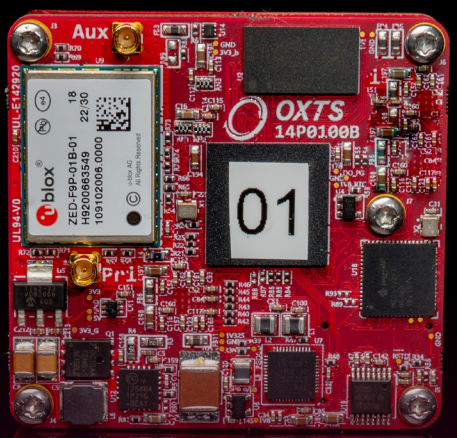


DATASHEET

xRED3000

Challenge the status quo.

Combining two survey-grade GNSS receivers and OxTS' latest IMU10 inertial technology, the xRED3000 is engineered to be the GNSS/INS component for any product that needs accurate localisation, even in harsh environments.

Key features:
+ Reliable, real-time data
+ ITAR-free; no export licence required
+ Three-minute, low-dynamics warm up
+ Tailored to your needs
+ Free-of-charge post-processing tools

OXTS

Specification at a glance:

20 g
mass

0.02°
roll and pitch

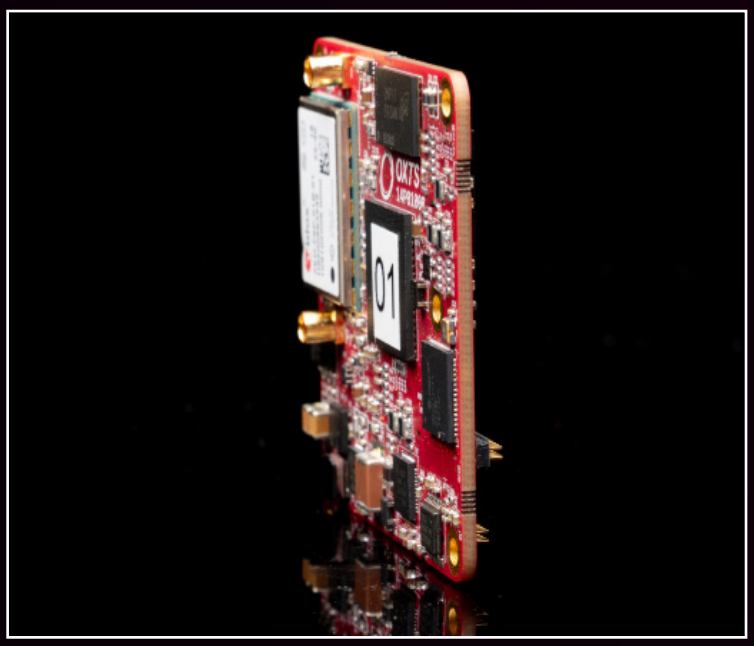
0.05°
heading

0.05 km/h
velocity

0.01 m
position

Ready for wherever your customers go.

- OxTS' latest *IMU10 technology* sets a new benchmark for inertial measurement price and performance.
- *Quad-constellation GNSS support* (GPS, Galileo, BeiDou and GLONASS) maximises RTK satellite coverage along their route.
- OxTS *gx/ix tight-coupling* algorithms provide enhanced multipath rejection in urban canyons and faster RTK reacquisition after temporary, complete outages.
- OxTS *LiDAR Inertial Odometry (LIO)* post-processing software reduces drift by aiding the navigation engine with velocity and angular rate updates from a LiDAR.
- *Embedded NTRIP client* makes it simple to obtain GNSS corrections.
- *Advanced vehicle model* algorithms constrain navigation output to those which match the motion profile of land-based vehicles, such as no rotation on the spot, to filter out erroneous sensor data.
- *Single- and dual-antenna support* provides flexibility in mechanical integration to best fit the application.



Compact. Light.

Measuring just 53.6 x 50.6 x 9.5 mm and weighing only 20 grams, the xRED3000 is suitable for land- and air-based applications.

Why choose the xRED3000?

Reliable, real-time data

- Combines two survey-grade GNSS receivers with OxTS' latest IMU10 inertial technology to deliver uninterrupted position, orientation and dynamics in all environments
- Outputs real-time data at 100 Hz (250 Hz optional) via ethernet and serial.

Low dynamics warm up

- The xRED3000 gets to specification within three minutes of low dynamics movement.
- Increases flight time efficiency for aerial applications and eliminates space requirements for land-based warm-ups.

Post-processing tools included

- Avoid the hassle of selling third-party subscriptions with your product with OxTS software suite, NAVsuite, included free-of-charge.
- NAVsuite contains the essential applications your customers could need for device configuration, real-time monitoring, post-processing and data visualisation.

ITAR-free: no export licence requirements

- Ship your xRED3000 globally without requiring export licences.
- The xRED3000 leverages advancements in OxTS' navigation engine to achieve a new level of performance using components that are not subject to export control.

Tailored to your needs

- Optimise your unit cost to include only the functionality you need.
- Use as a second-source option with no minimum order quantity and volume discounts available.
- Add additional functionality and firmware upgrades to your xRED3000s in the field with remote upgrades.

Options:

- ISO17025-accredited calibration
  Confirms the IMU in your xRED3000 is performing to specification with tracability certification.
- LiDAR boresight calibration and georeferencing
  Aligns and combines data from the xRED3000 and LiDAR into a georeferenced pointcloud.
- Network DGNSS
  Enables GNSS corrections to be sent and received over ethernet.
- Precision Time Protocol (PTP)
  Synchronises all devices in your system to a signle clock.
- Raw data streaming
  Simplify post-processing workflows by streaming raw data files directly to another storage device in real-time via ethernet UDP stream.
- LiDAR Inertial Odometry (LIO)
  Fuse LiDAR and OxTS INS data in post-process to significantly reduce position drift.
- Generic logging
  Log data from any other sensors and devices to the xRED3000s 32 GB internal storage via ethernet UDP stream.

Technical specification

Model	xRED3000
Positioning	GPS L1, L2C (QZSS) GLONASS L1, L2 BeiDou B1, B2 Galileo E1, E5
Single/Dual Antenna?	Both
ITAR-free?	Yes

OxTS IMU10 sensors

	Accelerometers	Gyros
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 °

Performance specification with GNSS [1]

	Real-time [1]	Post-process [1]
X,Y Position [CEP]	0.010 m	0.010 m
Altitude [RMS]	0.012 m	0.012 m
Velocity [RMS]	0.050 km/h	0.050 km/h
Roll & Pitch [1σ]	0.020°	0.020°
True Heading [1σ] [2]	0.050°	0.050°

Performance specification without GNSS after 60 s [RMS]

	Real-time [1]	Post-process [1]
X,Y Position [RMS]	1.50 m	0.50 m
Altitude [RMS]	0.60 m	0.30 m
Velocity [RMS]	0.10 m/s	0.07 m/s
Roll & Pitch [1σ]	0.04°	0.03°
True Heading [1σ] [2]	0.20°	0.10°

Physical characteristics

Dimensions	53.6 x 50.6 x 9.5 mm
Mass	20 g
Input voltage	5 - 60 V dc
Power consumption	4 W
Internal storage	32 GB
Onboard data-logging rate	8 MB/s

Interfaces

Ethernet	10/100 Base-T [x1]
Serial	1 x RS232 1 x TTL
Digital I/O	Quadrature wheelspeed input PPS input/output Trigger input/output [x4]

Environmental characteristics

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

[1] With differential corrections and DMI input

[2] With two-meter antenna separation

[3] At 50 km/h

Oxford Technical Solutions Ltd
www.oxts.com

T: +44 1869 814253
E: sales@oxts.com