



TSR AIR

**High-Performance Data Logger with Built-In 6DOF Sensors:
Onboard Recording or Real-Time Streaming**

Overview

The TSR AIR is a high-performance data logger with built-in 6-degree-of-freedom (6DOF) sensors designed for collecting shock and vibration data in harsh test environments. Compact and self-powered, the rugged system is ideal for unattended monitoring of shock, vibration, and other parameters, with the ability to capture multiple triggered events.

Simple and reliable, the TSR AIR is “always on” and ready to record. An advanced sleep mode “wakes” the unit when an event is triggered, records data to flash memory, and then automatically re-arms and returns to ready mode to capture the next event.

TSR AIR applications include: Shock & Vibration Analysis, In-Flight Testing, UAV/Drones, Parachute Deployment, Engine Vibration, Vehicle Crash Testing, Transportation Monitoring, and High-Value Asset

Features

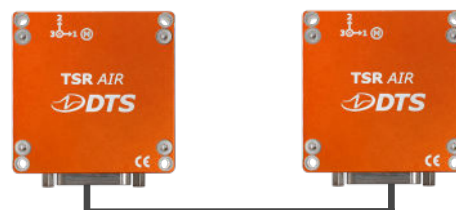
- Standalone data logger with built-in sensors and memory
- Small and lightweight for quick installation and testing
- Internal Sensors
 - Multiple accelerometer g-levels for full dynamic range
 - Angular rate sensors (high-rate gyroscope)
 - Temperature sensors
- Advanced “sleep & wake” feature extends battery life for months
- Wide operating temperature range of -40 °C to 60 °C
- Data writes to 16 GB flash memory and stores thousands of events
- Programmable sampling rate from 100 to 20,000 sps
- User-programmable trigger modes ranging from milliseconds to hours for each event
- Unit-to-unit synchronization via IEEE 1588 PTP, IRIG, or GPS
- Streaming format is IRIG-106 Chapter 10 compliant
- Simple, intuitive TSR AIR GO software for arming, downloading, and viewing data

Configurations & Interface

Standalone



Networked and synchronized via IEEE 1588 PTP



25-pin Micro-D system connector
(Same pinout and functionality as SLICE6 AIR)



Specifications

MODELS		DATA RECORDING	
Standard Model:	Supports onboard recording to flash memory	Memory Capacity:	16 GB standard, non-volatile flash
Streaming Model:	Supports onboard recording or real-time streaming*	Sleep:	Advanced motion detection for power savings
External Power Model:	Supports onboard recording or real-time streaming. The Battery is removed to support a wider operating temperature range.	Sampling Rate:	Programmable 100 to 20,000 sps
PHYSICAL		DATA COLLECTION MODES	
Size:	43 x 43 x 15 mm (1.69 x 1.69 x 0.59")	Active:	Circular buffer waiting for trigger 512 samples of pre-trigger data are also recorded with event
Weight:	50 g (1.8 oz)	Recorder:	No pre-trigger data (data collection starts in <2 msec)
Connector:	25-pin Micro-D (Ethernet, Power, I/O, Time Sync)	Schedule:	Wake and record at a specified date and time
Enclosure:	Anodized aluminum	Interval:	Wake and record at a specified interval of time
ENVIRONMENTAL		DATA STREAMING	
Operating Temp:	-40 °C to 60 °C -40 °C to 85 °C (External Power Model)	Streaming Rate:	Programmable 100 to 20,000 sps
Shock:	500 g survivable	Format:	IRIG-106 Chapter 10 or TmNS***
IP Rating:	IP67	TRIGGERING	
Military Standard:	MIL-STD-810G, MIL-STD-461G	Hardware Trigger:	Contact closure & TTL logic level (active low)
POWER / BATTERY		Software Level Trigger:	Programmable level trigger from internal sensors
Supply Voltage:	9 to 30 VDC, 2.5 W minimum	Trigger Modes:	Level, Schedule, Interval with High-g Accel
Battery Options:	Li-ion Rechargeable (350mAh)	SOFTWARE	
EMBEDDED SENSORS		Control:	TSR AIR GO
Triaxial Low-g Accelerometer:	Primary application: Vibration Range: ± 50 g ADC: 16-bit Bandwidth: Adjustable** up to 2000 Hz Piezoresistive, MEMS, DC response	Operating Systems:	Windows®, Linux
Triaxial High-g Accelerometer:	Primary application: Shock Range: ± 400 g ADC: 12-bit Bandwidth: Adjustable** up to 640 Hz Piezoresistive, MEMS, DC response	Communication:	100 Mbps Ethernet, DTS SLICE BUS compatible
Triaxial Angular Rate (Gyroscope):	Primary application: Angular Velocity Range: ± 2000 °/sec ADC: 16-bit Bandwidth: Adjustable** up to 180 Hz MEMS, DC response	Export Options:	IRIG-106 (Chapter 10 or TmNS), CSV, etc.
		CALIBRATION	
		Calibration Supplied:	ISO/IEC 17025 (A2LA Accredited). Measurements traceable to International System of Units (SI)
		Service Options:	Standard, On-site, and Service Contracts available
		TIME SOURCE	
		IEEE 1588 PTP**** (First TSR AIR in chain acts as Grand Master for chained units)	
		IRIG-B122****	
		GPS RS232/422/485 & 1PPS****	
		Internal RTC (5 ppm)	
		ACCESSORIES	
		See website for the full line of accessories	

* Streaming requires external power

** Adjustable filtering value is dependent on system sample rate

*** Under development

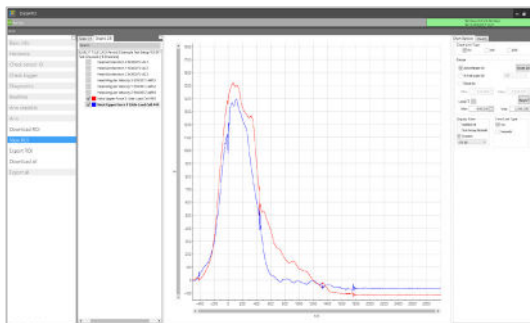
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Software

TSR AIR is supported by multiple control software options:

TSR AIR GO: An Easy-to-use Windows application designed specifically to support TSR AIR. It includes a sensor database, diagnostics, arming, downloading, data viewing and PSD analysis

API: Application Programming Interface (API) for user-developed application support



TSR AIR GO



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