



Pozyx 2GAD

Enhanced data accuracy in a GNSS-denied space

OxTS' Pozyx 2GAD solution enables Pozyx ultra-wideband (UWB) to aid your OxTS INS in an area where GNSS is not available.

2GAD technology, from OxTS, fuses aiding data from Pozyx UWB with OxTS inertial measurements for a more robust navigation solution than either system could achieve in isolation.

Applications:

- / Automated Valet Parking (AVP) testing
- / GNSS-denied robot navigation



No GNSS? No problem

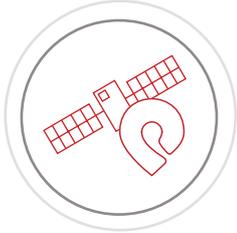
With OxTS' Pozyx 2GAD (to Generic Aiding Data), you can enhance the data accuracy you achieve in your multi-storey car park, tunnel, underpass or other GNSS-denied space. The solution enables real-time position updates, provided by a Pozyx ultra-wideband system, to be fused with your OxTS INS inertial measurements for improved navigation performance in the absence of GNSS signals.



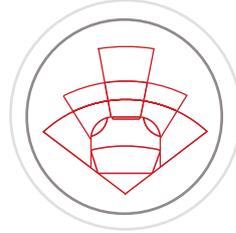
Enhanced accuracy
of position, orientation
and dynamics data in the
absence of GNSS-aiding



Approved robot integration
compatible with industry-standard
products including AB Dynamics
Launchpad 80 and GST



GNSS-Pozyx transitions
enables test routes into and
out of GNSS-denied areas



Compatibility with RT-Range
enables relative measurements
to up to four targets



Different inputs, same outputs
delivered at high data rate
(100 Hz or 250 Hz), with low
latency, as with GNSS-aiding



Uses OxTS' 2GAD technology
to fuse Pozyx data with inertial
measurements in the trusted
OxTS navigation engine

Case study: HORIBA MIRA ASSURED CAV Parking

Solution specification

Position accuracy (CEP)	0.035 m
Heading accuracy (RMS)	0.3°
Velocity accuracy (1 σ)	0.3 km/h
Pitch/roll accuracy (1 σ)	0.04°
UWB positioning technique	Time Difference of Arrival (TDOA)
Integration with AB Dynamics	Yes



**“OxTS delivered the robustness that
our clients expect from HORIBA MIRA’s
ASSURED CAV Parking”**

Ashley Patton, Chief Engineer, HORIBA MIRA



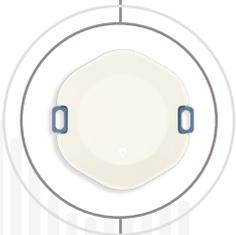
The components:

There are four main components that enable the Pozyx 2GAD solution: Pozyx anchors, Pozyx tags, Pozyx Gateway and an OxTS inertial navigation system (INS) with Pozyx 2GAD option.



Pozyx anchors

- / Anchors are a series of modules dispersed around the testing area.
- / Each anchor has a fixed, known position having been (semi-)permanently installed around the test area with their coordinates accurately surveyed.
- / A minimum of four anchors are needed to trilaterate position.



Pozyx industrial tags

- / Situated on the exterior of the vehicle.
- / Pozyx tags continuously transmit short pulses to the anchors.
- / The relative position of the tags to anchors, and the time-of-flight for each pulse, changes as the vehicle travels its route.
- / The time-of-flight measurements to each anchor are used to calculate the position of the tags within the space.



Pozyx gateway

- / Combines and processes information from each of the Pozyx Anchors and Tags to deliver a real-time position updates.
- / These real-time updates are then passed to the OxTS inertial navigation system to aid the navigation solution.



OxTS INS with Pozyx 2GAD option

- / Situated within the vehicle.
- / Receives aiding data from the Pozyx Gateway via OxTS' proprietary Generic Aiding interface which facilitates the use of different sensors (such as Pozyx UWB) within the navigation solution.
- / The OxTS INS fuses Pozyx position updates with inertial measurements to produce a single position solution with greater accuracy than either system could achieve in isolation.
- / The INS output is unchanged from that produced with GNSS-aiding; delivered at a high data rate (100 Hz or 250 Hz), with low latency, ensuring existing integrations with AB Dynamics robots work as usual.
- / Compatible OxTS INS devices including RT3000 v3 and RT1003 v2.

Performance^{1 2 3 4 5}

Position accuracy (CEP)	3.5 cm
Velocity accuracy (RMS)	0.3 km/h
Roll/pitch accuracy (1 σ)	0.04°
Heading accuracy (1 σ)	0.3°

Pozyx Industrial Anchor

Dimensions	229 x 110 x 59 mm
Mass	274 g
Input voltage	POE/POE+ or DC 6 - 53 V
Power consumption	4.5 W
Environmental protection	IP66/67
Operating conditions	-25 °C to +45 °C + solar load
Storage conditions	-40 °C to +70 °C

Additional equipment required

GNSS repeater
NTP server
POE switch
Power source/ battery
Ethernet cabling

Pozyx Gateway

Dimensions	210 x 125 x 77 mm
Mass	1.9 kg
Input voltage	9 - 36 V
Storage conditions	--20 °C to +70 °C

Pozyx Industrial Tag

Dimensions	66 x 65.3 x 17 mm
Mass	39 g
Power consumption ⁶	1.575 mW
Estimated lifetime (activated) ⁶	79 days
Battery type	CR2477
Environmental protection	IP66/67

¹ Accuracy of the OxTS INS is in reference to the Pozyx UWB system. Offset and bias introduced by the Pozyx UWB system cannot be measured by the INS.

² Results were recorded in a Pozyx UWB environment area that had the positioning algorithm optimised by Pozyx, with an estimated anchor density of 10 anchors per 500 m².

³ Valid with RT3000 v3.

⁴ Valid for flat surface.

⁵ Varies with dynamics.

⁶ Based on measurements at 20 °C with update rate of 20 Hz.



Oxford Technical Solutions Ltd
United Kingdom

sales@oxts.com

Setting the standard
in automotive testing
www.oxts.com