Overview of the Trimble TX5 Laser Scanner
Trimble TX5

Revolutionary and versatile scanning solution

- Compact / Lightweight
- Efficient
- Economical
- Ease of Use
Small and Compact

Smallest and most compact 3D laser scanner ever built!

Ultraportable design allows for operation without external devices

- Weighs just 5.0kg (11lbs)
- 240mm x 200mm x 100mm (9.5 in x 8 in x 4 in)
- Everything self-contained in small and light transport case

Easy to move and setup in complex environments
Trimble TX5 Key Features

- **Laser Technology**
  - Phase shift
  - 976,000 points per second

- **Integrated color camera**
  - Coaxial optics for accurate RGB’s

- **Range**
  - Up to 120m

- **Accuracy**
  - 2mm standard deviation
Data Capture Workflow

- **Line-of-sight technology**
  - Setup is more like camera than survey instrument
  - Careful planning required before data capture begins

- **Registration options:**
  - Spheres (preferred)
  - Paper targets
  - Common scan points
  - Internal sensors
Integrated Sensors

Integrated **compass and altimeter** in the Trimble TX5 add directional and height information to scans. **Dual axis compensation** adds level information to scans.

- Facilitate auto-registration process
- Differentiate scans from each other
- Reduce number of needed targets

Users have more information available to speed processing and deliverable creation.
Intuitive Touchscreen Display

Control all functions through simple user interface on instrument

- Simple user interface
- Touch control
- No need for external controllers/cables

Intuitive and easy to learn user interface helps get crews up and running quickly
Scanning Workflow

Capture data
- Point clouds
- Images

Process Data
- Registration (optional)
- Analyze and measure features
- Export to CAD/GIS
- Publish to WebShare (optional)

External CAD or GIS Packages
Trimble SCENE Software

- Automatic target detection, registration of clouds
- Generates panoramic images
- Quality control, visual inspection, and navigation functions
- 2D and 3D Measurement tools (heights, widths, circumference, etc.)
SCENE

Measurement Tools

- Measure between two or more scan points or objects
- Measure in panoramic or 3D views
- Option to display overall, horizontal and vertical distances
- Measurements can be located automatically in the future
SCENE

Automatic colorization of scans
SCENE

3D View
SCENE

Capable of making “virtual” 3D Measurements on any feature
SCENE

Capable of making “virtual” 3D Measurements on any feature
Gatewing
X100 UAS
What is a UAS?

- UAS – Unmanned Airborne System
  - UAV – Unmanned Airborne Vehicle

- New emerging technology well suited for the geospatial industry

- Complementary to traditional surveying and photogrammetry technologies

- Gatewing UAS focused on the survey & mapping industry
Benefits

• Aerial imagery solution in your hands
• Survey Hazardous & Hard-to-Reach Areas
• Safe & Easy to use
• Economic / Cost Effective
System Breakdown:

- Lightweight UAS body
- E-box:  
  - IMU
  - GPS
  - CPU
  - radio
- Ricoh 10MP Digital SLR
- Tablet PC Ground Control Station
- User-friendly photogrammetry software package
Two Part Workflow

1 Image acquisition
- Radio Communication
- Ground Control Station
- Raw Images
- Fully Automated Aerial Scan

2 Image processing
- Stretch Out
- Cloud
- Orthophoto
- DSM
Fully Automated Aerial Scanning - Photogrammetry, not LIDAR

- Use standard photogrammetric principle, combined with sensor data from e-box IMU.

- Complex geometry calcs determine XYZ coordinates, from pixels found in common between multiple photos.

- Result is millions of calculated points, forming a cloud/DSM.
X100 specs

- **Mass**: 2.0 kg
- **Cruise speed**: 75 km/h
- **Top speed**: 130 km/h
- **Wind speed**: < 65 km/h
- **Endurance**: 45 min
- **Mapping @ 5 cm**: 1.5 km²
- **Mapping @ 10 cm**: 3 km²
Designed for safety

- Safety critical design < 2 kg
- Shock-absorbing structure
- Electric propulsion
- Low altitude flight (approx. 100m)
- Automated from start to landing
- Pre-programmed mission (not RC)
- Emergency return to base functions, and automatic fail-safes

Seagull = approx. 1.75 kg
Ground Control Station

- Trimble Yuma Rugged ground control station (GCS)
- Integrated radio with 5km range
- Easy to use flight planning software
Gatewing PIX4UAV™

- Highly advanced visualization software
- Turns X100 images into georeferenced orthophotos & DSMs
- Fast
  - hundreds of images within minutes
- Complete Data Set within 5 hours
  - (10 million+ point cloud, plus hi-res ortho)
- Accurate
  - accuracy comparable with LiDAR
Clay Mine Site

Ortho-photo

- 1500 x 1000 m
- 30 min flight
- 900 pictures @ 10 Mp
- 5 cm GSD
Gold mine - DSM
Gold mine - DSM
Thank you

www.cansel.ca

www.gatewing.com