



# TSR AIR

**Universal Data Logger with Built-In 6DOF Sensors  
Onboard Recording & 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 multiple triggered-event capability.

Simple and reliable, the TSR AIR is “always on” and ready to record. An advanced sleep mode “wakes” for an event trigger, collects data to flash memory, 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, Transportation Monitoring and High-Value Asset Tracking**

## Features

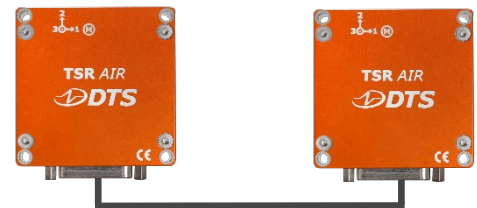
- Standalone data logger with sensors, memory & streaming capabilities
- Small and lightweight for quick installation and testing
- Internal Sensors
  - Multiple accelerometer g-levels for full dynamic range
  - Angular rate sensors (high-rate gyroscope)
  - Environment sensors temperature and altitude
- Advanced “sleep & wake” feature extends battery life for months
- Wide operating temperature range of -40C to 60°C
- Data writes to flash memory (up to 16 GB), stores 1000's of events
- Programmable sampling rate from 100 to 20,000 sps
- User-programmable trigger modes; msec to hours for each event
- Unit-to-unit synchronization via IEEE 1588 PTP, IRIG or GPS
- Simple, intuitive software for arming, downloading and viewing data

## Configurations & Interface

Standalone



Networked via synchronized IEEE 1588 PTP



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



## Specifications

| MODELS                             |   |
|------------------------------------|---|
| Standard:                          | Supports onboard recording to flash memory  |
| Streaming:                         | Supports onboard recording & real-time streaming  |
| PHYSICAL                           |   |
| Size:                              | 43 x 43 x 15 mm (1.69 x 1.69 x 0.59")   |
| Weight:                            | 50 grams (1.8 oz)   |
| Connector:                         | 25 pin microD (Ethernet, Power, I/O, IRIG, GPS)   |
| Enclosure:                         | Anodized aluminum   |
| ENVIRONMENTAL                      |   |
| Operating Temp:                    | -40 to 60°C   |
| Shock:                             | 1000 g survivable   |
| IP Rating:                         | IP67  |
| POWER / BATTERY                    |   |
| Supply Voltage:                    | 9 to 30 VDC, 2.5W minimum   |
| Battery Options:                   | Li-ion Rechargeable (350mAh)  |
| EMBEDDED SENSORS                   |   |
| Triaxial Low-g Accelerometer:      | <b>Primary application: Vibration</b><br>Range: Programmable, ±6g, ±12g, ±25g, ±50g<br>ADC: 16 bit, BW: 10 to 2000 Hz<br>Piezoresistive, MEMS, DC response, |
| Triaxial High-g Accelerometer:     | <b>Primary application: Shock</b><br>Range: ±400g<br>ADC: 12 bit, BW: 160 to 640 Hz<br>Piezoresistive, MEMS, DC response,                                   |
| Triaxial Angular Rate (Gyroscope): | <b>Primary application: Angular Velocity</b><br>Range: Programmable ±250 or ±2000 deg/sec<br>ADC: 16 bit, BW: 10-180 Hz<br>MEMS, DC response                |
| Environmental Sensors:             | Temperature: -40 to 85°C<br>Pressure: 300 to 1100 hPa (4.5 to 16 psi)   |

| DATA RECORDING   |   |
|--|---|
| Memory Capacity:   | 16 GB standard, flash non-volatile;   |
| Sleep:   | Advanced motion detection for power savings   |
| Data Collection Modes  |   |
| Active:  | Circular buffer waiting for trigger<br>Pre-trigger data is also recorded with event |
| Recorder:  | No pre-trigger data (data collection starts in <2 msec)                             |
| Schedule:  | Wake and record at a specified date and time  |
| Interval:  | Wake and record at a specified interval of time                                     |
| DATA STREAMING   |   |
| Streaming Rate:  | 10k   |
| Format:  | IRIG Chapter 10 or TmNS*  |
| TRIGGERING   |   |
| Hardware Trigger:  | Contact closure & TTL logic-level (active low)                                      |
| Software Level Trigger:  | Programmable level trigger from internal sensors                                    |
| Trigger Modes:   | Level, Schedule, Interval with High-g Accel   |
| SOFTWARE   |   |
| Control:   | DataPRO TSR AIR Software  |
| Operating Systems:   | Windows® 7/8/10 (32/64-bit), Linux  |
| Communication:   | 100M bps Ethernet, SLICE BUS compatible   |
| Export Options:  | IRIG-106 (Chapter 10 or TmNS), CVS, etc.  |
| CALIBRATION  |   |
| Calibration Supplied:  | NIST traceable  |
| ISO 17025:   | ISO 17025 (A2LA Accredited)   |
| Service Options:   | Standard, On-site & Service Contracts available                                     |
| TIME SOURCE  |   |
| IEEE 1588 PTP (Requires external power. First TSR AIR in chain acts as Grand Master for chained units) |   |
| IRIG-B122*   |   |
| GPS RS232/422/485 & 1 PPS*   |   |
| Internal RTC (5 ppm)   |   |
| ACCESSORIES  |   |
| See website for full line of accessories   |   |

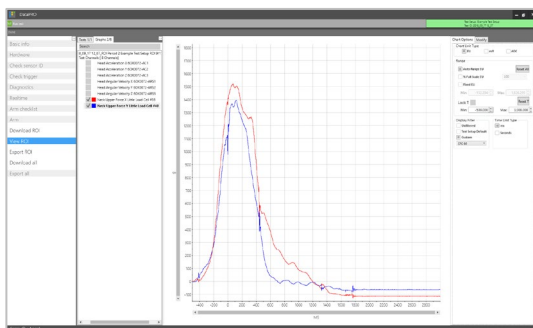
\*Under Development

## Software

TSR AIR is supported by multiple control software options:

**DTS DataPRO Software:** Easy-to-use Windows application designed specifically to support TSR AIR; includes sensor database, diagnostics, arming, downloading, data viewing and PSD analysis

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



DataPRO Software



〒103-8577  
 東京都中央区日本橋大伝馬町8-1  
**丸文株式会社**  
 システム事業本部 営業第2部 計測機器第1課  
 keisoku@marubun.co.jp



phone: +1 562-493-0158  
 email: sales@dtsweb.com  
 www.dtsweb.com