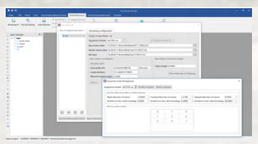
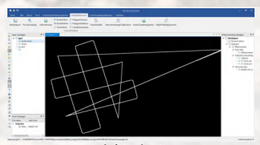
# LiDAR SAL-1500 AcuteLas Series

## Recommended UAV Platform

| | |
|---|---|
| Model Code | Bravo |
| Series | Fly2Map |
| Aircraft Type | hexacopter, with foldable propellers |
| Control Method | vertical take-off & landing |
| Structure | fully integrated, assembly free |
| Diagonal Distance | 1,650 mm |
| Payload Capacity | ⩾10 kg |
| Payload Mode | supports multiple payloads to carry |
| Payload Mounting | toolless assembly, flange connector available |
| Max. Take-off Weight | 21 kg (batteries included, without payload) |
| Power Supply | lithium polymer battery propulsion (6 units as a group, one key to start up) |
| Battery Power | 12,000 mAh, 6S, 26.1 V |
| Battery Charging Time | approx. 1.5 h (@15 A) for each |
| Terrain Awareness/Following | available, local DEM data needed to import |
| Obstacle Sensing | forward ⩾60 m, millimeter-wave radar detection |
| Downward Laser Ranging | ⩾60 m, for precise landing control |
| Max. Service Ceiling | 6,000 m ASL |
| Fail-safe System | 5 functioning motors to support safe landing in case of emergency |
| Cruising Speed | ⩾18 m/s |
| Endurance | 90 min (without payload) |
| Effective Flight Duration | 70 min (with 1 kg payload); 50 min (with 5 kg payload) |
| Response Time | setup＜10 min; packing＜10 min |
| Weather Limit | beaudfort scale 6 |
| Operating Temperature | -20~+50˚C |
| Environmental Humidity | 90% condensing |
| Ingress Protection Rating | IP 45 |
| Running Light | available on board, for better visibility especially when working in the dark |
| Positioning System | dual redundancy design |
| Airborne GNSS Module | GPS/Glonass: L1/L2, Galileo: L1/E5a, Beidou: B1C/B2a |
| GNSS Module Control | USB or Wi-Fi |
| Differential Mode | GNSS RTK/PPK, dual antenna for differential and orientation |
| Data Refresh Rate | ⩾100 Hz |
| Positioning Accuracy | H. ⩽±1cm+1ppm; V. ⩽±2cm+1ppm; |
| Video Transmission | FPV (adjustable), 1,080 P |
| Remote Controller Datalink | Wi-Fi + type C + RD-link |
| Internet Access | via external SIM card |
| Control Frequency | 2.4 - 2.483 Ghz |
| Radio Datalink Range | ⩾15 km (without obstruction and interference) |
| Stick Mode | one key to switch in remote controller |
| Display Terminal | integrated with LED screen, Android OS |
| Payload Setting | available in default flight planning & ground control software |
| Transportation Case Size | 800x800x1000 mm |
| Flight Planning Option | block mapping, corridor mapping, waypoint flight, surround flight, cross flight and other customized routes |


automobile mode setting & control interface


post-process setting


aerial trajectory


point cloud from automobile mode


point cloud from UAV-based mode


color point cloud from aerial mode


SOUTH Target your success

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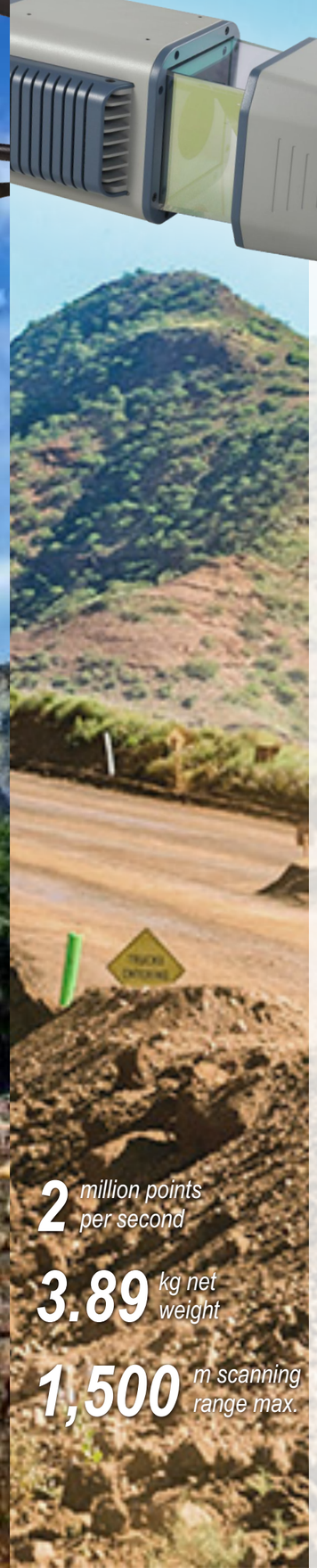


SOUTH Target your success

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**The men are talking about the mission zone of a 970-hectare survey job.**

CLIENT: the vertical height drop there is almost 450 meters...

SURVEYOR: don't worry, our scanning range is up to 1,500 meters.

CLIENT: that forest has a very high vegetational cover like 85%...

SURVEYOR: it's ok, coz' it's more likely for each laser beam to penetrate and reach the ground by 7 echo returns.

CLIENT: as it's an inaccessible area, you may find it difficult to arrange lots of drone take-offs.

SURVEYOR: when an aerial mission can last almost 1 hour instead of a couple of minutes, fewer flights are needed.

CLIENT: oh, really? What's your recommended solution to this job?

SURVEYOR: let's go with AcuteLas SAL-1500, an affordable medium-range LiDAR system.

| | | |
|---|---|---|
| Product Type | mobile LiDAR system | |
| Series | AcuteLas | |
| Application Mode | UAV-based/aircraft-based/SUV-based | |
| Power Consumption | 25 W | |
| Input Voltage | 18-48 V | |
| Temperature Range | operating -20~+40˚C; storage -20~+50˚C | |
| Dimension (LxWxH) | 297x180x120 mm | |
| Net Weight (w/o camera) | 3.89 kg | |
| Ingress Protection Rating | IP 64, dustproof and splash-proof | |
| Device Access | ethernet cable connection or web UI | |
| Device Control | computer interface or remote controller display | |
| Mission Parameters Setting | available in mobile carrier platform (eg. UAV flight planning software) | |
| Internal Memory | 128 GB, expandable upon request (eg. 1 TB) | |
| External Memory | SD card slot available | |
| **Part I: Laser Scanner** | | |
| Sensor Type | lightweight, pulse, survey-grade | |
| Measuring Range (natural targets p 80%) | max. 1500 m | |
| Max. Effective Measurement Rate | 2,000,000 points per second | |
| Accuracy / Precision | 15 mm @150 m / 20 mm | |
| Speed of Data Acquisition | complies with 30-80 km/h | |
| Field of View | 360° full range measurement performance | |
| Laser Product Classification | class 1 Laser Product (according to IEC 60825-1:2014) | |
| Laser Wavelength | 1500 nm | |
| Laser Beam Divergence | 0.3 mrad | |
| Echo Return | max. 7 returns for each emitted laser beam | |
| **Part II: Position & Orientation System (POS)** | | |
| Multi-constellation Tracking | GPS L1/L2, Glonass G1/G2, Beidou B1/B2 | |
| Data Refresh Rate | 600 Hz / 100 Hz | |
| Accelerometer Range | -20 g to +20 g | |
| Angular Input Range | -400°/s to +400°/s | |
| Heading Accuracy (post processed) | ⩽ 0.010° | |
| Roll/Pitch Accuracy (post processed) | ⩽ 0.005° | |
| Positioning Accuracy (post processed) | H. ⩽1 cm; V. ⩽2 cm | |
| **Part III: Imaging Sensor** | | |
| Fitting Mode | aerial mode | automobile mode |
| Integration Mode | attached to LiDAR externally | attached to LiDAR externally |
| Sensor Type | customized DSLR, full framer | 360° spherical camera system |
| Sensor Model | South S61 | FLIR Ladybug5+ |
| Imaging Type | orthophotography, RGB | panorama, RGB |
| Imaging Output | DOM (Digital Orthophoto Map) | panorama Image |
| Mixed Output | colorized point cloud | colorized point cloud |
| Resolution | 61 MP | 30 MP (5 MP*6 sensors) |
| Focal Length | 28 mm | / |
| Acquisition Rate | / | approx. 10 images per second |
| Weight | 500 g | 3 kg |
| Power Supply | external, via UAV platform | external, via customized power bank |
| Triggering Mode | triggered by LiDAR device | independent |
| Data Storage | inbuilt SSD 256 GB | connected to laptop for storage |

- ✓ Extremely lightweight unit with compact design
- ✓ Survey-grade sensors integrated for accurate topography
- ✓ Ready to fit a variety of mobile carrier platforms
- ✓ Complete software kits available for abundant outputs
- ✓ Field-proven solutions and project-based background


**SUV-based Application**
(Distance Measurement Indicator, as an option)

*Fly with a multi-rotor UAV (comparably cost friendly) for small areas that are considerably elevated and inaccessible.*

*Fly with a VTOL fixed-wing drone (different options) to replace multi-rotor for longer endurance (eg. 2-6 hours).*

*Fly with a manned aircraft to challenge those much bigger mission zones with complex terrain and dense vegetation.*

*Drive when it's possible. Mostly used for road expansion or reconstruction topography, and road assets inventory.*