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Talon RTR 2755
1-, 10-, 40-Gigabit Ethernet rugged rackmount recorder

Ideal for capturing any type of streaming source

- Records gigabit, 10-gigabit or 40-gigabit Ethernet streams
- TCP and UDP protocols
- Up to 122 TB of front-panel removable solid state storage
- Aggregate recording rates to 4.0 GB/sec

The Talon® RTR 2755 is a complete turnkey recording and playback system for storing 1-, 10-, and 40-gigabit Ethernet streams. It is ideal for capturing any type of streaming sources, including live transfers from sensors or data from other computers and supports both TCP and UDP protocols. Using highly-optimized disk storage technology, the system guarantees loss-free performance at aggregate recording rates up to 4.0 GB/sec.

Two rear panel SFP+ LC connectors for 850 nm multi-mode or single-mode fibre cables, or CX4 connectors for twinax cables accommodate all popular interfaces. Optional GPS time and position stamping accurately identifies each record in the file header.

RUGGED AND FLEXIBLE ARCHITECTURE

Because SSDs operate reliably under conditions of shock and vibration, the RTR 2755 performs well in ground, shipborne and airborne environments. The hot-swappable SSDs provide storage capacity of up to 243 TB. The drives can be easily removed or exchanged during or after a mission to retrieve recorded data.

The RTR 2755 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 provide a choice for the required level of redundancy.

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FEATURES

- Records gigabit, 10-gigabit or 40-gigabit Ethernet streams

- TCP and UDP protocols

- Optical interfaces available

- Aggregate recording rates to 4.0 GB/sec

- Up to 243 terabytes of storage to NTFS RAID solid state disk array

- Multiple RAID levels of 0, 5 and 6

- 4U short 19-inch rugged rackmount PC server chassis

- Designed to operate under conditions of shock and vibration

- Removable shock- and vibration-resistant SSDs perform well in vehicles, ships and aircraft

- Windows® workstation with high-performance Intel® processor

- SystemFlow® GUI with signal viewer analysis tool

- C-callable API for integration of recorder into applications

- File headers include time stamping and recording parameters

- Optional GPS time and position stamping

- Optional 18–36 VDC power supply
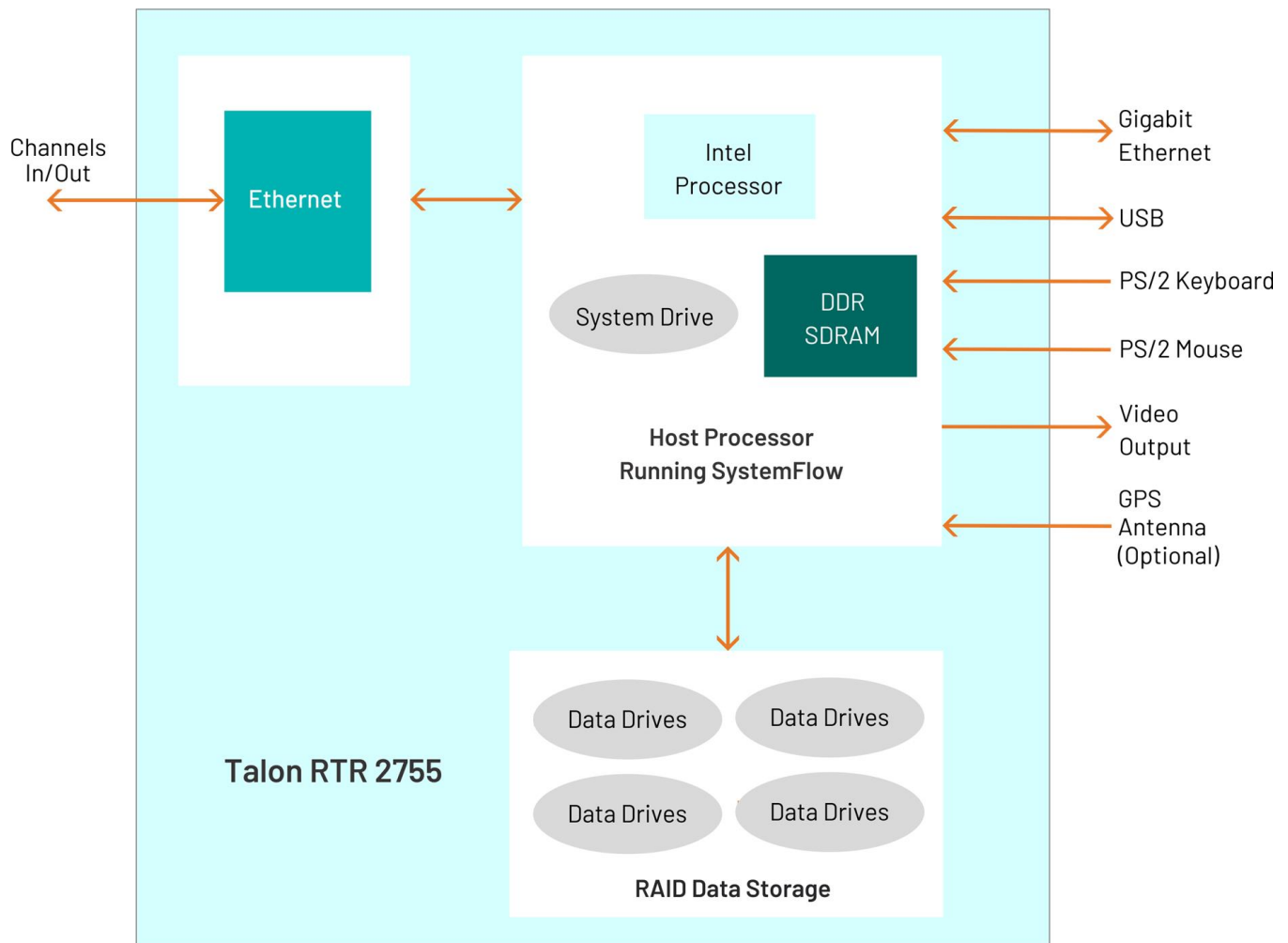
SYSTEMFLOW SOFTWARE

All Talon recorders include the Mercury SystemFlow® 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@mrcy.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 GUI

The RTR 2755 GUI provides the user with a control interface for the recording system. It includes Configuration, Record, Playback and Status screens, each with intuitive controls and indicators. The user can easily move between screens to set configuration parameters, control and monitor a recording, and play back a recorded signal. The signal viewer, integrated into the recording GUI, allows the user to monitor real-time signals or signals recorded on disk.

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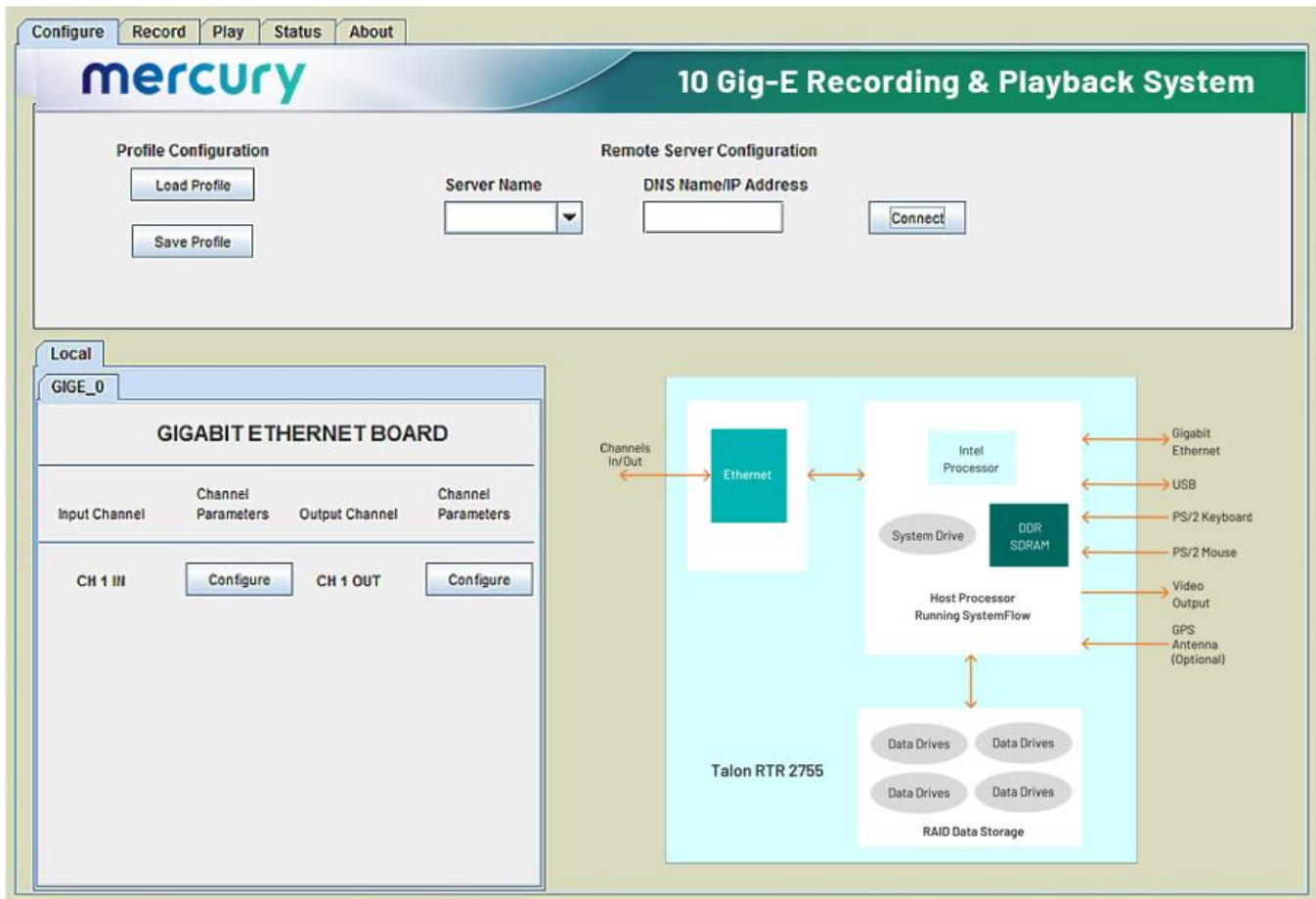
SETTING SYSTEM PARAMETERS

Parameters are entered for each input or output channel, specifying UDP or TCP protocol, client or server connection, the

IP address and port number. All parameters contain limit-checking and integrated help.
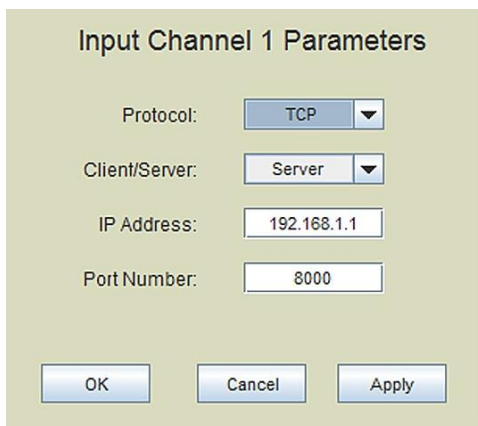
SIGNAL VIEWER

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.
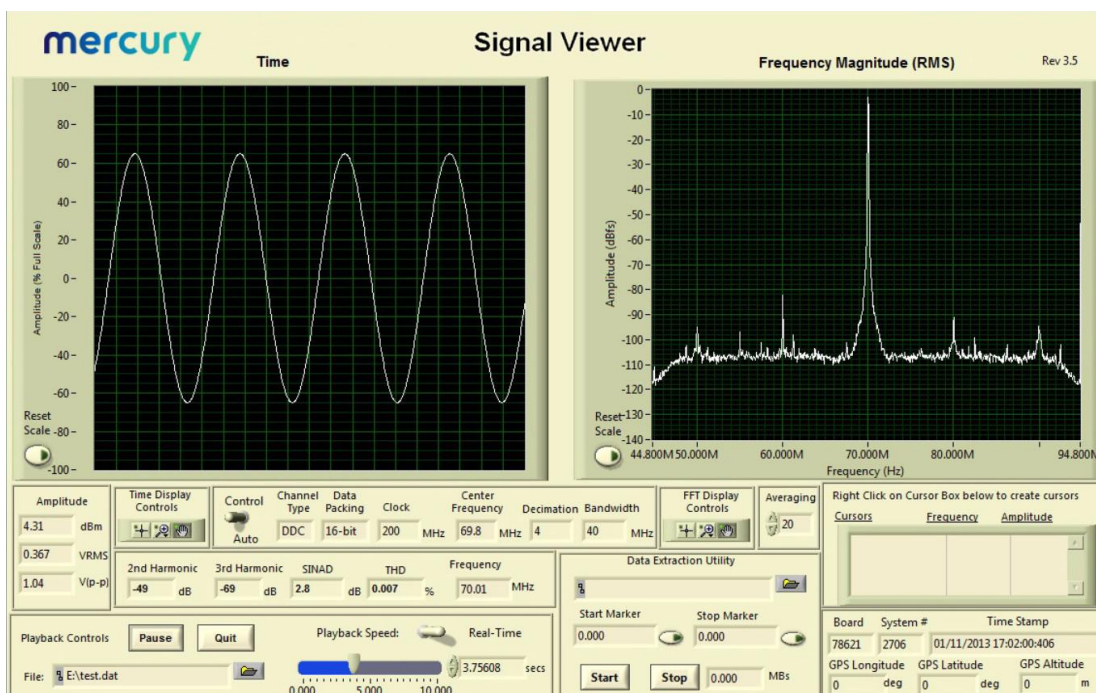
SYSTEMFLOW API

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 2755 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: Up to 122.8 TB SSDs
- Supported RAID Levels: (standard) 0
  - Option –285: RAID 5
  - Option –286: RAID 6
- Drive Type: Solid-state drive

Ethernet Interface

- Option 280: SFP+
  - Quantity: 2 ports
  - Connector Type: SFP+
- Option 281: Multi-mode Fibre Optical
  - Quantity: 2 ports
  - Cable: Multi-mode fibre, 850 nm
  - Connector Type: LC
  - Max. Cable Length: Up to 300 m
- Option 282: Single-mode Fibre Optical
  - Quantity: 2 ports
  - Cable: Single-mode fibre, 1310 nm
  - Connector Type: LC
  - Max Cable Length: Up to 10 km

Physical and Environmental

4U Short 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 –201	1-Channel record
Option –202	2- Ethernet ports
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 –410	3.8 TB SSD storage capacity
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

Interfaces

Option –280	SFP+ connectors
Option –281	Multi-mode optical, LC connectors
Option –282	Single-mode optical, LC connectors
Option –283	QSFP Connectors
Option –284	RJ45 Connector

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Interface Options	
Option -101	Gigabit Ethernet
Option -102	10-Gigabit Ethernet
Option -103	40-Gigabit Ethernet

General Options (append to all options)	
Option -261	GPS time and position stamping
Option -264	IRIG-B time stamping
Option -625	Front panel removable OS drive
Option -880	28 VDC power supply

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

LIFETIME SUPPORT FOR TALON PRODUCTS

Mercury offers worldwide customers shorter development time, reliable, rugged solutions for a variety of environments, reduced costs, and mature software development tools. We offer free lifetime support from our engineering staff, which customers can depend on through phone and email, as well as software updates. Take advantage of our 40 years of experience in delivering high-performance radar, communications, SIGINT, EW, and data acquisition MIL-Aero solutions worldwide.

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