AMFITRACK™ Gen3

Wireless electromagnetic 6DOF tracking system

H3

RX3

TX3

High precision

AMFITRACK™ is an embedded stand-alone, low cost yet high precision electromagnetic tracking system suitable for use in many applications.

The System

The AMFITRACK™ system consists of an EMF source (transmitter) and one or more wireless EMF sensors (receivers). The sensors measure the electromagnetic field generated by the source, and calculates its position and orientation relative to the EMF source, which is then transmitted wirelessly or by USB.

Free SDK

All system purchases includes well documented SDK's and the AMFITRACK™ Viewer application which can be used for 3D visualization together with system monitoring and configuration.
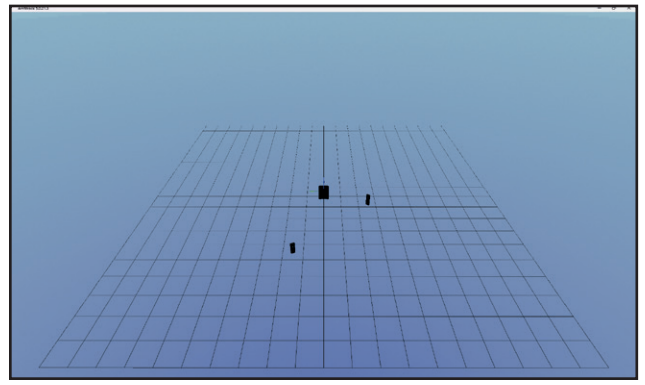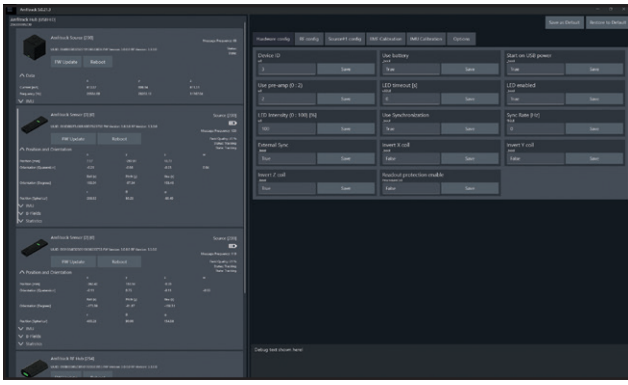
Key Features

- No Line-of-Sight occlusions and no drift
- Full Six-Degrees-of-Freedom (6DOF) tracking
- Wireless, rechargeable, small form factor sensors
- Sensor Tracking Autostart
- Multiple sensor tracking
- Embedded tracking algorithms (no post-processing needed)
- Highly configurable
- USB data output (Source / Sensor / Hub)
- IMU and magnetometer onboard
- EMF / IMU sensor fusion included
- Free Windows 3D visualization and configuration software
- Free SDK's including Python Library
- Compatible with Unity / SteamVR / Unreal Engine

Development Kits Available

AMFITRACK

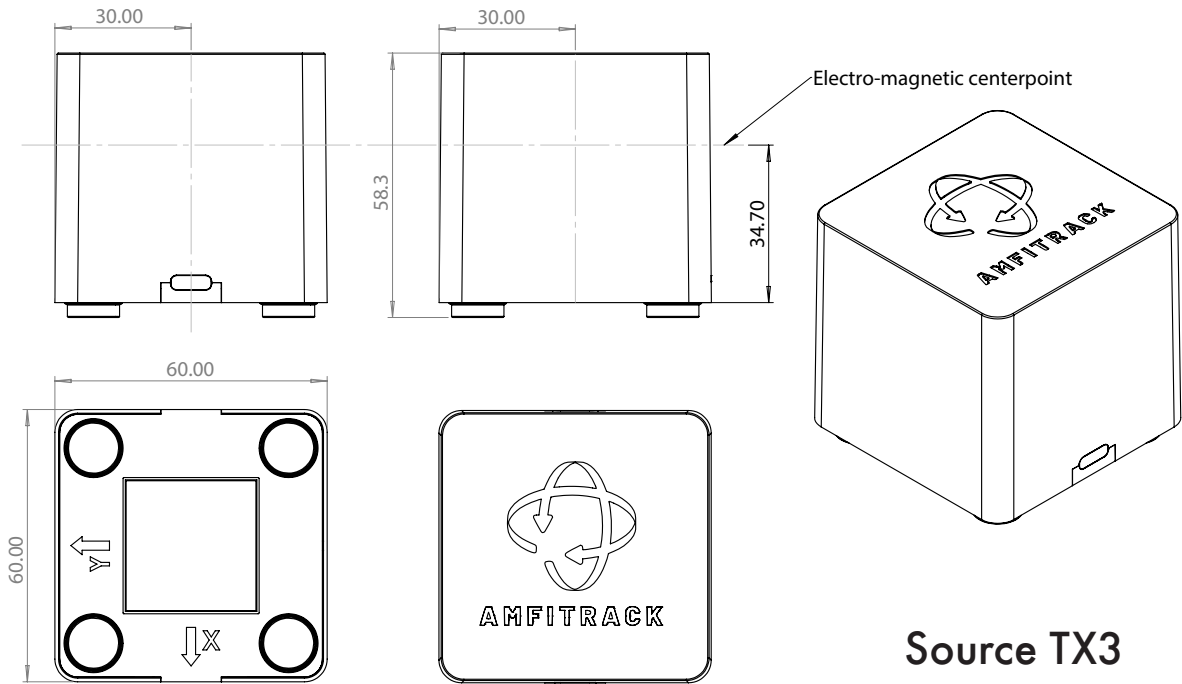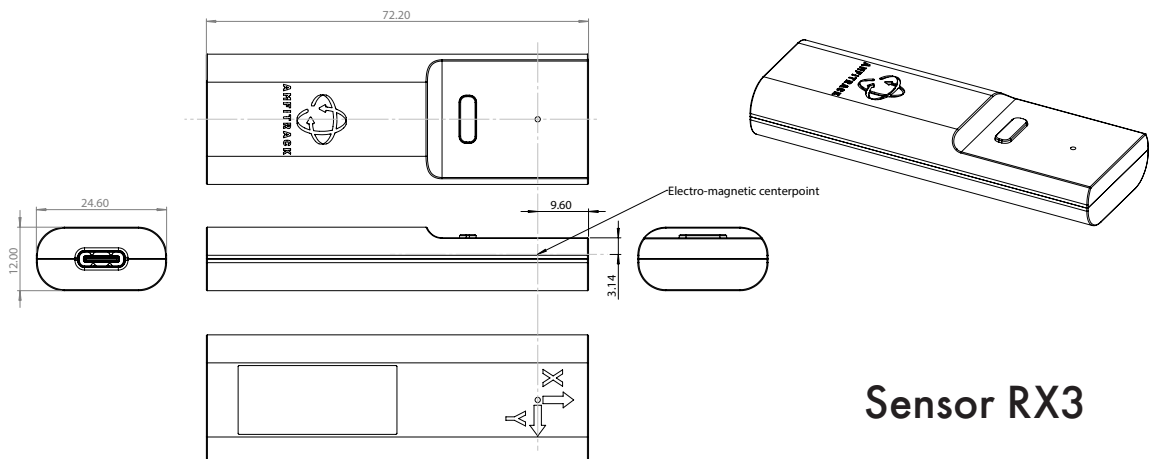*Free Windows 3D visualization and configuration software*

Free SDK's

Compatible with

Unity®

STEAMVR™

UNREAL ENGINE

30.00

30.00

Electro-magnetic centerpoint

58.3

34.70

60.00

60.00

Y

X

Source TX3

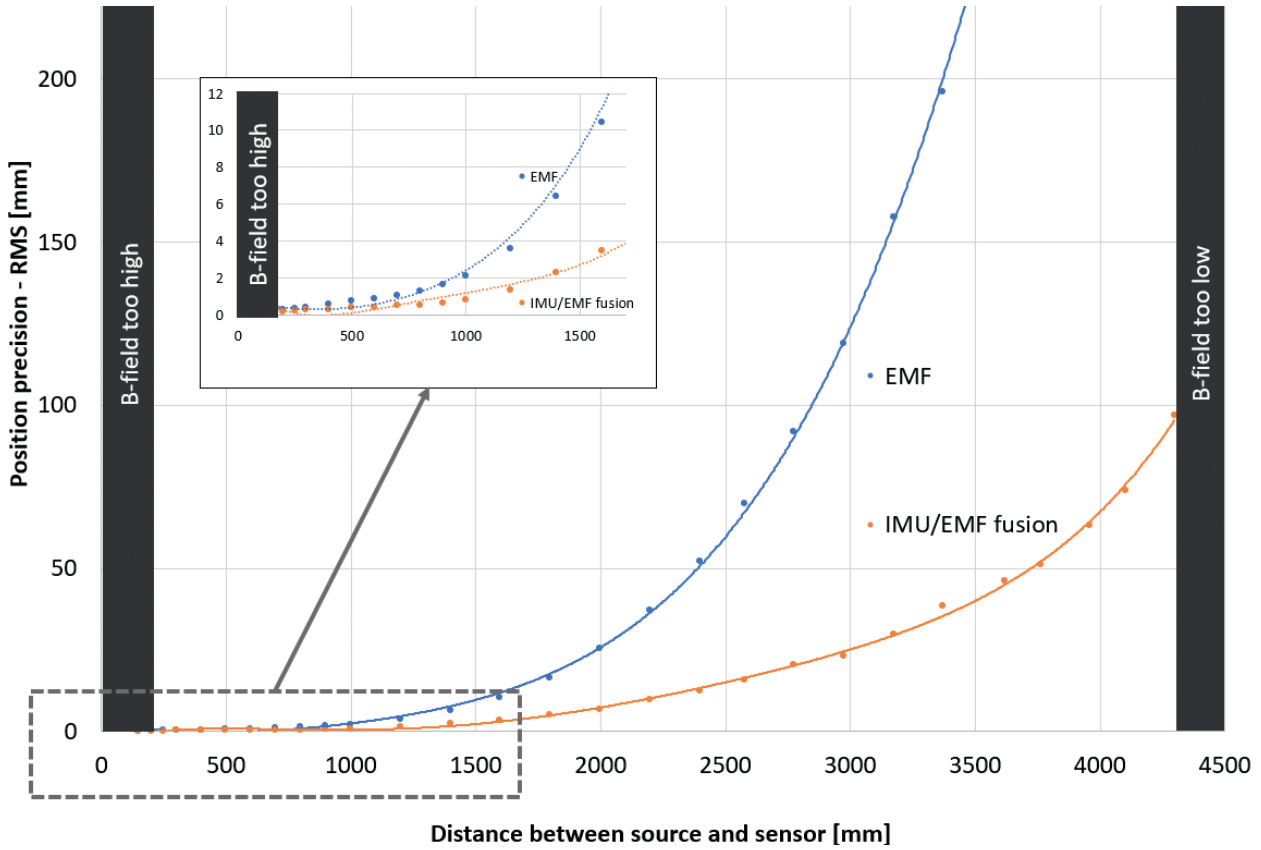72.20

Electro-magnetic centerpoint

24.60

12.00

9.60

3.14

Sensor RX3

Position precision vs distance

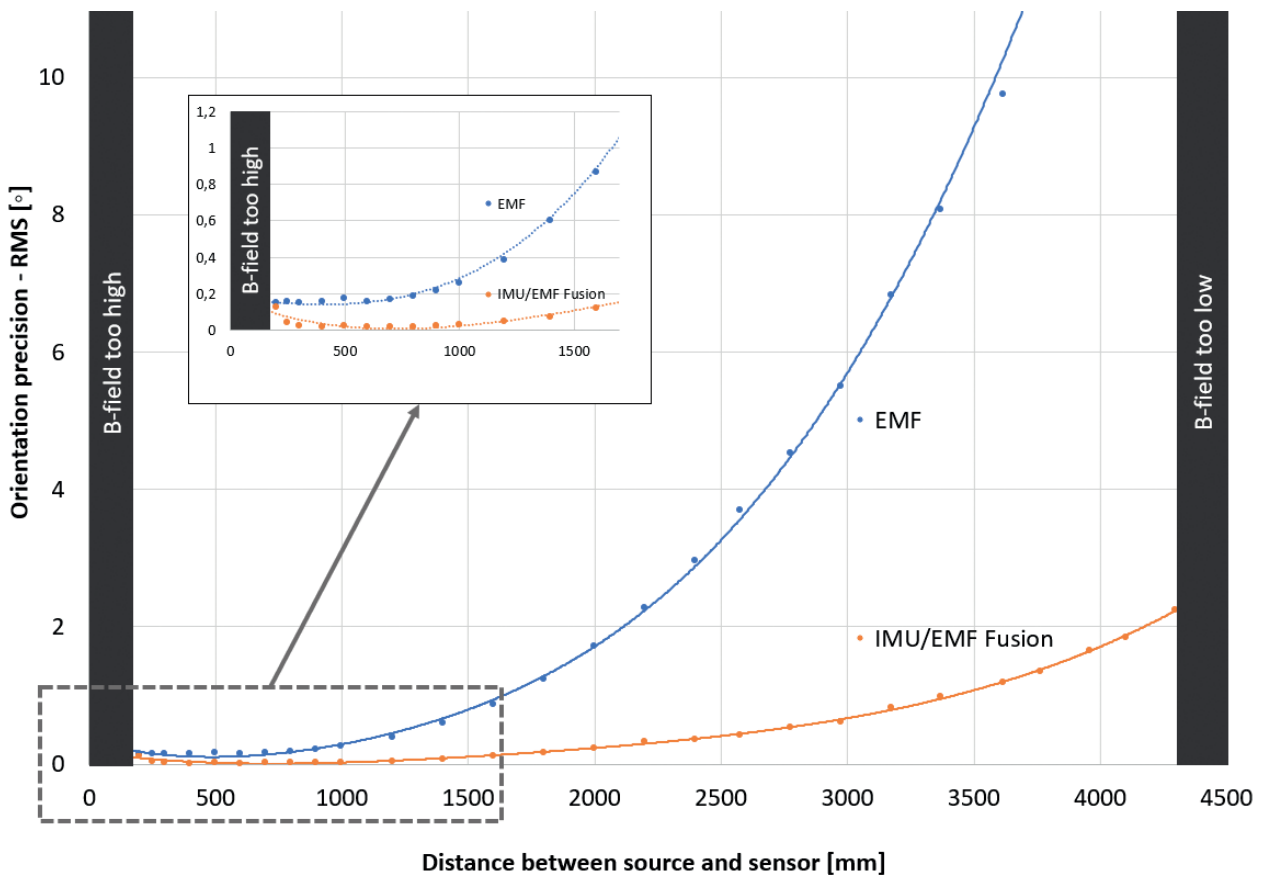### Sensor RX3 @ 120Hz / Source TX3-28 @ 2W

Orientation precision vs distance

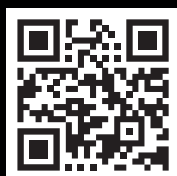### Sensor RX3 @ 120Hz / Source TX3-28 @ 2W

TRACKING RANGE	50-3500mm
NUMBER OF SENSORS	Number of sensors per source: Unlimited Number of sensors per RF Hub / Source Hub - 6 sensors @120Hz update rate - 3 sensors @240Hz update rate
UPDATE RATE	25Hz to 250Hz per sensor
INTERFACE	Source / Sensor / Hub: USB 2.0 (high speed) Data output: 6DOF via USB Position: XYZ Orientation: Quaternions and Euler angles
LATENCY	< 27ms @60Hz update rate < 15ms @120Hz update rate < 10ms @240Hz update rate (Measured from sensor movement to USB data ready) < 22ms @120Hz update rate (Measured from sensor movement to Windows SDK data ready)
INERTIAL MEASUREMENT UNIT (IMU)	Source / Sensor: IMU onboard. IMU data available in USB data packets
MAGNETOMETER	Source / Sensor: Magnetometer onboard. Magnetometer data available in USB data packets
EMF / IMU SENSOR FUSION	Software configurable EMF / IMU sensor fusion available
STATIC PRECISION	EMF / IMU Fusion ENABLED: Precision @1 meter between source and sensor (See graphs): Position: 0.9mm RMS Orientation: 0.15° RMS EMF / IMU Fusion DISABLED: Precision @1 meter between source and sensor (See graphs): Position: 2.1mm RMS Orientation: 0.27° RMS *(Note: Performance dependent on range, configuration and tracking environment)*
STATIC ACCURACY	Accuracy @1 meter between source and sensor: Position: 2.5mm RMS Orientation: 0.75° RMS *(Note: Performance dependent on range, configuration and tracking environment)*
SENSOR BATTERY	Type: Lithium Polymer (250mAh) Battery lifetime: 3 hours (from fully charged) Battery charge time: 1 hour 15 mins (from fully discharged)
SENSOR GPIO	1 x 12 bit analogue input available. 4x digital input available
SYNCHRONIZATION	External synchronization input available
SENSOR RANGE SELECTION	Software switchable Preamp for short / long range tracking Auto Pre-amp switching for short / long range tracking available
EM FIELD QUALITY INDICATOR	EM field quality index available in the USB data packets (8-bit value)
SOURCE EMF FREQUENCY SWITCHING	OPTIONAL: Software switchable EMF source frequencies for more EMF sources in the same tracking area
STATIC METAL CALIBRATION	OPTIONAL: Custom Calibration to compensate for static metal parts
TIMESTAMP	Data packet FrameID is incremented for every EMF sample
2.4GHZ RF CHANNEL SELECT	Software selectable. Less busy RF channel scanner feature available
OPERATING TEMPERATURE	10°C to 40°C at a relative humidity of 10% to 95%, noncondensing
DIMENSIONS	Source: 59 x 59 x 55 [mm w x d x h] Sensor: 24 x 72 x 12 [mm w x d x h] Hub: 24 x 41 x 12 [mm w x d x h]
WEIGHT	Source: 202 grams Sensor: 20 grams Hub: 8 grams
POWER REQUIREMENTS	Source: 5VDC (USB-C), 500mA (2.5W) Sensor: 5VDC (USB-C), 270mA (1.35W when charging)
SOFTWARE TOOLS	USB HID (Human Interface Device) - no Windows drivers needed AMFITRACK™ Viewer (Microsoft Windows application) for 3D visualization and system monitoring /configuration SDK's (C# / C / C++ / Python libraries) Unity demo project / Unreal engine plugin / Support for SteamVR
REGULATORY	FCC Part 15, class B FCC Part 15 Subpart C and Canada RSS-247 CE compliance: EN301-489-3 and EN61000-6-2 Japan TELEC: 201-190140 Australia RCM: Certified

MADE IN DENMARK