

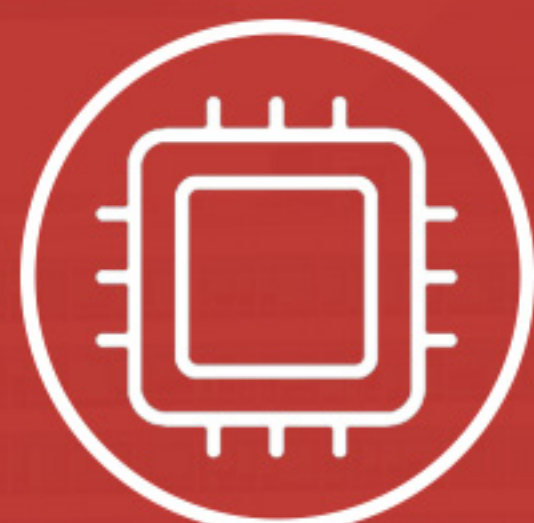


# ALPHA R1

*Precise remote control,  
efficient one-person operation*  
**ROBOTIC TOTAL STATION**



Intelligent  
operating  
system



Strong  
performance  
smooth  
operation



Advanced  
angle  
measurement  
system



Multifunctional  
android  
measurement  
software



Convenient  
and fast  
data transfer





# ALPHA R1

## ALPHA R1 Robotic Total Station

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ALPHA R1 Robotic Total Station delivers exceptional measurement performance with 1" angular accuracy and  $\pm(1\text{mm} + 1\text{ppm})$  distance measurement precision. Integrated with a high-efficiency motorized drive system and intelligent program control, it significantly enhances operational efficiency in complex surveying tasks. Its modular design supports secondary development for cross-industry applications, providing scalable solutions for customized engineering needs. As a professional surveying solution that combines power, performance, and productivity, the ALPHA R1 utilizes industry-leading Automatic Precision Aiming and Automatic Prism Recognition (APR) technologies to enable fast prism locking and dynamic tracking, optimizing both time and cost efficiency.





# Surpro 6.0



## ALPHA R1

### Revolutionary onboard software Power where you need it

Developed by integrating industry-leading surveying algorithms with decades of field-proven engineering experience, this professional surveying software establishes an efficient and reliable platform for field data collection and processing. Designed with user-friendly interfaces that align with modern surveying workflows.

#### •High-Efficiency Data Acquisition

Supports continuous point collection and rapid measurement modes to meet diverse accuracy requirements

#### •Advanced COGO Computations

Incorporates comprehensive coordinate geometry calculations including forward/inverse computations, intersection solutions, and precise area/volume measurements

#### •Seamless CAD Integration

Provides full compatibility with DWG/DXF formats for bidirectional data conversion between survey measurements and design drawings

#### •Comprehensive Road Engineering Module

Supports alignment design through both intersection and element methods, with multi-format data import functionality for highway and linear engineering projects

Engineered with operational efficiency, powerful functionality, and measurement reliability at its core, this solution has been widely adopted in land surveying, engineering surveys, and infrastructure construction, serving as an indispensable tool for enhancing surveying productivity and accuracy.





# ALPHA R1

## The New Era of Smart Surveying: Remote Precision, Solo Efficiency

- Our robotic total station enables remote intelligent control through 4G/5G/Wi-Fi connectivity, achieving kilometer-range operation to conduct precise measurements in hazardous or complex environments without on-site presence. The system supports multi-terminal compatibility with tablets and other terminal devices for seamless data transmission and real-time decision making. With assisted positioning, it automatically locks onto prism targets and intelligently tracks moving points, minimizing manual intervention while enhancing safety in high-risk applications like construction sites and tunnels.
- For single-operator efficiency, the integrated workflow combines automatic station setup, target recognition, and data collection, enabling one person to complete tasks traditionally requiring entire crews.





# ALPHA R1

## Torque Drive: Powerhouse for Precision Surveying

Featuring an exceptional 180°/s rotation speed, the ALPHA R1 delivers superior dynamic performance through its innovative xTrak technology, offering unparalleled smoothness and speed in operation.

### Automatic Prism Recognition (APR)

- Automatically identifies and measures prisms at distances up to 1000m
- Ensures precise target acquisition without manual intervention

### Intelligent Prism Search

- Performs 360° prism detection within a 300m radius
- Reduces measurement steps by approximately 67% compared to manual total stations
- Significantly enhances field work efficiency.

### Continuous Prism Tracking

- Maintains lock on moving prisms at speeds up to 20°/s
- Enables continuous monitoring of mobile targets

The system's advanced electro-optical technology combines high-speed servo motors with precision angle measurement, delivering industry-leading performance for dynamic measurement applications. This integrated solution dramatically reduces field operation time while maintaining survey-grade accuracy throughout all tracking operations.



# PRODUCT FEATURE



Specifications

|                             |                              |                       |                                      |
|-----------------------------|------------------------------|-----------------------|--------------------------------------|
| <b>ANGLE</b>                |                              | <b>Prism Lock</b>     |                                      |
| Accuracy                    | 1"                           | Tracking Speed        | 20°/s                                |
| Method                      | Absolute Encoding            | <b>LEVEL</b>          |                                      |
| Detecting System            | H: quadruple; V: quadruple   | Plate Level           | 30"/2mm                              |
| Minimum Reading             | 0.1"                         | Circular Level        | 8'/2mm                               |
| Diameter of Circle          | 79mm                         | <b>COMPENSATOR</b>    |                                      |
| Vertical Angle              | Zenith 0/ Horizontal 0       | Tilt Sensor           | Dual-axis Liquid electric sensor     |
| Unit                        | 360°/400gon/6400mil          | Range                 | 4'                                   |
| <b>DISTANCE</b>             |                              | Accuracy              | 1"                                   |
| Single Prism Range          | 3,500m                       | <b>LASER PLUMMET</b>  |                                      |
| Accuracy                    | 1mm+1ppm                     | Type                  | 635nm, Class II                      |
| Non-prism Range             | 1,000m                       | Accuracy              | 0.4mm at 1.5m height                 |
| Accuracy                    | 3mm+2ppm                     | Spot                  | 1.8mm at 1.5m height                 |
| Measuring Time - Prism      | Fine: <0.7s; Tracking: <0.3s | <b>GENERAL</b>        |                                      |
| -Non-P                      | T<600m: 0.5-3s; T>600m: <10s | Display               | Two sides, 6-inch color touch LCD    |
| PPM Correction              | Auto Sensor                  | Camera                | 5 MP                                 |
| <b>TELESCOPIC</b>           |                              | Guide Light           | Red/Yellow, 635nm/593nm              |
| Length                      | 164.5mm                      | OS                    | Android 9.0                          |
| Diameter                    | 45mm (EDM: 47mm)             | Internal Memory       | RAM 3GB, ROM 32GB                    |
| Magnification               | 30x                          | CPU                   | MSM8953                              |
| Image                       | Erect                        | I/O Interfaces        | RS232, USB, Micro USB, Bluetooth 4.0 |
| Field of View               | 1°30'                        | WLAN                  | Dual-band 802.11/a/b/g/n             |
| Resolving Power             | 3"                           | Battery               | Li-Ion, 14.4V, 6400mAh               |
| Minimum Focus               | 1.5m                         | Working Duration      | 8 Hours                              |
| <b>Trak MOTORIZATION</b>    |                              | Waterproof/Dustproof  | IP65                                 |
| Type                        | Type                         | Operating Temperature | -20°C to +50°C                       |
| Maximum Speed               | Maximum Speed                | Dimension             | 430 (H)*255 (L)*235 (W) mm           |
| <b>Auto Prism Recognize</b> |                              | Weight                | 9.3KG                                |
| Working Range               | 1.5-1000m                    |                       |                                      |
| Searching Time              | 5s                           |                       |                                      |
| <b>Prism Search</b>         |                              |                       |                                      |
| Working Range               | 1.5-300m                     |                       |                                      |
| Typical Searching Time      | <10s                         |                       |                                      |
| Field of View               | V: ±10°, H: 360°             |                       |                                      |

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