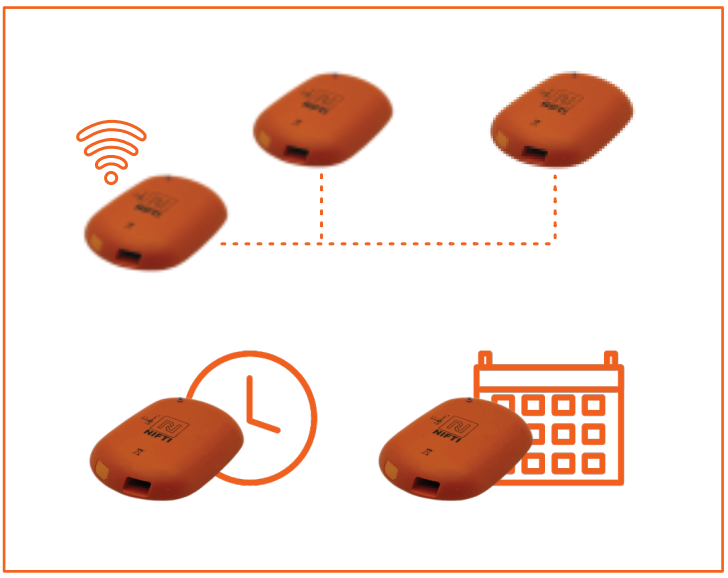
NIFTI

Non-Intrusive Flight Test Instrumentation

NIFTI™ is the Non-Intrusive Flight Test Instrumentation system that revolutionises aircraft flight testing by enabling rapid, affordable and flexible flight trials.

Designed by flight test crew, NIFTI is a small, aircraft-independent, wireless sensing system that collects environmental and structural response data using sensor nodes adhesively mounted to an aircraft's structure.

NIFTI was developed in close collaboration with the RAAF and has been flight qualified on multiple aircraft



Capture measurements by timer, schedule or UTC-synchronised wireless control

Key Advantages

NIFTI can be quickly configured and installed onto any aircraft from a jet to an ultralight

- Wireless, time synchronised data acquisition system
- Affordable instrumentation solution for in-service aircraft
- Mounts adhesively to the aircraft, no mounting holes required
- Captures data directly into standard CSV files for post-flight analysis
- Does not require interface with aircraft systems for operation

Configure NIFTI for operation with the easy-to-use Windows App

Sensor Nodes

Small, lightweight and wireless

- Mounting adhesives compatible with existing aircraft paint systems
- Suitable for external mounting directly on locations of interest
- Negligible aerodynamic/weight impacts
- Minimum endurance of 2 hours active at -45ºC, 40 hours at hibernation at 20ºC
- Variable sample rate up to 4KHz
- Sensor nodes available in tri-axial accelerometer configurations

NIFTI™ Strain Gauge Node

Datasheet V1.6

Description

The Non-Intrusive Flight Test Instrumentation System, or NIFTI, is a network of nodes that are mounted externally to an aircraft to collect flight test data. This eliminates the need to internally wire sensors to a dedicated aircraft for flight testing.

The *NIFTI™ Strain Gauge Node* captures high resolution three-channel measurement data from external sensors at a sampling rate up to 2000 Hz.

System Specifications

Sampe Rate	up to 2000 Hz
No. of Sample Channels	3 x 24-bit
Capture / Sleep Times[1]	2 / 27 Hrs @ 2000Hz 4 / 18 Hrs @ 1000Hz 6 / 9 Hrs @ 500Hz
Charge Time	3 Hrs to fully charge

Interface Specifications

- Micro USB 2.0
- External Sensor Port to connect with peripheral sensors, e.g. strain gauges, via an analogue/digital interface

Data Capture Specifications

Flash Storage Capacity	512 MB
Data File Format	.csv

Analog to Digital Converter Specifications

Data Channels	3
Analog Bandwidth	4000 Hz

Temperature Sensor Specifications

Range	-40 °C to +85 °C
Resolution	±0.5 °C

Radio Specifications

Operating Band	915 MHz (ISM)
Throughput	Up to 1 Mbps
Receiver Sensitivity	-133 dBm
Transmitter Power	+20 dBm

Battery Specifications

Battery Type	Lithium ion
Capacity	440 mAh
Voltage	3.7 V
Max Charger Voltage	4.2 V

Environmental Specifications

Operating Temperature[2]	-50 °C to +50 °C
Recharging Temperature	0 °C to +45 °C
Recommended Storage Temperature	-20 °C to +45 °C
Maximum Operating Altitude	50’000 feet
Minimum Pressure	11.6 kPa
Operating Humidity[2]	≤100%RH
Storage Humidity[2]	≤75%RH
Ingress Protection[2]	IP55

Mechanical Specifications

Enclosure Material	ULTEM™ RESIN 1000
Mass[2]	40 grams
Length	67.1 mm
Width	48.8 mm
Thickness	9.3 mm

Installation Specifications

Recommended Mounting Tape	3M™ VHB™ Tape 4941F
Safe Installation Period[2]	3 Months

[1]Value measured at sea level, at 25 °C with strain gauges fitted, using timed capture to fill data storage and remaining battery capacity used for sleep.

[2]Value subject to operational conditions & requirements.

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