RT3000 v4 DO-160

The DO-160 approved GNSS/INS from OxTS.

Combining dual GNSS receivers and OxTS' latest MEMS-based IMU10 technology, the RT3000 v4 DO-160 offers a commercially viable alternative to FOG-based navigation systems, complete with thorough environmental testing in a ruggedised package.

Key features:
+ Proven DO-160 performance
+ Cost-effective alternative to FOG IMUs
+ ITAR-free; no export licence required
+ IP67 environmental protection
+ Tailored to your needs

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Specification at a glance:

0.01 m
horizontal position

0.01°
roll and pitch

0.04°
true heading

0.025 km/h
velocity

IP67
environmental protection

0.21 m
position after 60 secs GNSS outage (PP)

What to expect from the RT3000 v4 DO-160:

DO-160 certified and IP67 rated

+ The RT3000 v4 DO-160 is certified to the stringent DO-160 aerospace standards.

+ IP67 rated, the RT3000 v4 DO-160 is protected from water (submerged in 15 cm to 1 m of water for upto 30 minutes) as well as dust, sand and dirt ingress.

Reliable, real-time data

+ Combines a survey-grade GNSS receiver with OxTS' latest IMU10 inertial technology to deliver uninterrupted position, orientation and dynamics in all environments.

+ The RT3000 v4 DO-160 outputs real-time data at 100 Hz (250 Hz optional) via ethernet and serial or CAN.

+ All data is logged to the 32 GB internal storage.

Tailored to your needs

+ Make the most of your budget by tailoring your RT3000 v4 DO-160 to include only the functionality you need.

+ Add additional functionality to your RT3000 v4 DO-160 as your requirements change with remote upgrades.

ITAR-free: no export licence requirements

+ Ship your RT3000 v4 DO-160 globally without requiring export licences.

+ The RT3000 v4 DO-160 leverages advancements in OxTS' navigation engine to achieve a new level of performance using components that are not subject to export control.
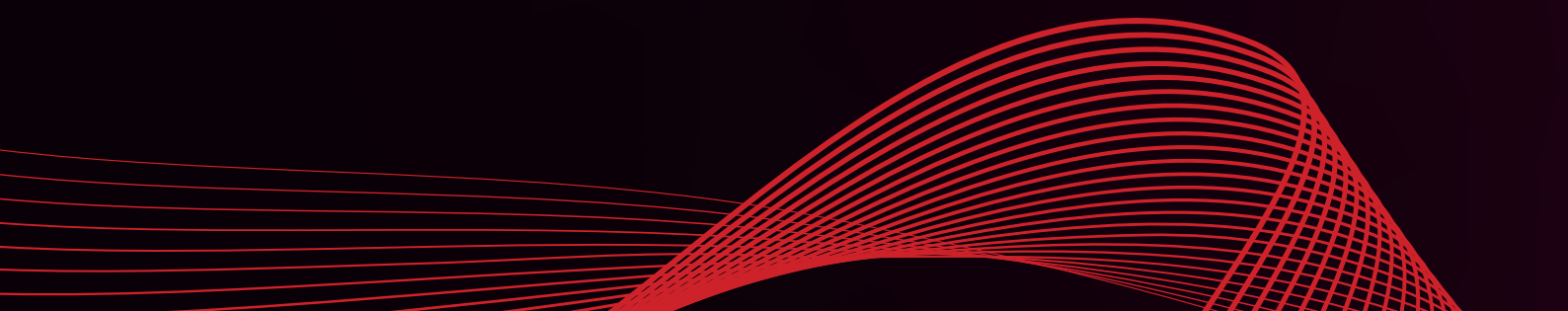
Post-processing tools included

+ Avoid the hassle of software subscriptions with OxTS software suite, NAVsuite, included free-of-charge.

+ NAVsuite contains all of the applications you need for device configuration, real-time monitoring, post-processing and data visualisation.

RT3000 v4 DO-160

| Environmental Tests	Category
Ground survival low temperature test, short-time operating low temperature test and operating low temperature test.	Sections 4.5.1 and 4.5.2, Category A4
Ground survival high temperature test, short-time operating high temperature test and operating high temperature test.	Sections 4.5.3 and 4.5.4, Category A4
Loss of Cooling	Sections 4.5.5, Category Z
Altitude	Section 4.6.1, Category F2
Temperature Variation	Section 5, Category C
Humidity	Section 6, Category B
Waterproofness	Section 10, Category R
Sand and Dust	Section 12, Category S
Fungus Resistance	Section 13, Category F
Salt Fog	Section 14, Category S
Vibration	Section 8, Category R5 curve E/E1
Operational Shock	Section 7, Category B
Crash Safety Shock	Section 7, Category B

EMC Tests	Category
Magnetic Effect	Section 15, Category Z
Power Interruption	Section 16.6, Category A
Voltage Spike	Section 17, Category B
Audio Frequency Conducted Susceptibility	Section 18, Category R
Induced Signal Susceptibility	Section 19, Category ZC
Radio Frequency Susceptibility	Section 20, Category R
Emissions of Radio Frequency Energy	Section 21, Category B
Lightning Induced Transient Susceptibility	Section 22, Category A1 J1 L1
(ESD) Electrostatic Discharge	Section 25, Category A
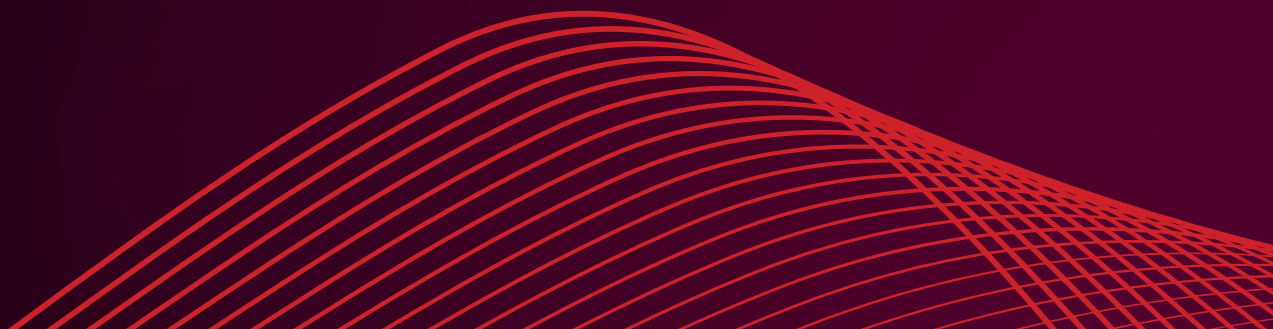
Technical specification

Model	RT3000 v4 DO-160
Positioning	GPS L1, L2C (QZSS)
	GLONASS L1, L2
	BeiDou B1, B2
	Galileo E1, E5
	L-Band
Single/Dual Antenna?	Both
ITAR-free?	Yes

Performance specification with GNSS [1]

	RTK/Post-process
X,Y Position [CEP]	0.010 m
Velocity [RMS]	0.025 km/h
Roll & Pitch [1σ]	0.010 °
True Heading [1σ] [3]	0.040 °
Slip angle [1σ] [4]	0.050 °

Performance specification without GNSS [RMS]

	Real-time [2]			Post-process [2]			Post-process with OxTS LIO		
	10 s	30 s	60 s	10 s	30 s	60 s	10 s	30 s	60 s
X,Y Position [m]	0.20	0.55	1.10	0.07	0.25	0.50	0.040	0.110	0.210
Velocity [m/s]	0.04	0.05	0.07	0.02	0.04	0.05	0.010	0.017	0.023
Roll & Pitch [deg]	0.02	0.025	0.03	0.01	0.016	0.02	0.008	0.015	0.019
True Heading [deg]	0.05	0.09	0.12	0.04	0.05	0.07	0.045	0.093	0.134

Physical characteristics

Dimensions	120 x 120 x 71 mm
Mass	850 g
Input voltage	10 - 48 V dc
Power consumption	10 W [max]
Internal storage	32 GB
Onboard data-logging rate	3 MB/s

OxTS IMU10 sensors

Type	Accelerometers	Gyros
Technology	MEMS	MEMS
Range	8 g	490 °/s
Bias stability	0.005 mg	0.8 °/hr
Scale factor [1σ]	0.02 %	0.08 %
Random walk	0.012 m/s/√hr	0.12 °/√hr
Axis alignment	< 0.01 °	< 0.05 °

Interfaces

Ethernet	Ethernet 10/100 Base-T x1
Serial/CAN	RS232 or CAN [software configurable] x1
Digital I/O	PPS sync out x1
	Trigger in/out [software configurable] x1

Environmental characteristics

Operating temperature	-40° to 70° C
Vibration	0.1g/Hz 5-500 Hz
Shock survival	100 g, 11 ms
Environmental protection	IP67

[1] Typical values subject to ionospheric/tropospheric conditions, satellite geometry, baseline length and multipath. Requires clear view of the sky and appropriate differential corrections to achieve full specification.

[2] With differential corrections and DMI input
[3] With two-meter antenna separation
[4] At 50 km/h

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