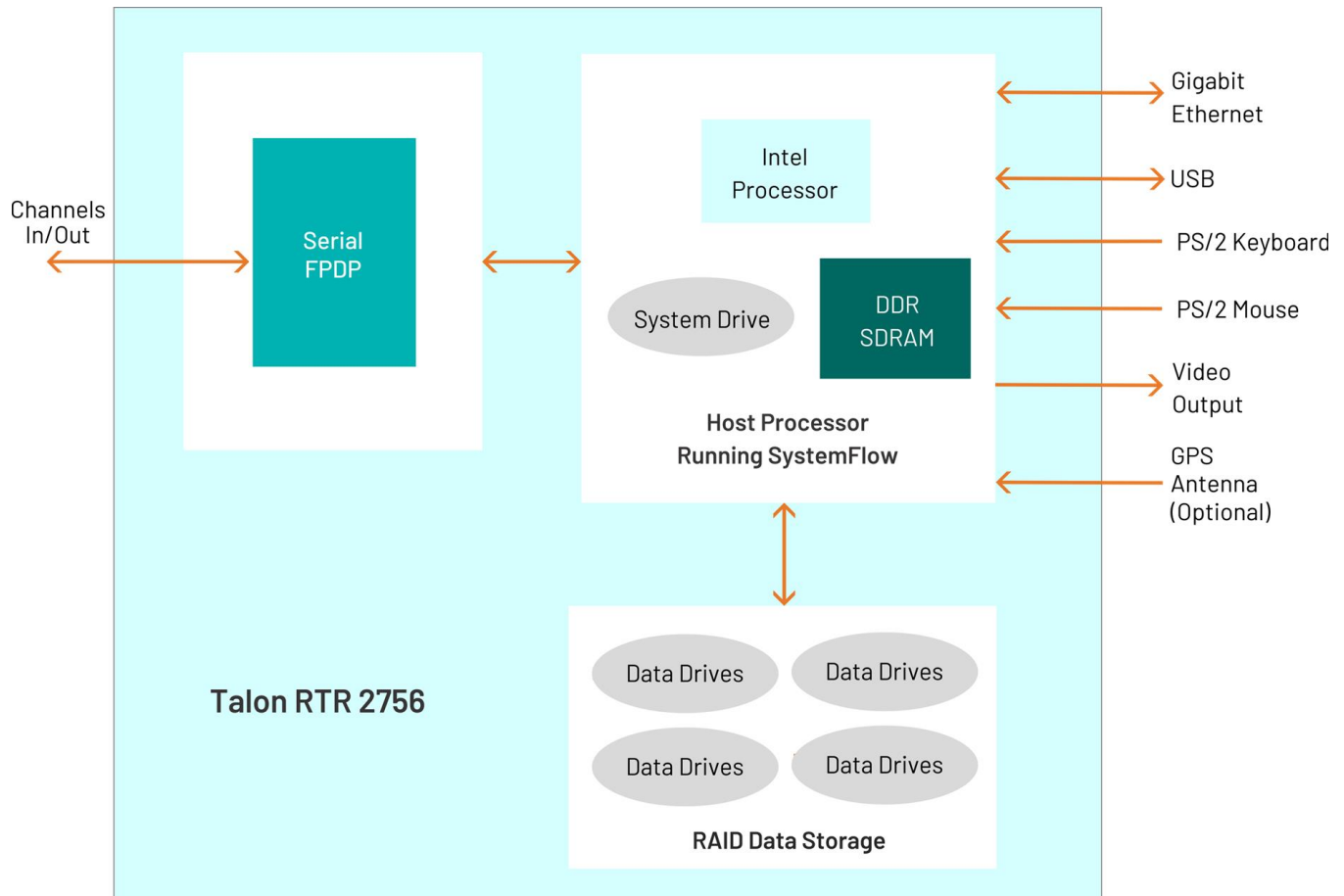
**The Talon<sup>®</sup> RTR 2756 is a complete turnkey recording system capable of recording and playing back multiple Serial FPDP data streams.** It is ideal for capturing any type of streaming sources, including live transfers from sensors or data from other computers, and is fully compatible with the VITA 17.1 specification. Using highly-optimized disk storage technology, the system achieves aggregate recording rates up to 3.2 GB/sec.

The RTR 2756 can be populated with up to eight SFP connectors. Single-mode and multi-mode fiber interfaces are available. The RTR 2756 is capable of both receiving and transmitting data over these links and supports real-time data storage to disk.

Programmable modes include flow control in both receive and transmit directions, CRC support, and copy/loop modes. The system is capable of handling 1.0625, 2.125, 2.5, 3.125 and 4.25 GBaud link rates supporting data transfer rates of up to 425 MB/sec per Serial FPDP link. Optional GPS time and position stamping allows the user to mark the beginning of a recording in the recording file's header.

**FEATURES**

- Designed to operate under conditions of shock and vibration
- Complete Serial FPDP record and playback system
- Up to eight I/O channels in a single 4U 19-inch rugged rackmount PC server chassis
- Removable SSDs
- Up to 46 terabytes of storage to NTFS RAID disk array
- Single-mode and multi-mode fiber interfaces available
- Real-time aggregate recording rates of up to 3.2 GB/sec
- Supports Flow Control, CRC, and Copy/Loop Mode as a receiver and transmitter
- Supports 1.0625, 2.125, 2.5, 3.125 and 4.25 GBaud link rates
- RAID levels of 0, 5, and 6
- Optional N+1 redundant power supply
- SystemFlow® GUI virtual instrumentation panel for fast, intuitive operation
- C-callable API for integration of recorder into applications
- File headers include time stamping and recording parameters
- Optional GPS time and position stamping
- Windows® workstation with high-performance Intel® processor



## RUGGED AND FLEXIBLE ARCHITECTURE

Because SSDs operate reliably under conditions of shock and vibration, the RTR 2756 performs well in ground, shipborne and airborne environments. Configurable with hot-swappable SSDs, the RTR 2756 can provide storage capacities of up to 46 TB in a rugged chassis. Drives can be easily removed or exchanged during or after a mission to retrieve recorded data.

The RTR 2756 is configured in a 4U 19-inch rack-mountable chassis, with hot-swap data drives, front-panel USB ports, and I/O connectors on the rear panel. Systems are scalable to accommodate multiple chassis to increase channel counts and aggregate data rates. All recorder chassis are connected via Ethernet and can be controlled from a single GUI either locally or from a remote PC.

Multiple RAID levels, including 0, 5, 6, provide a choice for the required level on redundancy. Redundant power supplies are optionally available to provide a robust and reliable high-performance recording system.

## SYSTEMFLOW SOFTWARE

All Talon recorders include the Mercury SystemFlow<sup>®</sup> recording software. SystemFlow software enables users to configure and control a Talon recorder:

- The SystemFlow GUI provides a point-and-click user interface. It includes Configure, Record, Playback, and Status screens, each with intuitive controls and indicators. The user can easily move between screens to configure parameters, control and monitor a recording, and play back a recorded stream.
- SystemFlow API provides a set of C-callable libraries that allow engineers to develop their own user interface to configure and control their Talon recorder. Additional high-level libraries, like Python, are available upon request.

The SystemFlow GUI and API can be run from a remote connection over Gigabit Ethernet. Recorders can be set up to run autonomously by implementing scripts using the API interface.

Talon systems record all data to the native NTFS file system, allowing for quick and easy access to the data from any computer. A simple header that holds the recording parameters is added to the beginning of each file. An optional GPS receiver allows the user to precisely timestamp files and optionally track the recorder's position throughout a mission.

## SYSTEMFLOW SIMULATOR

To learn more about SystemFlow software, contact Mercury at [techsales@mercy.com](mailto:techsales@mercy.com). The SystemFlow Simulator allows you to learn how to use a Talon recorder's SystemFlow software interface before you acquire a recorder or while you are waiting for delivery of a recorder.

The Simulator can simulate the operating environment of all the different Talon recorder models. The Simulator also demonstrates the SystemFlow Signal Viewer by playing recorded signals to simulate the appearance of live signals being digitized and recorded by a Talon analog signal recorder.

### Features

- Provides real-time recording system simulation
- Allows engineers to write and test their application (built using the SystemFlow API) before receiving the recorder hardware
- Demonstrates SystemFlow signal and file viewer tool
- Capable of simulating all Talon analog and digital recording systems
- Full Talon SystemFlow GUI
- Simulator can be used to develop Talon system profiles for use in the final system

**SYSTEMFLOW MAIN INTERFACE**

The RTR 2756 GUI shows a block diagram of the system and provides the user with a control interface for the recording system. It includes Configure, Record, Playback, and Status screens, each with intuitive

controls and indicators. The user can easily move between screens to configure parameters, control and monitor a recording, and play back a recorded stream.



**SYSTEMFLOW HARDWARE CONFIGURATION INTERFACE**

The Configure screen presents operational system parameters including temperature and voltages. Parameters are entered for each input or output channel, specifying the flow control settings and the recognition of a CRC in the data stream. Each channel can also be set up to utilize Serial FPDF's copy/loop mode. All parameters contain limit-checking and integrated help.

**Input Channel 1 Parameters**

Link Rate:  Gbaud

Flow Control:

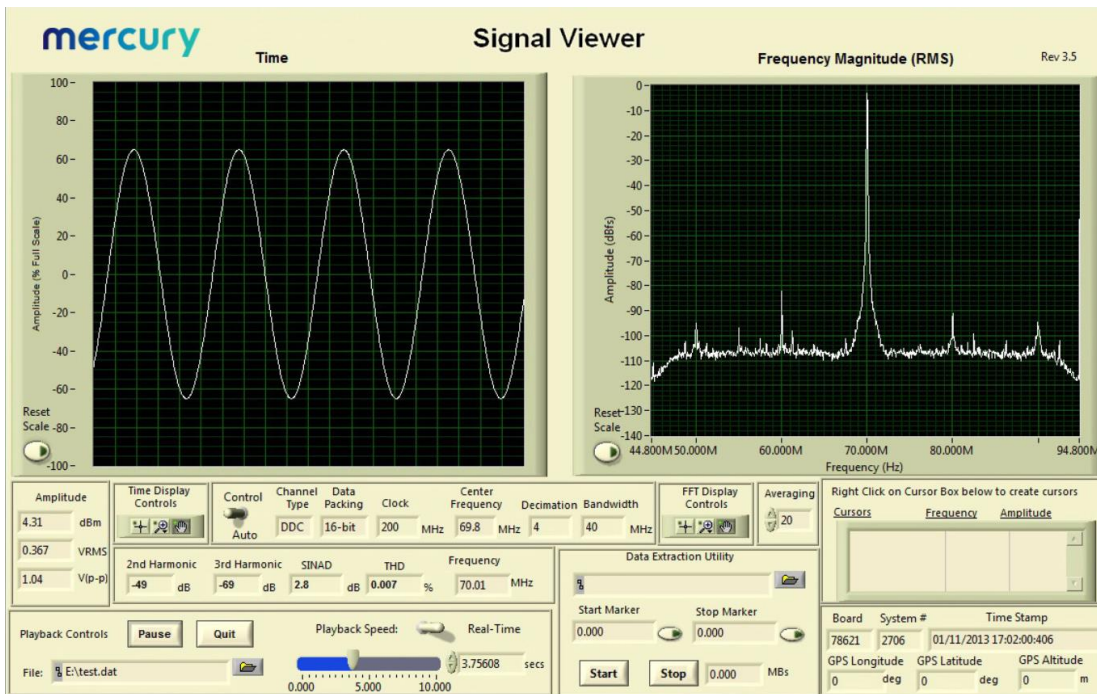
CRC:

Copy Mode:

**SIGNAL VIEWER**

The SystemFlow Signal Viewer includes a spectrogram, virtual oscilloscope, and spectrum analyzer for signal monitoring in both the time and frequency domains. It is extremely useful for previewing live inputs prior to recording, and for monitoring signals as they are being recorded to help ensure successful recording sessions. The viewer can also be used to inspect and analyze the recorded files after the recording is complete.

Advanced signal analysis capabilities include automatic calculators for signal amplitude and frequency, second and third harmonic components, THD (total harmonic distortion), and SINAD (signal to noise and distortion). With time and frequency zoom, panning modes, and dual, annotated cursors to mark and measure points of interest, the SystemFlow Signal Viewer can often eliminate the need for a separate oscilloscope or spectrum analyzer in the field.



## SYSTEMFLOW API

SystemFlow includes a complete API (Application Programming Interface) supporting control and status queries of all operations of the Talon recorder from a custom application.

High-level C-language function calls and the supporting device drivers allow users to incorporate the RTR 2756 as a high-performance server front end to a larger system. This is

supported using a socket interface through the Ethernet port, either to a local host or through an internet link for remote, standalone acquisition. Recorded NTFS files can be easily retrieved through the same connection. In addition to C, support is also provided for high level languages such as Python and C#. Below is an example of controlling recording via the SystemFlow API.

```
728     }
729     //transfer until end of disk
730     else if (transferType == TRANSFER_END_OF_DISK)
731     {
732         recordParams->transferTime = 0;           // must set to 0
733         recordParams->transferLength = 0;        // must set to 0
734     }
735
736     //////////////////////////////////////////////////////////////////// Start the record ////////////////////////////////////////////////////////////////////
737     SetConsoleTextAttribute (hConsole, FOREGROUND_GREEN | FOREGROUND_INTENSITY );
738     printf("\nCase 6: RTS_Record\n");
739     SetConsoleTextAttribute (hConsole, wOldColorAttrs);
740
741     //trigger immediately
742     if(recordParams->trigger == RTS_TRIGGER_IMMEDIATELY)
743     {
744         //send record command
745         if ((error = RTS_Record(++msgNum,
746                               serverInfo,
747                               recordParams,
748                               recordChanId,
749                               fileName[0])) != RTS_SUCCESS)
750         {
751             printf("Record Error # 0x%lx.\n", error);
752             exitHandler(error);
753             goto freeMem;
754         }
755
756         Sleep(500);
757     }
758
759     //wait for SW trigger
760     else if(recordParams->trigger == RTS_WAIT_FOR_SW_TRIGGER)
761     {
762         //send record command which set up record and start DMA
763         if ((error = RTS_Record(++msgNum,
764                               serverInfo,
765                               recordParams,
766                               recordChanId,
767                               fileName[0])) != RTS_SUCCESS)
```

**SPECIFICATIONS**

**PC Workstation**

Operating System: Windows®

Processor: Intel Core i7 processor or better

SDRAM: (standard) 8 GB

- Option -309: 16 GB
- Option -310: 32 GB
- Option -311: 64 GB

RAID

- Storage: 3.8, 7.6, 15.3, 30.7 or 46.0 TB
- Supported RAID Levels: (standard) 0
  - Option -285: RAID 5
  - Option -286: RAID 6
- Drive Type: Solid-state drive

**Serial FTP Interface - Option 280**

Cable: 100-ohm shielded twin-ax

Connector Type: SFP+

Max. Cable Length: 20 m

**Multi-mode Fiber Optical - Option 281**

Cable: Multi-mode fiber, 850 nm

Connector Type: LC

Max. Cable Length: Up to 300 m

**Single-mode Fiber Optical - Option 282**

Cable: Single-mode fiber

Connector Type: LC

Max. Cable Length: Up to 10 km

**Physical and Environmental**

4U Long Chassis: 19" W x 21" D x 7" H

Weight: 50 lb. approx.

Operating Temp: 0° to +50° C

Storage Temp: -40° to +85° C

Relative Humidity: 5 to 95%, non-condensing

Operating Shock: 15 g max. (11 msec, half sine wave)

Operating Vibration: 10 to 20 Hz: 0.02 inch peak, 20 to 500 Hz: 1.4 g peak acceleration

Power Requirements: 100 to 240 VAC, 50 to 60 Hz, 500 W max.

**ORDERING INFORMATION**

**Channel Configurations**

Option -204	4- Ethernet ports
Option -208	8- Ethernet ports

NOTE: Option -208 available only with Option -101

**RAID Configurations**

Standard	RAID 0 configuration
Option -285	RAID 5 configuration
Option -286	RAID 6 configuration

**Memory Options**

Standard	8 GB system memory
Option -309	16 GB system memory
Option -310	32 GB system memory
Option -311	64 GB system memory

**Storage Options**

Option -415	7.6 TB SSD storage capacity
Option -420	15.3 TB SSD storage capacity
Option -430	30.7 TB SSD storage capacity
Option -460	61.4 TB SSD storage capacity
Option -485	122.8 TB SSD storage capacity
Option -490	243.3 TB SSD storage capacity

**Serial FPDP Interface (append to all options)**

Option -280	SFP+ connectors
Option -281	Multi-mode optical, LC connectors, 4 ports
Option -282	Single-mode optical, LC connectors, 4 ports

**General Options (append to all options)**

Option -261	GPS time and position stamping
Option -264	IRIG-B time stamping

Contact Mercury for compatible option combinations. Storage and general options may change, so contact Mercury for the latest information.



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