DATASHEET

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.

The OxTS 2GAD technology combines data from Pozyx UWB and OxTS inertial measurements to create a navigation solution that surpasses the capabilities of each system when used independently, resulting in a more robust navigation solution.

Applications:

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

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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.

2GAD

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 - relative accuracy (CEP)	0.035 m
Heading - relative accuracy (RMS)	0.3°
Velocity - relative accuracy (1σ)	0.3 km/h
Pitch/roll - relative accuracy (1σ)	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 Executive 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 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 v4 and RT1003 v2.

DATASHEET

Specification

PERFORMANCE[1,2,3,4,5,6]

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

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

POZYZ 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

POZYX INDUSTRIAL TAG

Dimensions	66 × 65.3 × 17 mm
Mass	39 g
Power consumption[7]	1.575 mW
Estimated lifetime (activated)[7]	79 days
Battery type	CR2477
Environmental protection	IP66/67

ADDITIONAL EQUIPMENT REQUIRED

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

[1] 1, All UWB system performance is dependant on local environmental factors such as geometry and reflections. System performance will vary depending on the local environment it is being used in.
[2] Relative 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.
[3] 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 m^2.
[4] Valid with RT3000 v3.
[5] Valid for flat surface.
[6] Varies with dynamics.
[7] Based on measurements at 20 °C with an update rate of 20 Hz.

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