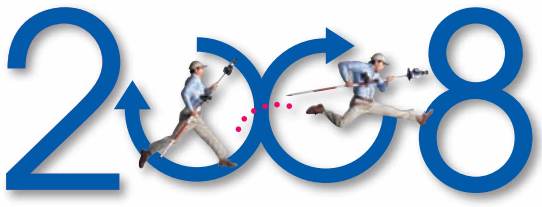
SOKKIA WORLD

SOKKIA

SOKKIA Communication Magazine

2008 SPRING

IN THIS ISSUE >>>



Studying the Past and Looking to the Future

Welcome to the second edition of SOKKIA WORLD.
We start our first issue for 2008 with news and reports from around the world. The World Report section covers INTERGEO, the largest meeting of geodesy, geoinformation and land management industries in the world. We continue with a report from SAIE, an important European exhibition for the surveying, construction and construction materials industries.

Before looking to the future, we need to learn lessons from the past. We did just that in our User Report from the Aomori Prefectural Archaeological Artifacts Research Center where SRX is playing an important role in recording the location of ancient artifacts from as far back as 4,500 years ago. This article once again highlights the flexibility of the SOKKIA FREESTYLE 360° concept and the wide range of potential applications.

2008 will be full of exciting events, one of which will be the maiden voyage of the Singapore Flyer, the world's tallest Ferris wheel. In this User Report, we follow the construction of the Singapore Flyer and the various challenges that SOKKIA user UTOC Engineering Pte Ltd faced when building this record-setting structure. Using a NET1200, UTOC Engineers were able to overcome challenging site conditions and perform difficult measurements resulting in a world-class contribution.

Two new products are also introduced in this issue – the SOKKIA CLASSIC SET X total station and NET05 Automated 3D Station. SET X is a rugged total station which boasts the highest environmental protection rating for its class in Windows CE total stations and a long-life, flexible power system. NET05 is an ultra high-performance automated 3D station for monitoring and industrial measurement applications. Auto-pointing and auto-tracking functions open the door to new possibilities in monitoring and measuring applications.

Thank you for your support in 2007. Our pledge for 2008 is to continue providing high-quality content provided by the global SOKKIA network and present useful information to those supporting SOKKIA the world over.

WORLD REPORT

I N T E R G E O

Leipzig, Germany 25 (Tue) – 27 (Thu) September

With more than 17,000 visitors and delegates from more than 80 countries, INTERGEO is the largest meeting of the geodesy, geoinformation and land management industries in the world. This year INTERGEO was held in Leipzig, Germany.

An impressive showing at a sophisticated exhibition

The SOKKIA booth was one of the largest of the event and was situated in a high-traffic area. The SOKKIA FREESTYLE 360° campaign and the introduction of the new SET X total station were real eye catchers. Sharing the spotlight were SOKKIA Europe's 25th anniversary discounts and the introduction of the automated 3D station NET1.

SOKKIA proudly welcomed European and international guests while strengthening its international image. The booth had a VIP area for meetings and a continuously crowded bar for drinks provided an excellent opportunity to chat with customers from all over the world.

The booth itself was divided into three islands, each representing a different business unit: surveying, industrial and construction. Visitors had the opportunity to see the latest developments as well as ask questions and receive the assistance of the SOKKIA crew to get familiar with the products. SOKKIA Europe's German based industrial partner GLM

WORLD REPORT

SOKKIA Europe's brand promise, "Precision & Reliability", was used throughout the booth.

The SET X total station was a real eye catcher. The display showing two surveyors in the desert with the rugged SET X made quite an impression.

Demonstrations of the SRX, SET X and GSR2700 ISX were also held outdoors.

Lasermesstechnik showed the ins and outs of monitoring and industrial solutions with the NET1 and SOKKIA distributor IVK assisted to serve our German customers even better.

New to the booth were the interactive displays which SOKKIA used to celebrate its 25th anniversary in Europe in addition to introducing the SET X, a 3-year European warranty, total station and GPS integration through SDR+, SRX and the NET1.

A team of product experts gave outdoor demonstrations of the SRX and SET X total stations and the GSR2700 ISX GNSS system. This gave visitors the chance to experience the high functionality of the SRX firsthand. As expected, there was an air of excitement about SOKKIA's easy-to-use systems.

A grand SOKKIA lottery was held daily and attracted a lot of attention during the three day event. A professional entertainer delighted the crowd with interactive presentations to announce the winners of a poker set, luxury watch and iPod. The winner of the grand prize - a holiday trip worth a value of 1500 euros - was picked from among all of the entries.

Next year, INTERGEO will be held in Bremen from 30 September until 2 October.

Ramona Brongers
Communication and
PR Executive
SOKKIA B.V.

S A I E

Bologna, Italy 24 (Wed) – 28 (Sun) October

SAIE is an important European exhibition for the surveying, construction and construction materials industries. Held annually, the exhibition was hosted for the five days from October 24 – 28 in historic Bologna, Italy.

SOKKIA Attracted Attention and Favorable Reviews

The SOKKIA booth presented a strong visual image with a fresh new layout and the use of black and SOKKIA blue to match the brochures that were being distributed.

At the center of the booth was the SET X display. With the highest environmental rating of its class for Windows CE total stations, the SET X was the focus of good reviews and plenty of attention. Those in attendance could feel the standard for reflectorless total stations being raised.

In recent years, GPS has been rapidly gaining in popularity in Italy. This provided a warm welcome for the SOKKIA GPS/GNSS lineup with good reviews from those in attendance for GSR2700 ISX, the GNSS receiver which provides the ideal solution for the needs of the market, and GIR1600, which was introduced in Italy for the first time.

Interest in SOKKIA products is growing throughout Italy, and a large number of guests visited the SOKKIA booth during this five day exhibition.

Andrea Mosca
President & CEO
SOKKIA S.p.A.

SRX Shows the Benefits of SOKKIA FREESTYLE Increase Efficiency and Reduce Labor with

Aomori Prefectural Archaeological Artifacts Research Center

Unveiled at GeoInformation Forum 2007, total station SRX is the symbol of SOKKIA's new concept "FREESTYLE 360°" and is the talk of the town. Developed to achieve complete remote control, SRX creates a stress-free, flexible surveying site using SOKKIA's unique auto-tracking technology. This article is the second in a series of SRX user reports. Last year, the Aomori Prefectural Archaeological Artifacts Research Center (APAARC) implemented 14 SRX, and we visited to hear their impressions of using the SRX to survey archaeological remains.

SRX can be used by a single prism-side operator. The APAARC uses two-person teams (one prism-side operator and one keeping records with a tablet PC) to improve measurement.

360°
Stress-Free Complete Remote Control

NISHIKOKI and SOKKIA coordinated the assistance of new technology for cultural artifact surveys

SOKKIA's "FREESTYLE 360°" is a product concept that makes the claim, "Technology should serve to free the imagination."

Users can freely move about the work site and quickly perform surveys as they would like. In order to create this environment of freedom, SOKKIA instruments needed to be easy to operate.

The total station SRX, which was introduced last October, is the literal embodiment of this freestyle concept.

Masahiro Oridate
Sales Manager
NISHIKOKI Co., Ltd.
Aomori Branch

One month before the release of SRX, a demonstration for distributors was given at the exclusive Roppongi Hills complex in Tokyo. Used in conjunction with SOKKIA's unique on-demand remote control system, SRX achieved nearly flawless auto-tracking and auto-pointing. In the event of a loss of target lock, the total station quickly recovered lock and completed the measurement. Looking on this scene with intense concentration was Mr. Masahiro Oridate, sales manager of SOKKIA distributor NISHIKOKI Co., Ltd.'s Aomori branch.

"Yes, we can sell that. I can confidently recommend it," he thought to himself. In the back of Oridate's mind was the APAARC, with which he has a relationship dating back over 20 years.

Called "the find of the century," the APAARC was the first to do experimental excavation at the Sannai-Maruyama Site backed with the technical support of SOKKIA and NISHIKOKI. In addition, NISHIKOKI contributed to cultural research by sending SOKKIA's newest technology and systems to sites such as the joint Sino-Japanese research survey of the Xinlong Guo remains in the autonomous region of Inner Mongolia.

14 high-speed auto-tracking SRX were greeted with cheers on the worksite

Oridate went right to work with the plan of implementing SRX in the New Year. Early in the New Year he held a demonstration at the APAARC. With the entire staff of the center looking on, SRX exhibited its auto-pointing and auto-sighting prowess.

Oridate was sure of the success of the demonstration. "As soon as it started auto-tracking there was a din of oohs and aahs. Everyone was surprised by the speed of the SRX."

The true value of SRX was quickly realized by Mr. Kazuo Katsuragi, General Manager of Protection of Cultural Properties for the APAARC.

Katsuragi is busy with excavations around areas slated for new bullet train stations and we managed to get a few minutes to talk with him about how he came to decide on implementing SRX.

He described his first impression by saying, "Although I was interested in an auto-tracking total station when I first heard about it from Mr. Oridate, I was unsure of the actual performance. That said, I was shocked when I saw auto-tracking and auto-pointing during the SRX demonstration. I did a quick survey of the staff right there and almost all of them wanted to implement it in the following year. Measurement and recording on archaeological digs are usually performed by two people, but with SRX it can be done by a single operator. Also, it is easy to operate, making it a great system for use on dig sites."

"However, this isn't to say that we didn't have concerns about the new system. We were worried about how it would match with the electronic plane-tables and fieldbooks that we were using, and whether we could move around the site holding the large prism. SOKKIA helped with software support, and once we got on-site we had no problems using the prism. All our problems were imaginary" he said with a satisfied smile as he returned to supervise the site.

SRX performance- seeing is believing
Transforming the image of auto-tracking total stations

100 to 200 relics are unearthed daily at the Sunakose site. Among excavating workers and other obstructions, SRX provides fast and accurate measurement with auto-pointing and auto-tracking.

The APAARC implemented 12 SRX in April 2007 and it has proven to increase efficiency and reduce labor on dozens of jobsites. Staff members who at first claimed that the previous systems were sufficient have started to show interest in using SRX. Currently, the APAARC has implemented an additional two SRX for a total of 14 playing important roles at various jobsites.

Speed is of the essence during steady excavation

To hear the opinion of those actually working on a dig site, we headed to the Sunakose site near Shirakami-Sanchi, a UNESCO World Heritage Site.

The Sunakose site is home to remains from the early to late Jomon Period (about 4,500 to 3,000 years ago), and is home to a fire pit and other highly interesting materials of similar stone arrangement to the Komakino site which is known for its stone circles.

The remains sprinkle more than a dozen sites occupying an approximate area of 700,000m^2 on the right bank of Lake Miyama in Aomori Prefecture. Sunakose is one of these sites, and surveying is planned to continue until 2014.

Excavation is tedious work carried out facing the ground with shovels and brushes, but the atmosphere completely changes once something has been unearthed.

Mr. Masaki Jin, Manager of Protection of Cultural Properties overseeing on-site measurement and recording had the following to say, “During the initial excavation at this site 100 to 200 relics and remains were uncovered daily. The main part of our job is to record and map these quickly and accurately. The people using the total station are research assistants with no surveying knowledge. Therefore, we need a simple system that anyone can use on the jobsite. At the SRX demo I was really impressed and thought ‘This is just what we need!’”

Mother Nature is moody, and records need to be taken before rain from sudden showers soaks the remains. Surveying archaeological digs requires faster speeds than we realized.

Cable-free ease of use brings about a several fold increase in efficiency

We followed two research assistants, Mr. Shinsuke Koshika and Mr. Masaki Tateyama as they were measuring on-site.

On a worksite that was a flurry of activity, the two freely switched between prism configurations to continue a quick, flowing operation using a short pin-pole if there were no obstacles and a range pole for areas that were sunken, full of brush, or where other workers would be an obstruction.

According to Koshika, “Using the previous system, we could measure about 200 points in an hour, but with SRX we can measure 300 points in 30 minutes. We also use a tablet PC so we can check the results right away and our errors have been reduced to zero.”

“The total station follows the prism no matter which way it is facing. If lock is lost, SRX auto-points and auto-tracks right away. Because it is cable-free thanks to *Bluetooth*® wireless technology, it is easy to use and there isn’t any trouble,” Tateyama said confidently.

We also asked Jin, who is in charge of on-site direction, to talk about the benefits of SRX.

He told us firsthand of the flexibility of SOKKIA’s pole configurations, auto-pointing and auto-tracking performance, and the high accuracy distance measurement “RED-tech EX” in saying, “I don’t know how this is used on an actual surveying jobsite, but our job on a protection of cultural properties jobsite is to record each unearthed article as it is found. You’d understand if you saw it, but our site is a jumble of excavating workers, and you can’t ask them to move during measurement. On uneven jobsites there are excavating workers and we measure while taking the presence of these obstacles for granted. SRX is the best solution as we can use 10, 30

SOKKIA's unique pin-pole and range pole selections are used to measure artifacts according to the presence of on-site obstacles. SOKKIA FREESTYLE 360° boosts efficiency by letting the user select the right tool for the job.

and 50cm pin-poles and regular range poles depending on the conditions, and, if lock is lost by somebody cutting through, SRX quickly recovers and tracks. Also, using reflectorless measurement, we can now easily create soil strata cross-section figures that were previously drawn by hand."

SRX in combination with the new prism for the on-demand remote-control unit dramatically improves accuracy and handles 360° of rotation providing fast total station tracking speeds. That way, in the event that target lock should be lost, reacquisition and tracking are quickly achieved. Total downtime is limited to just a few seconds, if not less. This eliminates fatigue during operation. In addition, SRX lets the user personify the "FREESTYLE" concept using SOKKIA's unique pin-poles to use the right tool for the job.

It has been said that seeing is believing. SOKKIA "FREESTYLE 360°" is making changes to the way measurement is performed in industries where fast, accurate measurements are vital. Try SRX and experience the difference.

Yasushi Endo
SOKKIA SALES CO., LTD.
Tohoku Branch

Total Stations

SRX

- A combination of the auto-tracking function and the on-demand remote control system achieves "complete remote control"
- On-board RED-tech EX EDM provides precise distance measurement over a wide range of situations
- New angle measurement system featuring refined absolute encoders
- Internal multiple data interfaces including serial, CF card, USB, and SFX
- Internal Class 1 *Bluetooth* wireless technology makes a license-free wireless remote control surveying system

USER REPORT File. 1

The Aomori Prefectural Archaeological Artifacts Research Center

152-15 Amadanai Shinjo, Aomori City
Aomori Japan 038-0042
TEL: +81-17-788-5701 FAX: +81-17-788-5702

"I was impressed with the performance of auto-tracking and auto-pointing. This is just what we needed!"

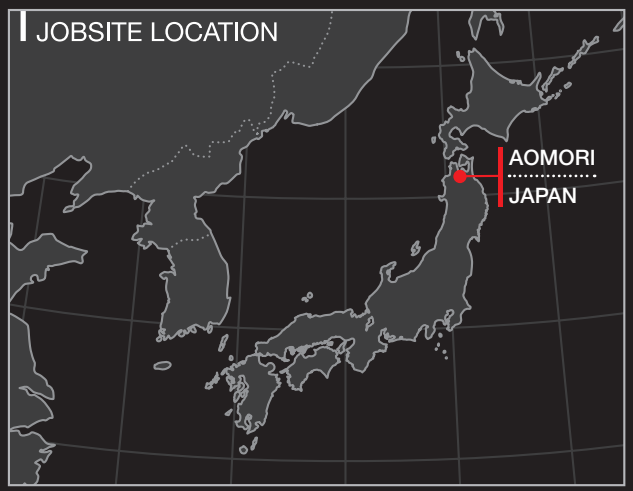
Masaki Jin
Manager of Protection of Cultural Properties
1st Research Group
Aomori Prefectural Archaeological Artifacts Research Center

"The total station follows the prism no matter which way it is facing. Lock is recovered right away and there is no stress."

Masaki Tateyama
Research Assistant
1st Research Group
Aomori Prefectural Archaeological Artifacts Research Center

"With SRX, 200 points an hour has become 300 points in 30 minutes. One person operation saves labor."

Shinsuke Koshika
Research Assistant
1st Research Group
Aomori Prefectural Archaeological Artifacts Research Center



The Singapore Flyer-Surveying Technology a Record-Setting Attraction Possible

The Republic of Singapore is an island nation with a rich history. First settled in the second century A.D., it has grown to become a booming center of technological, mechanical, petrochemical and biomedical development. Singapore continues this tradition of cutting-edge development by being home to the Singapore Flyer, the world's tallest Ferris wheel. UTOC Engineering Pte Ltd used a SOKKIA NET1200 to overcome the various challenges associated with the construction of a world record-setting structure.

The Singapore Flyer is the world's tallest Ferris wheel set to make its maiden flight on Valentine's Day, 14 February 2008. The Singapore Flyer occupies a land area of 33,700 square meters along the Marina Promenade and promises breathtaking views of downtown Singapore and extending 45 kilometers out to sea.

Standing at a spectacular height of 165 meters, the Singapore Flyer will feature 28 air-conditioned capsules capable of holding 27 passengers each. The wheel has a diameter of 150 meters and one full rotation will take 37 minutes.

SOKKIA user UTOC Engineering Pte Ltd was responsible for undertaking the enormous task of erecting the giant Ferris wheel.

Challenges in construction and the decision to use NET1200

The task of constructing the massive support columns and rim structure (wheel) was in the hands of the project managers and engineers from UTOC Engineering Pte Ltd.

Many challenges surfaced during the construction, the most pressing of which were the construction of the upright support columns within strict tolerances and the constant monitoring of the effects of the strong ocean winds on the rim structure.

Building the first section of the support columns

Helps Make

USER REPORT
File. 2

UTOC Survey Engineer using a SOKKIA NET1200 with diagonal eyepiece

Another challenge was presented by the conditions of the site itself. The Marina Promenade is a narrow peninsula of reclaimed land adjacent to the downtown business district of Singapore. Limited working space and the presence of the giant crank station was a challenge during construction. The tip of the support structure stands 85 meters high and the cramped work space required a steep zenith angle to perform a nearly impossible vertical measurement.

Limited working space

The solution to this problem started with a reference to a base line running across the base of the two support columns which required both good surveying technique and a high-precision total station.

The spindle

The next set of challenges was presented by the spindle which forms the axis of the giant Ferris wheel. The spindle is fitted to both sides of the support structure and has more than two thousand bolts, which required each hole to be measured in relation to the others before the actual fitting process began. This required an extreme amount of patience and a highly accurate, easy to use instrument to minimize operator fatigue.

The spindle itself weighs 180 tons and holds 112 radial cables that support the rim structure and the lifting operation to attach the spindle was the most critical part of the entire construction process. While the engineers were busy fitting the spindle, the support structure had to be constantly monitored to ensure that both ends of the spindle were level despite differences in lifting speeds of the four lifting jacks used. This required an instrument that was both fast and accurate.

To overcome the challenges in this high-precision three-dimensional structural project, the construction of the Singapore Flyer required special attention to be paid to surveying techniques and a high performance instrument. The decision was made to use a SOKKIA NET1200 3D station.

SOKKIA's NET1200 is an ultra-high performance 3D station. When utilized with SDR4000 3D measurement software installed on a data collector, NET1200 can measure and compare points in three dimensions to ensure the highest precision. This system does not require a known control point as it can establish a coordinate system by measuring two or three convenient points on site. This allows freedom of mobility so engineers can set up the instrument at any location to monitor the structure.

Using the NET1200, engineers were able to confidently measure the tip of the 165 meter tall support rim within the space constraints of the site. Using these measurements, the relation to any point along the support rim or wheel structure could be easily computed, greatly reducing working hours and operator fatigue when monitoring the entire structure.

Successful construction starts with successful planning

Installing the steel columns

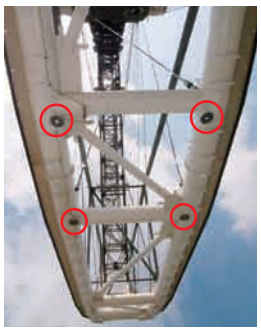
Construction began with the assembly of the two support structures section by section. Once the supports were completed, the spindle was installed. Installing the spindle was the most important part of the entire process and was accomplished after an exhausting 12-hour operation.

Once the spindle was in place, the segments of the rim structure were installed one at a time. The final stage of the operation was lifting the capsules to be fitted to the perimeter of the rim structure.

Installing one of the capsules to the outer rim

Raising a capsule to the top

Throughout the entire operation SOKKIA reflective sheets were used at 200 points. Working closely with structural and design engineers, UTOC surveying engineers pre-planned and attached reflective sheets to the support and rim structure components on the ground before actual construction began.



200 reflective sheets were carefully applied prior to construction

SOKKIA worked with UTOC Engineering Pte Ltd at every step of the way

UTOC Engineering Pte Ltd has been using SOKKIA total stations for 6 years. The Singapore Flyer project was their first purchase of a NET1200 and SDR4000.

SOKKIA NET1200

The decision as to which instrument to use did not come easily as they had no previous experience using such a high-precision total station. However, given the tight tolerance requirements of 5mm at 85 meters measured from the ground, the decision to purchase a NET1200 proved to be correct. Mr. Hiroaki Ohtomo, manager of UTOC Engineering Pte Ltd commented on the accuracy and ease of use in measuring 3D coordinates.

Prior to construction, SOKKIA conducted on-site training for the project team to simulate the actual working conditions and made regular visits to the site and project team. This was done to ensure that each member was fully competent in using the system. During this process, NET1200 was only sent back once for general maintenance and cleaning as required every six months according to the service contract.

Surveyors used advanced technology to make one of the most scenic tourist attractions in the world possible

The Singapore Flyer fitted with temporary support struts

Construction progressed smoothly and the Singapore Flyer was completed days ahead of schedule. The decision to purchase a SOKKIA NET1200 was a contributing factor to this success. NET1200 successfully accomplished the task of surveying one of the most scenic tourist attractions in the world – The Singapore Flyer. SOKKIA is proud to have been a part of this monumental project.

3D STATION
NET1200
Bluetooth®

USER REPORT File.2

Singapore Flyer Project
UTOC Engineering Pte Ltd

"I am very happy with SOKKIA's after sales support. They promptly responded to our requests."

Mr. Lim Teng Meng
Senior Construction Manager
UTOC Engineering Pte Ltd

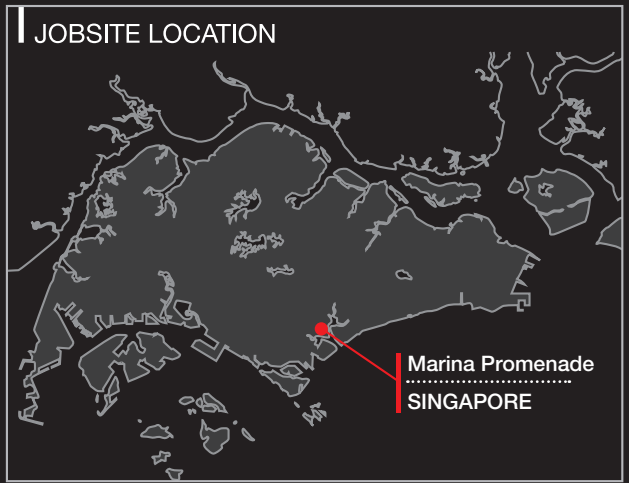
"I am really satisfied with NET1200 and SDR4000 because it has high accuracy in measurement, operation, and reliability."

Mr. Hiroaki Ohtomo
Erection Manager
Singapore Flyer Project
UTOC Engineering Pte Ltd

"The NET1200 is very user-friendly. It doesn't require fixed points for measurement and maintains high accuracy even at steep angles. It provides highly reliable results."

Mr. Tan Wee Kee
Project Engineer
UTOC Engineering Pte Ltd

JOBSITE LOCATION



SETX

SOKKIA CLASSIC

A Rugged Partner for any Jobsite

There When You Need It Most

SET X has what it takes to get the job done wherever the site may be. SET X boasts an environmental protection rating of IP65, the first in its class for Windows CE total stations. SET X has a flexible power system with 28 hours of operational life using the two standard rechargeable Li-Ion batteries. External battery BDC61 provides an additional 38.5 hours of use for a total of 66.5 hours. SET X maintains IP65 even with the external battery connected.

User-Friendly Design

SET X features a redesigned ergonomic handle and new attachment mechanism. The handle facilitates a tight grip in severe conditions, yet can be easily and quickly removed for vertical and near vertical measurements. The finely balanced trigger key facilitates measurement while looking through the telescope and using the fine motion screws. SET X comes standard with SOKKIA's high visibility guide light unit, *Bluetooth* wireless technology, and a high-visibility transreflective LCD touch screen control panel and fully backlit alphanumeric keyboard.

Advanced Functions

SET X features a RED-tech EX EDM, the latest in SOKKIA's innovative reflectorless measurement technology. RED-tech EX performs fast, highly accurate measurements using reflective prisms, sheet targets and in reflectorless measurement mode. SET1X and SET2X models feature SOKKIA's groundbreaking Independent Angle Calibration System (IACS) technology for extremely reliable angle measurement. SET X comes installed with SDR onboard software - Windows CE-based data collection software that increases functionality by providing powerful surveying programs with an intuitive workflow, customizable settings and a graphic interface.

NET05

Ultra-Precision Automated 3D Station

Auto-Pointing, Auto-Tracking, Motor Drive, Remote Control

Bluetooth®

0.5” Angle Accuracy

NET05 provides the industry’s highest 0.5” (0.15mgon) angle measurement precision backed by unique Independent Angle Calibration System (IACS) and enhanced encoders with market proven RAB code technology.

Super Laser Distance Meter

SOKKIA’s breakthrough distance measurement technology ensures the industry’s highest comprehensive performance. NET05 provides (0.8mm + 1ppm) accuracy up to 3,500m (11,480ft.) with normal surveying prisms. Measurement with (0.5mm + 1ppm) sub-millimeter accuracy is possible using reflective sheet targets.

Automated Measurement

With an exclusive auto-pointing algorithm for monitoring, NET05 automatically sights the prism closest to the telescope center regardless of the distance from the instrument and even if multiple prisms or reflective objects are in the field of view. Using the auto-tracking capability, moving targets are continuously measured, further broadening measurement possibilities.

Fully Equipped for all Applications and Environments

NET05 provides a solution for a wide range of measuring applications. NET05 offers the highest in its class IP64 environmental protection, *Bluetooth* wireless technology for convenient, license-free wireless communication, a high-visibility transreflective LCD touch screen control panel, Windows CE operating system, a fully backlit alphanumeric keyboard, a target illumination function for easy sighting in low lighting conditions, and many more.

STANDING TRUE

SOKKIA is there when you need it the most.
Our innovative lineup represents our commitment to your ever-changing needs for precision and reliability.
SOKKIA, made for you, made by you.

SOKKIA

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