Sixdof Space
ULTRA FAST OPTICAL TRACKING

SDS661-D Optical Drone Landing System

HIGHLIGHTS

- **High-Resolution Drift-Free Optical Tracking**
- **Fully independent of GPS**
- **Operates under conditions of total darkness to full sunlight, able to tolerate high winds and adverse weather conditions**
- **Full 6DOF Pose (position and orientation) to 8 meters with cm level accuracy**
- **Target heading up to 100 meters**
- **Simple SDK available**
- **Simple Installation and Maintenance**
- **High Speed (updates every 2.5 ms)**
- **For use on Windows and Linux Systems**

DESCRIPTION

SDS661-D is a high-speed positioning system providing full 6DOF tracking designed to facilitate autonomous drone approach and landing in any environment. The system includes:

- SDS661 Optical Tracker with integrated IMU and Ethernet UDP data communication

- Sensor board incorporating three "Carnea" patented toroidal optic sensor modules with an infra-red optimized housing and carbon fiber mounting plate

- Comprehensive software package includes tracking algorithms, host processing SDK, demonstration software and visualization tools

- Set of low-powered coded IR Beacons and controller board for short-range (up to 8 meter) tracking

- Optional high-powered coded IR Beacon and controller board for long-range (up to 100 meters in direct sunlight) approach

BENEFITS

- Precision low-latency angular and 6DOF tracking
- Low computational requirements (no DSP/GPU)
- Continuous optical lock during high-rate movement
- Clearly defined API enables a range of use cases
- Software includes system integration examples

PERFORMANCE

Absolute Angular Accuracy	$<0.5^\circ$ over 120° FoV
Absolute Positional Accuracy:	As low as 1cm[1]
Field-of-view	120° x 120°
Operating light levels	0 – 100,000 lux
Interface	Ethernet (UDP)
Power supply (sensor)	5V, 250mA
Power supply (beacons)	12-24V, 2A
Operating temperature	0°C to 50°C
Raw measurement frequency	Over 10,000 FPS
Capture latency	<2ms
Host processor requirement	1 x 2GHz core

[1] Dependent on distance and beacon baseline.

Positional Accuracy - 50cm Target
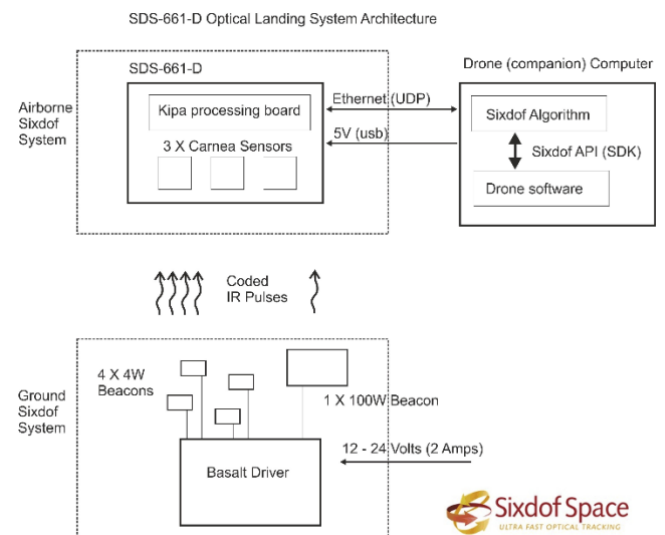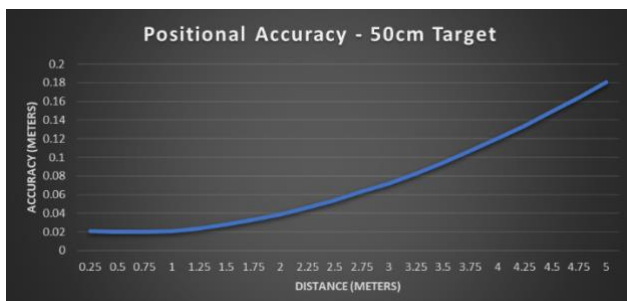
SDS-661 bare module including "Kipa" Sensor Board, Carbon Fiber Plate and three "Carnea" Sensors
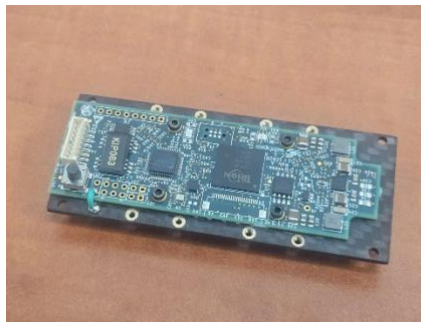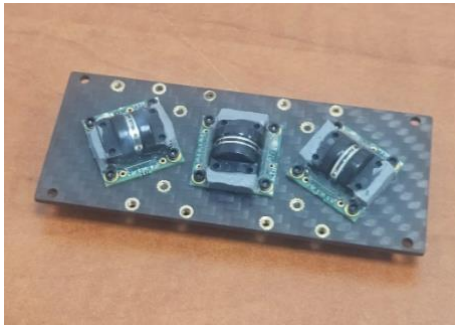
Size (mm):	92 x 38 x 18
Weight:	30 g
Power:	5V, 250mA

Molex 8pin Pico-SPOX

Sensor Housing with IR window

Size (mm):	98 x 44 x 20
Weight:	25 g

"Basalt-D" Driver Board

Size(mm):	55 x 50 x 10
Weight:	22 g
Power:	12-24V, 1A

Drives up to 6 beacons

"Basalt" Driver board Housing
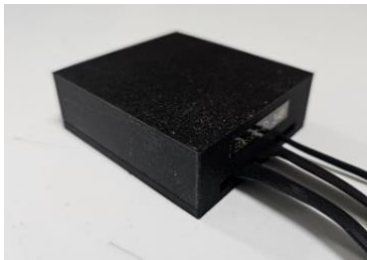
Size(mm):	70 x 56 x 24
Weight:	14g

Low powered 850nm Bare IR LED beacons

Size:	8mm (round)
Weight:	<1 g each
Range (m):	Up to 8

Connects to Basalt driver board via 2pin pico-clasp

High powered 850nm IR LED module with high current driver

Size(mm):	20 x 80 x 30
Weight:	230 g
Power:	24V, 3A
Range (m):	Up to 25
FOV:	120 degrees

Connects to Basalt driver board

Long Range VCSEL based IR Laser module with driver

Size(mm):	160 x 105 x 30
Weight:	430 g
Power:	24V, 5A
Range (m):	Up to 100
FOV:	23 degrees

Integrated Basalt driver board

IR Beacon in housing

Size(mm):	25 x 20 x 6
Weight:	5 g

With 1-meter cable

SDS-661 Interface Board
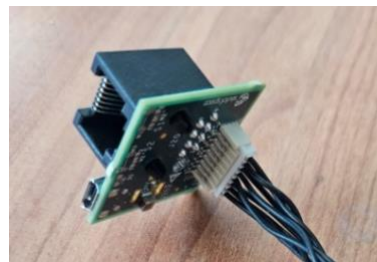
Size(mm):	30 x 27 x 20
Weight:	6 g
Ethernet:	RJ45,
Power:	USB uB

Molex 8pin Pico-SPOX connector, 10 cm cable