

# TRIMBLE AX80 AIRBORNE LIDAR SOLUTION

## KEY FEATURES

**Top-of-the range** airborne LIDAR solution

**Versatile** solution for aerial survey, remote sensing, **ultra-wide area and corridor mapping**

Fully integrated, **end-to-end solution** covers pre-flight planning to post-flight processing

Powerful dual channel laser with **800 kHz pulse repetition rate** gives class-leading ground resolution

Maximum operating flight altitude of **4700 m AGL**

Ultra-wide effective swath width allows **efficient data capture** and optimized flight profiles

**Low cost-of-ownership** through proven reliability and high workflow productivity

Revolutionary **oblique laser scanning capability** for vertical surfaces

## OVERVIEW

The Trimble® AX80 is the top-of-the-range, high performance, versatile, and fully integrated airborne LIDAR solution from Trimble, designed to meet most aerial survey requirements. It captures very dense point clouds at high resolution using a powerful dual laser system with a pulse repetition rate (PRR) of 800 kHz. The solution also exploits advanced techniques such as simultaneous multi-pulse processing, echo digitization, and waveform analysis. With its Trimble flight planning and sensor management software, industry leading Riegl LIDAR technology, Trimble GNSS-Inertial system, and Trimble Inpho processing software, the AX80 has been designed as an end-to-end solution to deliver unparalleled performance, operational flexibility and efficiency, and in-service reliability. At the same time, however, it offers a low cost-of-ownership for aerial survey companies while long-term lifecycle support is provided by Trimble's global organization.

## APPLICATIONS

The Trimble AX80 can be used for the majority of survey projects from ultra wide area mapping at 15,000 feet to low-level corridor mapping, and remote sensing. The solution is designed to capture and process dense point clouds for end-user requirements in the majority of LIDAR application areas. Applications typically include agriculture and forestry management; mining, oil and gas exploration; complex city and urban mapping; power line and pipeline surveys and monitoring; and snowfield and glacier mapping. The airborne sensor suite can be installed on both fixed- and rotary-wing aircraft.

## BENEFITS

The solution offers an extensive range of benefits that will help aerial survey companies deliver a high quality service to customers at the same time as lowering cost and risk. These benefits include:

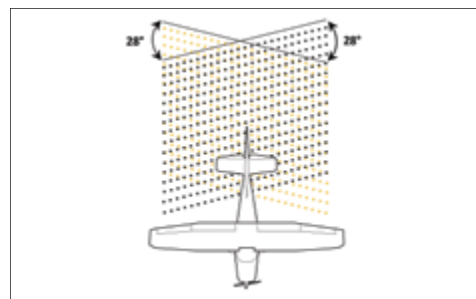
### End-to-end process

Designed from the outset as a seamless solution, the Trimble AX80 is supplied with a comprehensive suite of Trimble software tools to enable operators to rapidly plan missions, capture high quality data, and carry out the detailed analysis required. These tools cover the

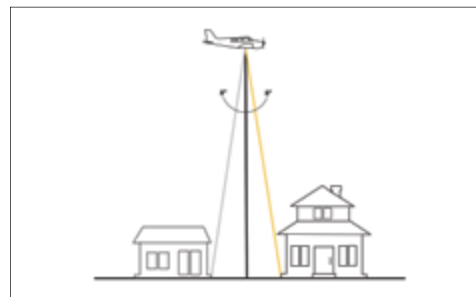
entire end-to-end process and include flight profile planning, sensor(s) and data recorder configuration, in-flight sensor management, in-flight monitoring, post flight analysis, and information extraction and presentation. The proven workflows offer high productivity to further reduce the cost-of-ownership.

### Excellent performance

The AX80 integrates two powerful long-range lasers tilted at 28° with respect to each other operating at a total PRR of 800 kHz with a maximum scan frequency of 400 Hz. Beam deflection is achieved through a rotating polygon mirror instead of the more common oscillating mirror, resulting in two sets of parallel scan lines on the ground with uniform point spacing and high accuracy within a 60 degree field-of-view. With the capability of simultaneously processing up to 10 pulses in the air, the AX80 is ideal for surveying complex terrain.



The AX80 offers a unique oblique laser scanning capability which allows scanning of vertical surfaces.



### Operational flexibility

The AX80 offers significant operational flexibility to allow missions to be completed faster, and at lower cost and risk. Survey companies can exploit the performance advantage in a number of ways. For instance, to achieve a given resolution on the ground, flight profiles can be planned more efficiently. This is because the need for track overlap is significantly reduced meaning less time in the air, and missions can be flown at higher altitudes and at economic ground speeds, also enhancing productivity.



# TRIMBLE AX80 AIRBORNE LIDAR AND IMAGING SOLUTION

## SYSTEM

Temperature	
Operation	0° C to +40° C (32° F to 104° F)
Storage	-10° C to +50° C (14° F to 122° F)
Humidity	0% to 85% non-condensing
Power consumption	<25A @ 28 V (UPS included)
Weight	100 kg (220 lb) approx

## SENSOR HEAD

Laser classification	Class 3B
Laser wavelength	Near infrared
Laser Pulse Repetition Rate	200 kHz–800 kHz
Scanning mechanism	Rotating polygon mirror
Scan pattern	Parallel scan lines
Scan frequency (max.)	400 Hz
Scan width (FOV)	0–60°
Operating flight altitude	50 m–4700 m (164 ft–15,500 ft) AGL
Range measurement accuracy <sup>1</sup>	.2 cm
Vertical accuracy <sup>1</sup>	<15 cm (absolute)
Horizontal accuracy <sup>1</sup>	<20 cm (absolute)
Beam divergence	≤0.25 mrad
Range capture	Unlimited echoes (Digitized waveform processing)
Intensity capture	16 bit dynamic range for each echo
Vertical discrimination distance	.0.4 m–0.7 m
Dimensions	690 x 440 x 306 mm

## COMPUTER RACK

Log time	>8 hours
Data storage	removable SSD
Dimensions	400 x 370 x 310 mm

## APPLICATIONS

- Agriculture and forestry management
- Mining, oil and gas exploration
- Complex city and urban mapping
- Power line and pipeline surveys and monitoring
- Snowfield and glacier mapping

## POSITIONING SYSTEM

Trimble AP50 GNSS/IMU (non-ITAR)

## FLIGHT & SENSOR MANAGEMENT

Flight management software	Trimble FMS
Mission planning software	Trimble AMP
Mission control software	Trimble AMC

## DATA PROCESSING SOFTWARE

### Included

Direct georeferencing	Applanix POSPac
LIDAR processing	LPMaster

### Optional

Orthophoto processing (optional)	OrthoMaster OrthoVista
Terrain modelling (optional)	DTMaster DTMExtension

## DIGITAL AERIAL CAMERA (OPTION)

Model	Trimble AC IQ180
Array size	.80 MP
Channels	.Three (RGB)
Forward Motion Compensation	.Fully integrated
Shutter type	.Electronically controlled leaf shutter
Shutter speed	.1 second to 1/1000 second, bulb
Ground Sample Distance <sup>2</sup>	.>5 cm
Image pixel size	.5.2 µm
Calibration	.Geometrical and Radiometrical

<sup>1</sup> The given accuracies have been achieved in test conditions. These accuracies can vary with flight altitude.  
<sup>2</sup> GSD can be smaller if flying lower.



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