

[WIRELESS SENSORS]

Reentry Breakup Recorder – Wireless Temperature Sensor (REBR-W)

Wireless Reentry Temperature Sensor

[PRODUCT OVERVIEW]

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Invocon's Wireless Temperature Sensor system was developed for integration into The Aerospace Corporation's Reentry Breakup Recorder (REBR-W). The REBR-W is an enhanced wireless version of the REBR instrument that gathers temperature data from distributed remote sensor nodes throughout a reentering spacecraft. Invocon defined, produced, and tested the integrated wireless sensor solution, leveraging over 25 wireless sensor system designs developed for NASA on the Space Shuttle and International Space Station to measure temperature, vibration, shock, and pressure.



[CAPABILITIES]

Features & Applications

Key Features

◆ Distributed Wireless Sensor Architecture

Multiple remotely mounted sensor nodes transmit temperature data from locations throughout the spacecraft to the central REBR-W unit, eliminating wiring across structural panels.

◆ High-Temperature Measurement Capability

Sensor nodes use high-temperature-rated sensors positioned to capture temperature data through the extreme thermal environment of reentry.

◆ NASA ISS and Shuttle Heritage

Draws on Invocon's 25+ wireless sensor system designs developed for NASA, providing a proven and mission-validated technology base. sensor selection across different structure types.

Typical Applications

- ◆ **Reentry Hazard Prediction Studies**
Provides distributed temperature data to improve models of spacecraft breakup behavior and debris hazard prediction.
- ◆ **Reentry Breakup Research**
Characterizes thermal profiles across the host vehicle’s structure during atmospheric reentry to expand understanding of breakup phenomena.
- ◆ **ISS Visiting Vehicle Instrumentation**
Installed on cargo vehicles docking with the ISS and intentionally deorbited at end of mission for reentry data collection.
- ◆ **Spacecraft Deorbit Planning**
Data supports planning for controlled and uncontrolled reentries by validating thermal and breakup models.

[TECHNICAL DATA]

Key Specifications

SPECIFICATION	VALUE
ELECTRICAL	
Measurement Parameter	Temperature (high-temperature capable sensors)
Data Handling	Remote nodes measure and transmit to REBR-W; REBR-W stores data and transmits to ground post-reentry via the REBR satellite communications.
MECHANICAL	
Weight	1.8 ounces (Sensor Unit + Battery)
Enclosure	Approximately 4.3cm x 4.3cm x 2.2cm.