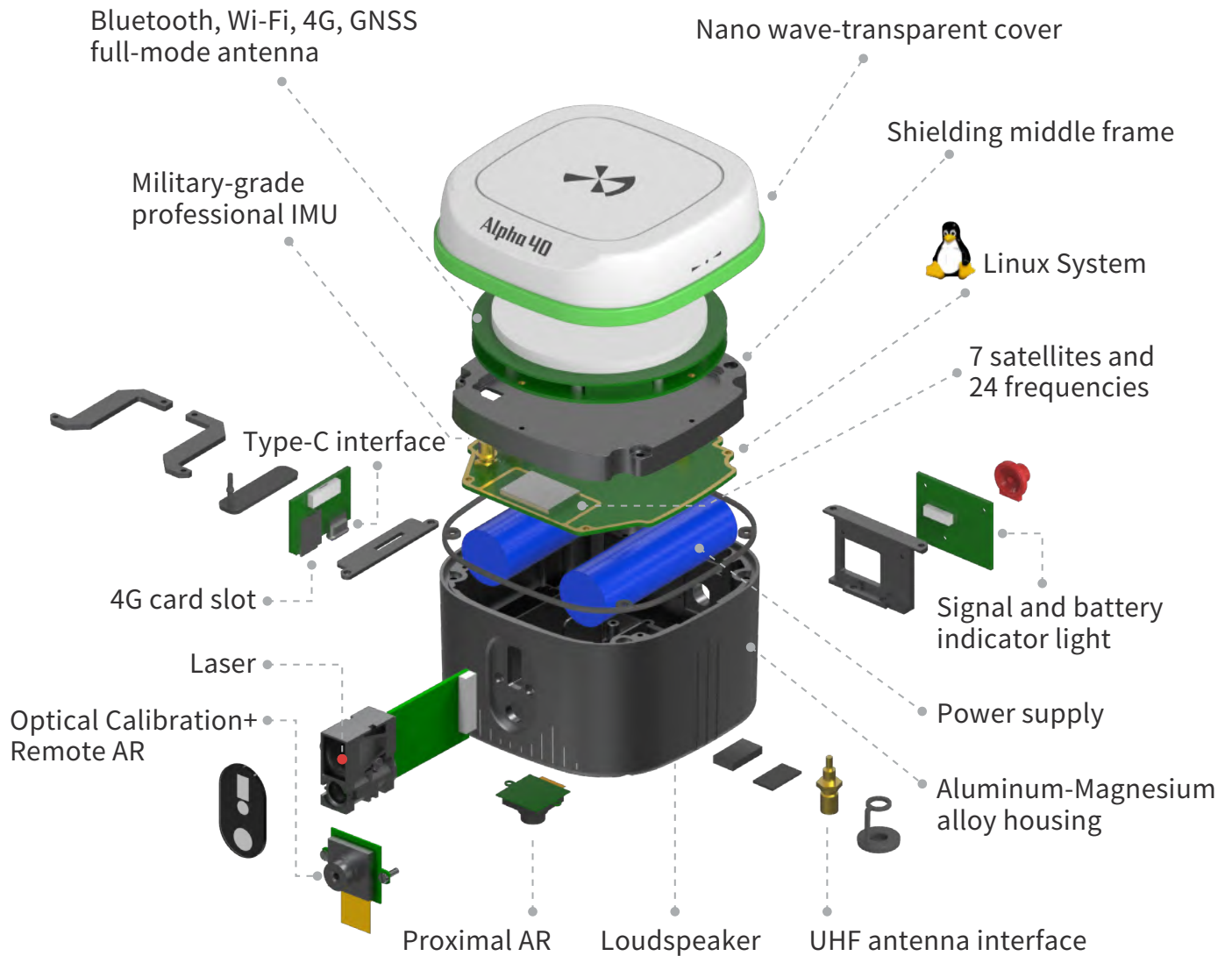![Alpha Surveying logo]

Alpha40

Optic-electric RTK

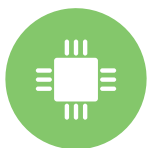Optics + Laser + AR Dual-Camera | Laser-Guided with high accuracy

ISO
ISO9001

CE

Alpha 40 Optic-electric RTK

Alpha 40 Optic-electric RTK is the new generation of RTK, which comprehensively innovates inertial navigation, radio and software, reliable laser measurement + optical calibration + AR dual camera, and achieves non-contact measurement accuracy and an excellent layout experience. The intelligent platform is designed for the future, with rich communication modes and interfaces, and works in coordination with smart terminals, optoelectronic products, and unmanned systems.

Bluetooth, Wi-Fi, 4G, GNSS full-mode antenna

Nano wave-transparent cover

Military-grade professional IMU

Shielding middle frame

Linux System

Type-C interface

7 satellites and 24 frequencies

4G card slot

Signal and battery indicator light

Laser

Power supply

Optical Calibration+ Remote AR

Aluminum-Magnesium alloy housing

Proximal AR

Loudspeaker

UHF antenna interface

And more

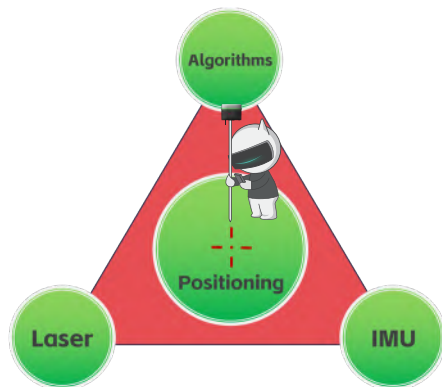Onboard 4G

Battery level display

Intelligent Voice

PPP

Long battery life

WebUI

0.015° Military Grade Inertial Navigation

Breaking through bottlenecks

The inertial navigation accuracy is as high as 0.015°, which brings to a new level, 3 times the accuracy of similar products on the market, thus breaking through the accuracy bottleneck of laser measurement and laying an important foundation for the availability of laser measurement.

Limitless Inertial Navigation

Limitless inertial navigation module, 2cm accuracy at 60° inclination; no initialization required, just walk a few steps to enter the inertial navigation mode; breaking the 90° limit, any inclination angle can be measured.

Laser Measurement

Building on Alpha Optoelectronic's technological strengths in measurement, this system integrates an ultra-high-precision 0.015° inertial navigation system (INS) with positioning and magnetometer data, enhanced by temperature compensation algorithms. This enables real-time output of accurate tilt measurement data even under extreme inclinations and high-dynamic conditions. Through algorithmic fusion with 1mm-accuracy laser ranging and RTK positioning, it achieves 360° non-contact measurement with 3-5cm accuracy at 10m distances.
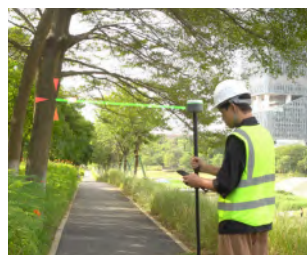
Optical Calibration

The Alpha 40 employs optical system calibration to synchronize the crosshair aiming point with the actual laser measurement target. This innovative approach ensures full-visibility positioning even when the laser spot becomes invisible under intense sunlight. Through unified calibration of imaging, optical, and INS systems.
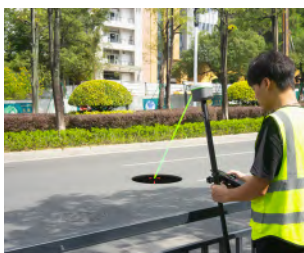

Weight **680g**

10cm 10cm 8cm

Alpha 40

Scenario

Cadastral hidden point

Aerial Point

Underground Point

Inaccessible Points

Laser Measurement + Optical Calibration
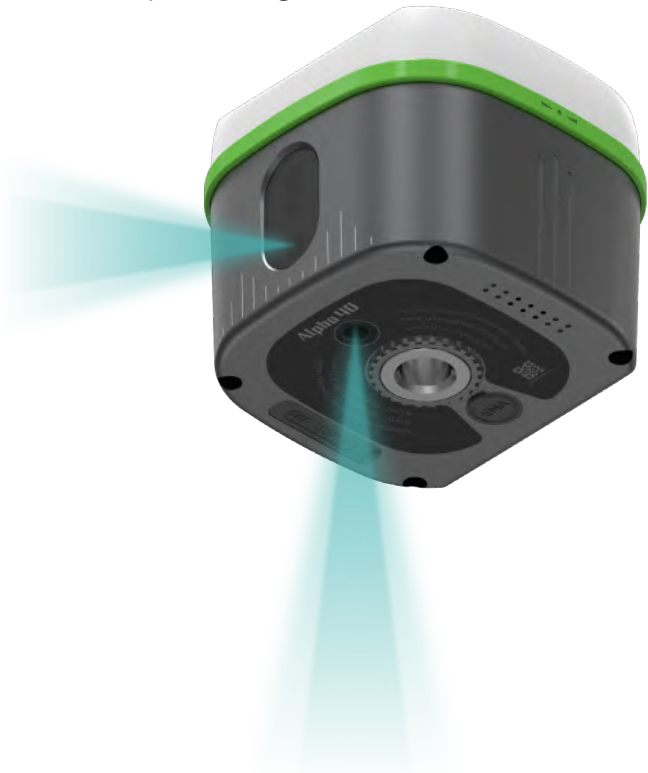
Dual-AR Staking-out
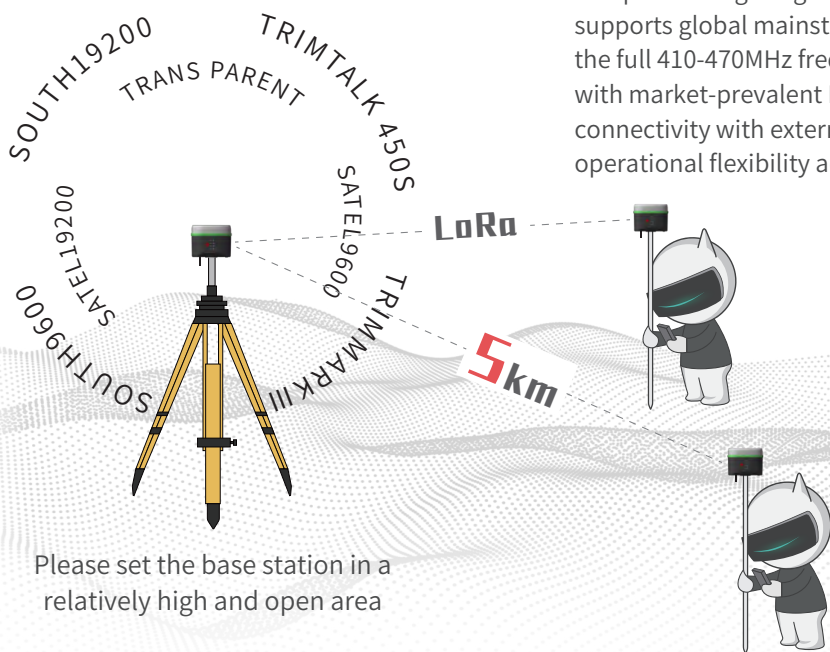

Remote AR-Guided Staking-out

Proximal AR-Guided Staking-out

Immersive real-scene staking-out, dual AR staking-out guidance, from far to near, switch to near-view AR at about 5m (adjustable distance). 360° real-time clear display under strong outdoor light, combining design data with real-world images, so that what you see is what you get. Image-level lens, small optical distortion, combined with professional algorithms, to achieve 1cm accuracy in real-scene point finding.
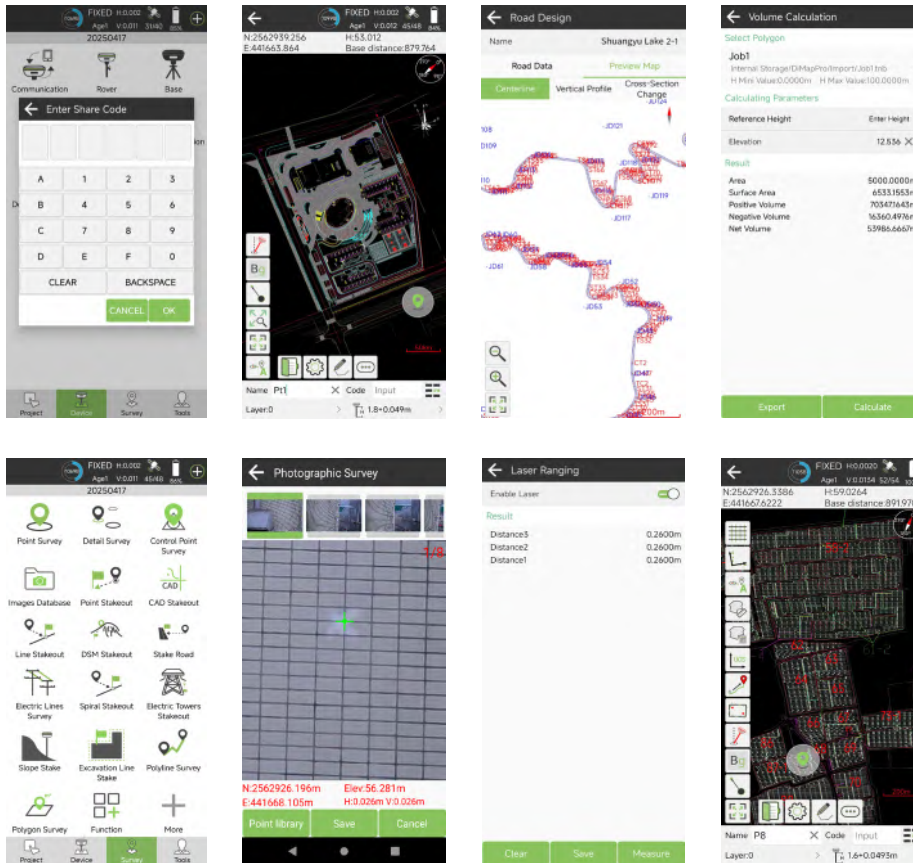

Dual-Mode Radio Transceiver

Integrating a built-in 2W full-power compatible radio and LoRa low-power long-range dual-mode transceiver, this system supports global mainstream communication protocols. Covering the full 410-470MHz frequency band for seamless compatibility with market-prevalent RTK protocols. The serial port enables connectivity with external high-power radios, expanding global operational flexibility across diverse workflows.

SOUTH19200 TRANS PARENT TRIMTALK 450S
SATEL19200 SATEL9600 TRIMMARK III SOUTH9600

LoRa

5km

Please set the base station in a relatively high and open area

Professional Field Software DiMap Pro

In addition to point measurement, detailed measurement, control point measurement, point stakeout, CAD mapping, road design stakeout, power survey, and elevation site control, it also supports line measurement, surface measurement, curve stakeout, tower base stakeout, photovoltaic stakeout, earthwork measurement, etc.

Alpha Controller

5.5-inch large screen
8 cores 4+64G
IP67 protection
Supports 10-point touch
Rainy mode
Glove mode

Stronger CAD engine and performance, smooth opening and running of files over 100M, support for loading more layers, and complete drawing functions; support multiple text encoding formats; support custom data decimal places, multiple angle formats, voice broadcast, start location services, and interface style adjustment. Support Amap (standard map), Amap (satellite map), OpenStreetMap, WMS map configuration, map calibration; support encoding management; more complete software setting functions; support cloud sharing/file sharing; support shortcut key customization, support import range preview of survey area files; support bias correction, background layer setting, tilt measurement accuracy check; support function customization, post-measurement correction, and built-in calculator.

Drone base station

Supports drone base station function and serial port customization, and realizes positioning fusion for unmanned systems and laser radar.

Professional configuration

Standard configuration: 1.8m lightweight carbon fiber portable pole, retracted length 75cm; special configuration: 22cm high instrument box, surveyors can sit outdoors.
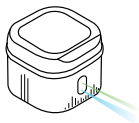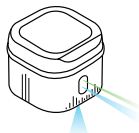
Professional Set

Alpha 40	×1
Radio Antenna	×1
Host Adapter	×1
Host Cable	×1
Controller	×1
Controller Adapter	×1
Controller Cable	×1
Centering Pole	×1
Bracket	×1
Instruction	×1
Carrying Case	×1

Version

Laser with one-camera

Laser with dual-camera

Technical Specification

Category	Parameter	Value
GNSS	Channel	1408
	Signal Tracking	GPS: L1C/A, L1C, L2C, L2P, L5
		BDS: B1I, B2I, B3I, B1C, B2a, B2b
		GLONASS: G1, G2, G3
		Galileo: E1, E5a, E5b, E6
		QZSS: L1C/A, L1C, L2C, L5
		SBAS: L1
		NAVIC: L5
	Static Accuracy	H: $\pm(2.5+0.5\times10^{-6}D)$mm
		V: $\pm(5+0.5\times10^{-6}D)$mm
	RTK Accuracy	H: $\pm(8+1\times10^{-6}D)$mm
		V: $\pm(15+1\times10^{-6}D)$mm
Tilt Compensation	Compensation Accuracy	$\pm(8+0.3TILT)$mm
	Compensation Angle	0~60°
	Update Rate	200Hz
System Parameters	Operating System	LINUX
	Memory	32G
	Data Record	DAT、Rinex
	Network	4G
	WiFi	802.11a/b/g/n/ac
	Bluetooth	5.2 BR/EDR+LE(Dual-mode Bluetooth)
Radio	Power	2w
	Frequency	410-470MHz
	Global Communication Protocol	TRIMTALK 450S、TRIMMARKIII、SOUTH9600、SOUTH19200、SATEL9600、SATEL19200、TRANSPARENT、LoRa
	Operation Mode	Transceiver
Power	Voltage	9 - 20V Power Delivery
	Working Time	Battery capacity 37Wh. 18h (Ntrip)、15h (Radio Receiving)、8h (Radio Transmitting)
Laser Measurement	Range	50m
	Accuracy	±1mm
Port Indicator	SMA	Radio UHF Antenna
	Type-C	Charging, data transmitting, external port connection
	Indicator Lights	Satellite, Datalink, Bluetooth, battery light
	Loudspeaker	Support intelligent voice
Physical	Dimension	100mm*100mm*80mm(Excluding 5/8 pin interface)
	Weight	650g
Environmental	Operating Temperature	-30℃～+70℃
	Storage Temperature	-40℃～+80℃
	Water/Dust Proof	IP67
	Shock	Normal temperature resistance of 1.8 m drop (hard ground)
	Humidity	Up to 100%

*The above technical parameters are for your reference.The company reserves the right to change the design and planning of the product based on the actual product.