CRFS
a Motorola Solutions Company

EXTRAORDINARY
RF TECHNOLOGY

DATA SHEET

RFEYE NODE 100-18 LW

ADVANCED LIGHTWEIGHT RF SENSOR FOR AUTONOMOUS SYSTEM INTEGRATION

The RFeye Node 100-18 LW offers the same high performance and real-time spectrum operations as our standard RFeye Node 100-18 sensor, but in a smaller, lightweight form well suited for all types of autonomous systems and operations needs.

Developed to integrate as a payload into fixed wing ISR autonomous aerial vehicles, the RFeye Node 100-18 LW (lightweight) is an innovative RF sensor that operates up to 18 GHz. It is a complete spectrum monitoring and geolocation system, can record high-fidelity I/Q data, and is designed to be both a standalone RF sensor and for use in distributed networks. This sensor has been completely redesigned for enhanced SWaP and easy integration.

Weighing less than 2kg, the sensor extends flight time by reducing weight. Three RF ports support antennas for different frequency bands and all four GNSS satellite constellations. Co-engineering, interference, and filter settings knowledge and support is available for integrators.

An uprated GNSS chipset supports the L1 / L2 and L1 / L5 bands (LW RF sensor only). The RFeye Node 100-18 LW offers outstanding phase noise, noise figure, channel re-tune time, and spurious free dynamic range parameters, superior to other RF sensors in its class.

AT A GLANCE:

- Modified aluminium case and heatsink
- Less than 2kg
- Supports RF information superiority: air-to-air and air-to-ground
- Signal detection, monitoring, and geolocation (TDoA, 3D TDoA)
- Non-invasive to host platform
- Cost effective solution for fast and wide area deployment

An easily deployable capability extender for air, maritime and land operations. With its compact and lightweight form factor, the RFeye Node 100-18 LW is an excellent RF sensor for wide area surveillance, border security monitoring, communications intelligence, and RF (I/Q) data collection.

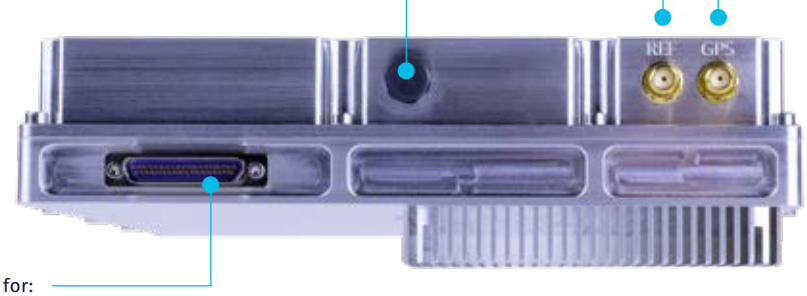
RFEYE NODE 100-18 LW
IN DETAIL

- Allows up to 3 antennas for different frequency bands
- All 3 ports support 9kHz to 18GHz

- GPS / GNSS antenna port
- Supports bands L1, L2, L5
- Multi-constellation

10MHz Ref input port

Goretex breather gland to compensate for air pressure & altitude changes



D-type connector for:

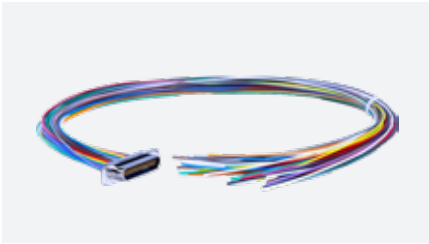
- GigE Ethernet / POnE power
- DC power
- USB 2
- HDMI
- Fan power output

GUIDANCE FOR INTEGRATORS

Physical: CRFS can supply CAD drawings or loan a space model. You must allow for mount point vibration damping. **Thermals:** Requires forced air cooling of at least 2 cfm (3.5 m^3/h) **Operating environment:** Sensor is sealed to IP67 provided the correct connectors are fitted. **Power:** Limits are +10v to +30V DC. **RF:** CRFS can provide guidance on RF measurements, antenna choice, filter choice and RF cables. **SSD storage:** Optional external hard drive. **Data connection:** Ethernet connection with Ethernet switch possible. **SSUS:** Provides easy access to RF sensor (Node) operating and software updates. For more information please contact CRFS.

RFEYE NODE 100-18 LW BUNDLE

RFeye 100-18 LW sensor



LW Node wire-ended integration connector

LW Node main breakout loom

DC power, RJ 45 Ethernet, USB 2, Expansion port, Fan Header

OPTIONAL ACCESSORIES

GNSS passive antenna

W x H x D (45x51x12mm)
Weight (120g)

Compact wideband omni passive antenna
(500 MHz – 18 GHz)

W x H x D (60x65x35.1mm)
Weight (108g)

UHF stub passive antenna
(315 MHz – 515 MHz)

W x H x D (52x508x52mm)
Weight (13g)

V/UHF blade antenna

(30 MHz – 512 MHz)
W x H x D (276 x 70 x 128 mm)
Weight (450g)

External 1TB SSD 2.5 inch data drive

W x H x D (88x153x12mm)
Weight (130g)

RFEYE NODE 100-18 LW SPECIFICATIONS

Single channel receiver

Switchable RF inputs	3 x SMA connectors

Frequency

Range	9 kHz to 18 GHz

Noise figures at maximum sensitivity (typical)

9 kHz to 83 MHz	11 dB
83 MHz to 1 GHz	9 dB
1 GHz to 2.9 GHz	8 dB
2.9 GHz to 5.9 GHz	7 dB
5.9 GHz to 10 GHz	9.5 dB
10 GHz to 15 GHz	12 dB
15 GHz to 16 GHz	13 dB
16 GHz to 17 GHz	18 dB
17 GHz to 18 GHz	21 dB

Phase noise at 20kHz offset (typical)

Receiver input at 1 GHz	-126 dBc/Hz
Receiver input at 5 GHz	-121 dBc/Hz
Receiver input at 18 GHz	-110 dBc/Hz

Signal analysis

Instantaneous bandwidth	100 MHz
Tuning resolution	1 Hz

Internal frequency reference

Initial accuracy @20°C	±0.1 ppm typ.
Stability over temperature	±0.3 ppm
Ageing over 1 day	±0.04 ppm

Programmable sweep modes

Sweep speed at 2 MHz RBW	390 GHz/s typ.
Sweep speed at 61 kHz RBW	320 GHz/s typ.
User programmable modes	free run continuous, single timed, user trigger, adaptive
Trigger-on-event modes	user defined masks, actions alarms

Sampling

Resolution	16 bits per channel (I&Q)
Rate	125 MS/s I&Q

Third order intercept points with AGC

≤ 1 GHz	+20 dBm typical
> 1 GHz to ≤ 6 GHz	+15 dBm typical
> 6 GHz to ≤ 18 GHz	+20 dBm typical

Local oscillator

Re-radiation	≤ -90 dBm typical

Timing & Frequency references

Selectable	Internal, GNSS or external
GNSS constellations	4
GNSS bands	L1/L2 and L1/L5
External input	10 MHz ±10 ppm

Processor sub-system

CPU	Intel E3845 quad core

I/O Multipin Connector

Network	1 x 1 GigE, with POnE
Universal Serial Bus	1 x USB2.0
1 x expansion ports configurable as:	1 x SyncLinc with < 10 ns RMS accuracy typical, trigger input, external peripheral control
GNSS antenna input	1 x SMA passive or active (3.3 VDC)

Data storage (option)

External flash disk	via USB interfaces

Size, weight and power

Dimensions (w, h, d) (Node only)	230 x 52 x 187 mm (9.1 x 2.0 x 7.4 inches)
Weight (Node only)	1.95 kg (4.3 lbs)
DC power	12 VDC (limits 10-30V)
Power On Ethernet (POnE)	56 VDC

Power consumption

Typical	35W
Maximum	45W

Environmental

Operating temperature	-30 to +50 °C (-22 to 122° F) with forced air cooling
Storage temperature	-40 to +71 °C (-40 to 160° F)
Ingress protection	IP65 (minimum)

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