Mobile Survey System IP-S2

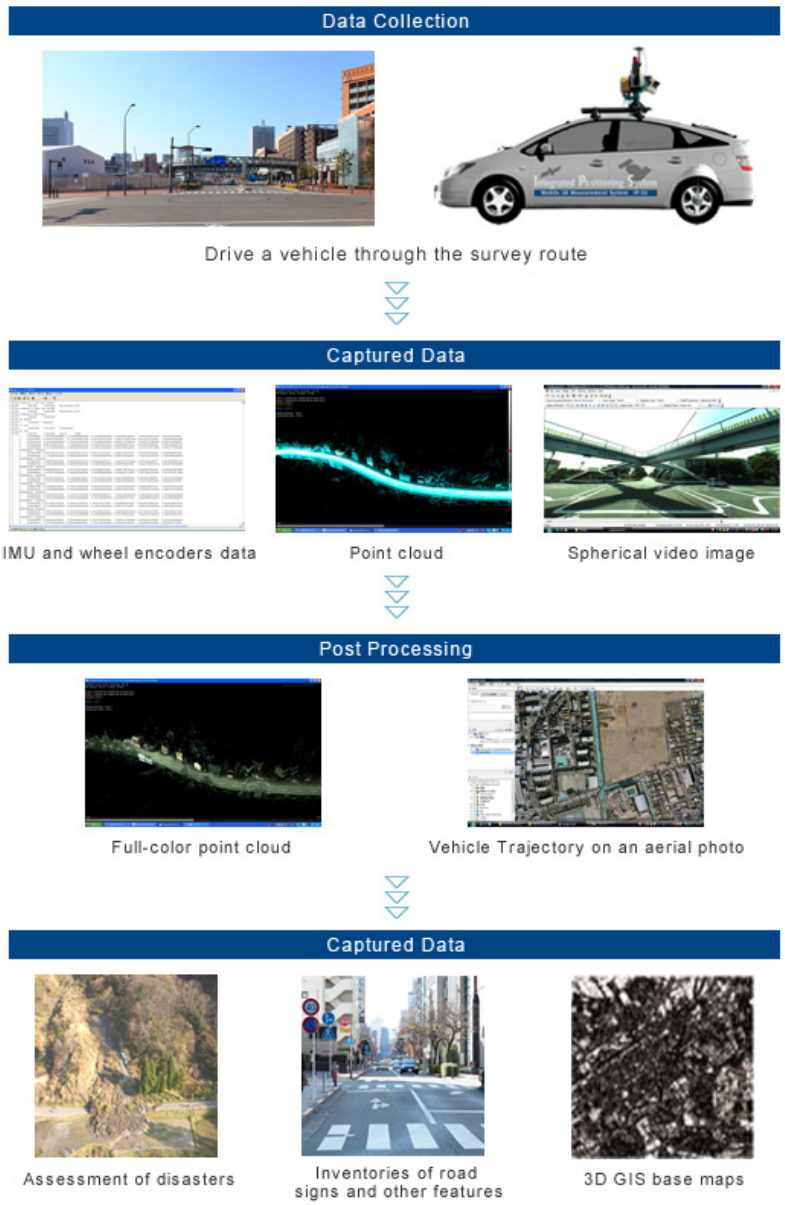
IP-S2
Mobile Survey System

- Captures Geo-referenced, Time-stamped Point Clouds and Video Imagery
- High-precision Dual-frequency GNSS Tracking
- IMU-assisted Continuous Navigation
- 3D Profile Scanning of Roadside Features
- 360° Camera for Spherical Image Capture
- Quick and Easy Setting-up

Mobile Survey System

Innovation of 3D data collection technology is one of the key drivers for GIS business growth and expansion.
Topcon IP-S2 Mobile Survey System provides fast, cost effective, accurate, and comprehensive spatial data collection solution for GIS and digital mapping applications.
Incorporating around-the-corner sensing technologies, the IP-S2 system acquires complete dataset while driving a vehicle.

Drive and Scan the Roadside Features, Acquire Complete Dataset



IP-S2 BOX

The IP-S2 Box determines precise vehicle position and attitude on real-time basis using multiple sensors. Integrated dual-frequency GNSS receiver tracks both GPS and GLONASS signals expanding operation area, particularly in urban canyons. Built-in IMU constantly monitors vehicle motion and attitude, allowing the IP-S2 system to track the vehicle position even when driving near obstructions or through tunnels where satellite signals can be blocked.

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Vehicle Wheel Encoders

Vehicle wheel encoders further enhance positioning accuracy and reliability. Retrofitted to rear wheel axles, the encoder detects rotation of each wheel. Vehicle attitude can be computed even more accurately by comparing difference in rotation speeds between two wheels.

Laser Scanners (optional)

Three 2D laser scanners capture high-resolution 3D point clouds of roadside features day and night, regardless of lighting conditions. The IP-S2 system integrates captured point clouds with precise geographical locations as well as GPS time allowing for detailed analysis such as time-dependent changes of profile, geometry and location.

360° Digital Camera (optional)

The 360° digital camera continuously captures spherical video imagery. A combination with point clouds significantly enhances 3D data analysis.

Integrated Cube System for Quick, Easy Setting-up

The IP-S2 employs a cube mounting system that integrates all the sensors into a single block, allowing for quick and easy mounting on and dismounting from a vehicles without the need for time-consuming calibrations.
A hard carrying case contains the whole cube system providing maximum protection for transportation.

Laptop PC Controls Everything

The highly integrated system configuration, requires only one laptop PC in the car. Everything from data capture to processing, and to analysis can be carried out with the same PC on site.

IP-S2 Dashboard - Data Collection Software

User-friendly Operation
The IP-S2 Dashboard operates on a PC web browser. This software allows the users to easily control and configure the IP-S2 BOX with all connected sensors via an Ethernet cable. It also controls field data capture, storage and display.

Geoclean - Post Processing Software

GNSS Post Processing
The Geoclean determines the vehicle positions by means of continuous kinematic processing using vehicle mounted GNSS receiver and fixed base station data.

Hybrid Analysis for Vehicle Attitude and Location
IMU data and wheel encoder information make an accurate computation of a vehicle attitude possible. By integrating GNSS data, the Geoclean determines a vehicle attitude correlated to accurate geographical locations.

Combining Video Images and Point Clouds
The Geoclean precisely combines video imagery and scanned data, allowing for generating full-color point clouds.

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Coordinate System Conversion

The Geoclean converts the WGS84, a GPS based coordinates, into local coordinate systems applicable to GIS and CAD software.

IP-S2 Specifications

IP-S2 BOX	
Integrated GNSS Receiver	
Number of Channels	40 channels
	GPS L1/L2 carrier, L1CA, L1P, L2P
	GLONASS L1/L2 carrier, L1CA, L1P, L2P
Data Update/Output Rate	10Hz
Static Positioning Accuracy	H ±3.0mm + 0.5ppm
	V ±5.0mm + 0.5ppm
Kinematic Positioning Accuracy	H ±10mm + 1ppm
	V ±15mm + 1ppm
Integrated IMU	
Type	MEMS gyroscope
Gyro Bias	25°/h
Acceleration Bias	8.0mG
General	
Data Update/Output Rate	100Hz
Input Voltage	9 to 28V DC
Keyboard	FN1, FN2, Power
LED	Power, GNSS, Status
I/O ports	USB, Ethernet, Scanners, 360° Camera,Wheel Encoders, GNSS Antenna
Operating Temperature	-30 to +60°C
Dust/Water Protection	IP66
Dimensions	200 x 230 x 110mm (excluding protrusions)
Weight	3.64kg
Sensors	
Wheel Encoders	
Pulse Rate	2,500 PPR
Dust/Water protection	IP67
Laser Scanners	
Typical Measurement Accuracy	±35mm
Data Update/Output Rate	75Hz
Typical Range	30m
Laser Class	Class 1
360° Digital Camera	
Configuration	6 CCD image sensors
Resolution	1600(H) x 1200(V) pixels
Operating Temperature	0 to +45°C

Recommended PC Specifications	
OS	Windows XP SP2 or later (32bit)
CPU	Intel CoreDuro 1.4GHz or higher
RAM	2GB or larger
Graphics Card	Graphics Card with an independent Graphic Chip 256MB or larger video memory
Port	e-SATA x1, USB x 2