

Specifications for an Integrated vehicle-traffic data collection system

Description

This will be a synchronized system to collect multi-sensor vehicle-traffic data. The system will include an IMU (with high fidelity GPS, accelerometer, and gyroscope), LIDAR, CAN reader, a 4-channel video camera system, and a data logger. The specifications are detailed below.

IMU System

Velocity accuracy (RMS): 0.1 km/h

Roll/pitch: 0.05°

Heading (2 m antenna baseline): 0.1°

GPS: (Position accuracy (CEP) of 1.6 m SPS / 0.6 m SBAS / 0.4 m DGPS / 0.02 m RIK, Position drift after 60 s GNSS outage* (RMS) of 0.95 m)

Accelerometer (Bias stability of 0.02 mg, Linearity (+1 g range) of 0.05 %, Scale factor of 0.01%, Range of 30g)

Gyroscope (Bias stability of 3° /hr, Linearity (+200° range) of 0.05 %, Scale factor of 0.05%, Range of 300°, Slip Angle (at 50km/hr) of 0.25°, Update Rate of 100 Hz (200/250 Hz optional), Calculation Latency of 215 microseconds with 250 microseconds jitter)

Lidar System

Range: 100 m

Field-of-View (Horizontal): 360°

Field-of-View (Vertical): 30°

Accuracy - +/- 5 cm

Channels: Minimum of 16

Software for visualization and data collection

4-Channel Video Camera System

HD Camera System with 4 hour storage

inside and outside mounting arrangement

Synchronized Video Display system

5Ahr Lithium-Ion Battery Pack and Charger

Remote start/stop

CAN Reader

Data transfer rate of at least 1 Mbit/s

Data Logger

An in-vehicle data logger to which all sensors would be interfaced to provide synchronized data.

Terms and Conditions

The cost of the IMU system, LIDAR, CAN Reader, 4-channel video system, integration of individual sensors, and annual maintenance shall be indicated separately. The quote should be valid for all or a subset of sensors. Annual maintenance charges will be paid quarterly upon addressing all the pending requests.

Any specific vehicle requirements expected should be mentioned clearly in the technical bid.

The vendor would be responsible for identifying the required hardware and software that are compatible with each other. The brand and model of the sensors identified by the vendor may be procured by IIT Madras to avail lower import duties/taxes.

Installation: The vendor should provide accessories for installing the sensors and the integrated data logger on-board a vehicle. The vendor will also demonstrate installation of a fully functional integrated system and provide on-site training for installation and operation.

Warranty: The vendor will provide warranty on all components for three years from the date of completion of commissioning/installation.

Maintenance: The vendor will provide annual maintenance, and updates for all software components for three years from the date of completion of commissioning/installation. The maintenance activities should be completed within 1 week from the date of request.