# AUTOMATED TOTAL STATION

## STRUCTURAL MONITORING

## Applications

Automated Total stations (ATS) are designed for high resolution monitoring of three-dimensional structural movement.

**Typical applications include:**

- Monitoring differential movement in structures affected by nearby construction works.
- Monitoring schemes where high accuracy readings are required on a large number of targets (e.g. building façades).
- Long-term 3D structural monitoring achieved by regular site visits or automated setups using programmed surveys.
- 24-hour automated monitoring of prism networks.
- Monitoring of structures that are difficult to access or impractical to monitor by other means.

## Installation

Before beginning any surveys, a control network should be established using targets placed outside the works' expected zone of influence.
This control will be used a reference for the survey targets installed on the structure(s) to be monitored.

A mixture of ground points (Nails) and glued retro targets or prisms can be used to ensure you have a good range of fixed control to use for resection.

Placement of survey targets varies based on structure and application, but they are often arranged in rows or arrays. It is important to ensure they are visible from planned setup locations.

Multiple baseline readings are required before the commencement of monitoring surveys to ensure accurate readings of differential movement.

Automated ATS network additionally require mounting brackets, communications boxes and permanent power supplies.
As ATS locations are fixed, careful attention must be paid to target visibility and line-of-sight over the span of the project.

## Specifications

**Range -** 1.5 ~ 3500m (prism)
**Range -** 1.5 ~ 1000m (reflectorless)

**Accuracy -** 0.6 mm (prism)
**Accuracy -** 2.0 mm (reflectorless)

**Temp Rating:** - 20°C to +50°C

**Dimensions:** 300 x 250 x 600 mm

**Weight -** 7.6 kg

## Operation

**Manual Total Station Surveys –**
Careful planning is essential for managing surveys during all phases of the project, including pre- and post-construction.
Use of the same setup locations is ideal to achieve the best possible accuracy and repeatability.
Multiple measurements of each point are taken on each survey visit. Each individual measurement is checked, and any potential outliers are removed.

**Automated Total Stations –**
ATS can be deployed as single units or as part of a larger network.
Automated systems are managed using a combination of software.
Manufacturer software is used to program and send commands to the instruments via comm boxes.
GEO-Instruments' in-house software QuickAdjust is used to automatically process data and check for errors.

## Key Advantages

**Practical, Accurate Data Acquisition:**
Quick set ups and high-resolution data offer an efficient solution to many construction monitoring applications.

**Versatile:**
Manual surveys can be carried out almost anywhere with minimal disruption.
Automated setups provide reliable data without the need for site visits.

**Automated and Low Maintenance:**
Automated networks can run for years, providing high frequency, 24hr data with minimal need for calibration and maintenance.