A Brief Instruction to the Company

Suzhou FOIF Co., Ltd. was set up on the basis of legal reform from Suzhou First Optical Instrument Factory in August 1999. Suzhou First Optical Instrument Factory was founded in 1958, it produced the first 1st grade optical theodolite, the J2 optical theodolite in 1968 and the DS3 in 1968, the first automatic level in China. The first DCH1 EDM was developed in 1987 and the first total station DQZ2 in 1996. From 1986 to 1996 the company worked successively on the manufacturing and assembly technology of Wild T2 and Leica D1600. Suzhou FOIF also assembled the Sokkia DT2 EDM in 1992. FOIF is a professional enterprise of designing, manufacturing and sale for surveying products, it is high-tech enterprise and was awarded a certificate from Chinese government as an Honouring Contracts and Keeping Promise Enterprise for Grade AAA in Jiangsu province. FOIF is the first enterprise in China which produces a total station used reflectorless technology.

FOIF equipped with an advanced CNC (Computerised Numerical Control) machining centre, turning machine centre, three coordinate measuring machines and testing equipments, and use NX3 CAD/CAM computer assistant system for designing and manufacturing. FOIF is the renowned brand in the survey & industry in the world. And the high quality was accepted in most of customers. In 1996 FOIF's quality management system had attained ISO9001: 1994 Certification of DNV (Det Norske Veritas) and review the Certification of ISO9001: 2008. The quality of products keeps on high level and won several titles of honour by the National Quality Supervise Department, China Machinery Industry Fine Products, etc. FOIF has set up a sales net cover the whole China and the market share is always in the leading position. The products export to Europe, America, Australia, Africa and Asia, it also has a sales net cover the world.

In recently years, FOIF has expanded through joint venture and now includes a professional factory manufacturing precision parts, a professional factory producing automatic levels and a professional factory for accessories.

FOIF established an R & D Center for the research into advanced technology and creation of new products. The professional engineers and technicians working on products development and annual research expenditure is more than 5 per cent of sales. FOIF also worked with the famous professional university to research the high-level technology of survey and Geomatics.

FOIF’s main products are surveying instruments, construction instruments, laser instruments and tools. In recent years FOIF has been establishing 10 series and approximately 100 models products, including gyroscope station, GNSS/GIS products, total station, industrial measuring instrument, electronic theodolite, optical theodolite, automatic level, laser plummet, laser level and architecture installing instruments, etc.
**A50 GNSS Receiver**

- Multisystem and multifrequency GNSS Satellite tracking (GPS, Glonass, Galileo, Beidou...)
- Provides electronic bubble and inclination correcting
- Supports multiple languages
- Miniaturization structure with mass memory and OLED display
- USB OTG, WIFI, Bluetooth, wireless radio, mobile network (2G/3G) are available
- Remote control and embedded system adopted, the whole level of intelligence is enhanced.

**A30 GNSS Receiver**

- Professional GNSS Satellite tracking (GPS, Glonass, Galileo, Beidou...)
- Equipped with industry standard GNSS engine (Trimble, NovAtel...)
- Centering pole by built-in sensor
- Automatic tilt correcting system in 30 degree (optional)
- Voice messages
- OLED display with superior brightness & temperature range
- Base and rover communication options to suit any application
- 3.5G WWAN (HSDPA/WCDMA/EDGE...) module option
- FOIF PRS (Portable Reference System) technology, compatible with other brands GNSS products
- Specifications

  - **GNSS Engine**
    - Trimble BD970 (220 channels)
    - NovAtel OEM2R (optional) 120 channels
    - Advanced multipath mitigation
    - Update rate: 1, 2.5, 10, 20 Hz Selectable
    - L1 L1CA/L2E/L2C/L5
    - L1/L2: 1.5/1.5Hz (acceptance for baselines >20 km)
    - 99.9% reliability
  - **Real-Time Accuracy (rms)**
    - Horizontal: 10 mm (0.033 ft) ± 1 ppm
    - Vertical: 20 mm (0.065 ft) ± 1 ppm
  - **Real-Time Performance**
    - Instant RTK initialization
  - **Memory**
    - Internal: 4GB
    - External: 2SAT
  - **I/O Interface**
    - RS232, USB, Bluetooth

**F60 GNSS Receiver**

- A modular system with external antenna for maximum flexibility
- Professional GNSS Satellite tracking (GPS/Glonass/Galileo/Beidou)
- Equipped with industry standard GNSS engine (Trimble, NovAtel...)
- Advanced rugged and modular design, IP67 and MIL-STD 810F, working range -30°C ~ +45°C
- OLED display with superior brightness & temperature range
- High performance GNSS receiver, support EVENT input, PPS and NMEA output
- Multiple data links supported: GPS, internal Satel radio (Tx/E/Rx), external radio, Bluetooth or serial ports communication
- FOIF PRS (Portable Reference System) technology, compatible with other brands GNSS products
- Specifications

  - **GNSS Engine**
    - Trimble BD970 (220 channels)
    - NovAtel OEM2R (optional) 120 channels
    - Advanced multipath mitigation
    - Update rate: 1, 2.5, 10, 20 Hz Selectable
    - L1 L1CA/L2E/L2C/L5
    - L1/L2: 1.5/1.5Hz (acceptance for baselines >20 km)
    - 99.9% reliability
  - **Real-Time Accuracy (rms)**
    - Horizontal: 10 mm (0.033 ft) ± 1 ppm
    - Vertical: 20 mm (0.065 ft) ± 1 ppm
  - **Real-Time Performance**
    - Instant RTK initialization
  - **Communication Module**
    - Internal radio: -Satellite UHF Link (403-473MHz) Rx/ Tx both
    - External radio: -FOIF external radio Rx & Tx (FLDL-1, 2/3/5W selectable)
    - VAM/GPRS/EDGE (class 10) (both external and internal)
  - **Quad-band**: -CDMA/GPRS: 850/900/1800/1900MHz band
    - CDMA (optional)
  - **Post processing (rms)**
    - Horizontal: 3 mm (0.01 ft) ± 0.5 ppm
    - Vertical: 6 mm (0.02 ft) ± 0.5 ppm
  - **I/O Interface**
    - RS232 (9398) port
    - USB port
    - Bluetooth
    - GNSS antenna port
    - PPS, NMEA, EXT Event, External radio port
  - **Solutions**
    - Field Software Suite
    - FOIF Survey or FOIF Field/Genius
    - Carson SunCE coming soon
  - **Data Format**
    - NMEA 0183 (2,3,4,5,7,8,10)
    - RTCM 3.x
    - BD3 (optional)
  - **Data Flow**
    - FOIF PRS (Portable Reference System)
    - Connects to base stations through the same antenna
    - Provides high-precision and real-time data
  - **Real-time capability**
    - Only with cell phone coverage, you can build PRS system at any time. Does not require a fixed reference station and can be built anywhere.
  - **Extensibility**
    - Just append A100 receiver, you can combine multiple PRS system when needed
  - **Compatibility**
    - The system is compatible with GPRS data link functions of the other brands of GNSS receivers
  - **Flexibility**
    - Best CORS solution in area where no fixed CORS station
GNSS

A100 Reference Receiver

- Flexible CORS GNSS receiver
- Professional GNSS satellite tracking (GPS/GLONASS/Galileo/Beidou...)
- Easy operating by computer or Bluetooth connecting
- OLED display with superior brightness & temperature range
- Voice messages of multiple languages, support customized voices according to customers requirements.
- Multiple data file formats
- Compatible with other brands CORS systems
- FOIF PRS (Portable Reference System) technology
- Small investment while building multi-reference stations.

Specifications

Accuracy

<table>
<thead>
<tr>
<th></th>
<th>RTK</th>
<th>Static collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizontal</td>
<td>$\pm 10 \text{ mm} + 1 \times 10^{-5} \text{ D}$</td>
<td>$\pm 20 \text{ mm} + 1 \times 10^{-5} \text{ D}$</td>
</tr>
<tr>
<td>Vertical</td>
<td>$\pm 3 \text{ mm} + 1 \times 10^{-5} \text{ D}$</td>
<td>$\pm 6 \text{ mm} + 1 \times 10^{-5} \text{ D}$</td>
</tr>
</tbody>
</table>

Communication

- 2×RS232 (DB96LEMO) port
- 1×SD port
- 1×Bluetooth
- 1×RJ45 port for internet

Optional parts:
- PPS port, internal radio, SIM port, GSM module etc.

Physical

- Dimension (L×W×H): 265mm×130mm×55mm
- Weight: 1.5kg
- Shock: designed to survive 1.5m drop onto hard surface

A3 Static GNSS Receiver

- Advanced rugged design
- Voice messages
- OLED display with superior brightness & temperature range
- Compatibility, can work with other brands’ single & dual-frequency receivers to do control surveying
- All-in-one; Flexibility
- Office Software Suite: FOIF Geomatics office

A200 GNSS CORS Station

- Integrated terminal sever
- The terminal server used automatic controlling platform with 4U industry standard
- Equipped with industry standard GNSS engine (Trimble, Novatel, Javad...)
- Wireless signal transmitting is optional

<table>
<thead>
<tr>
<th></th>
<th>5mm+1ppm (Horizontal)</th>
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</thead>
<tbody>
<tr>
<td>Position Accuracy</td>
<td>10mm+1ppm (Vertical)</td>
</tr>
<tr>
<td>Channels</td>
<td>12 channels (10 channels when tracking SBAS)</td>
</tr>
<tr>
<td>Time to first fix (C/W/R)</td>
<td>60s/45s/20s</td>
</tr>
<tr>
<td>Dimensions (h<em>d</em>w*)</td>
<td>10.1 cm×19.7cm×19.7cm</td>
</tr>
<tr>
<td>Water and dust protection</td>
<td>IP67 (IEC60529)</td>
</tr>
<tr>
<td>Shock</td>
<td>2.0m (6.6 ft) pole drop</td>
</tr>
</tbody>
</table>
Handhelder

F55 Series GNSS Receiver

- Combine the modern positioning technology and versatility of a powerful handheld, perfect for collecting geographic data and operate fast and accurate measurements.
- Up to 120 channels GNSS receiver for RTK centimetric surveying, ALL in one hand
- GPS+GLONASS satellites tracking capability, supports Galileo
- Windows Mobile 6.5 Professional operating system
- High performance touch screen 3.7” high resolution 640x480 pixel display, sunlight-optimized
- Wi-Fi, Bluetooth, GPRS modem, 5 megapixel camera, voice call and MMS, Mini waterproof USB connector, all included as standard
- Onboard software FOIF SuperGIS for GIS applications

F52G GIS Handhelder

- Combine the modern positioning technology and versatility of a powerful handheld, perfect for collecting geographic data and operate fast and accurate measurements.
- Supports standard NMEA protocol and a proprietary binary format for GPS data output
- Windows Mobile 6.5 Professional operating system
- High performance touch screen 3.7” high resolution 640x480 pixel display, sunlight-optimized
- Wi-Fi, Bluetooth, GPRS modem, 5 megapixel camera, voice call and MMS, Mini waterproof USB connector, all included as standard
- Onboard software FOIF SuperGIS for GIS applications

<table>
<thead>
<tr>
<th>GNSS-integrated high-performance GNSS (GPS, GLONASS and SBAS) receiver</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H-accuracy</strong></td>
</tr>
<tr>
<td>Single Point L1</td>
</tr>
<tr>
<td>Single Point L1/L2</td>
</tr>
<tr>
<td>SBAS</td>
</tr>
<tr>
<td>DGPS</td>
</tr>
<tr>
<td>RTK</td>
</tr>
<tr>
<td><strong>GNSS</strong></td>
</tr>
<tr>
<td>GPS/ SBAS</td>
</tr>
</tbody>
</table>

A50/A30 Auto Data Collection and Incline Measurement

A50/A30 are equipped with electronic bubble and tilt sensor, with these features you can get point position automatically without touching controller screen, it makes your job easier and quicker; and A50/A30 can get corrected result although its supporting pole tilt in 30°, surveyor do not always need to hold the supporting pole straightly, with A30 enjoying job is possible.

- **Easy to calibrate**

Adjust the electric bubble to make it corresponding with the mechanical bubble on the tribrach.

Calibrate electronic compass, meantime rotate GNSS receiver over 720° smoothly.

- **Incline Measurement**

Difference is within 1 cm
Software

FOIF SuperGIS

FOIF SuperGIS is an out-of-the-box and multipurpose mobile GIS solution, helping you easily collect, display, edit, and analyze spatial data with greater field productivity.

- **Features**
  - Provide handy map navigation & query functions
  - Built-in hundreds of commonly used coordinate systems
  - Support to create multiple GPS waypoints
  - Offer direction guide for current GPS position & destination
  - Support to record and display GPS tracklog
  - Measure, digitize and edit features with ease

- **Supported file formats**
  - Vector data: GEO, SHP, MIF and DXF
  - Raster data: MrSid, ECW, LAN, BMP, GIF, PNG and JPEG
  - OGC standards: WMS, WFS, and GML

- **System requirements**
  - Pocket PC Operating system:
    - Windows Mobile 5.x/6.x
  - PC Operating system:
    - Windows 2000/XP/2003/Vista/7
  - Synchronization environment
    - Microsoft ActiveSync 4.2 or above
    - Windows Mobile Device Centre 6.1 or above

SuperGIS Desktop is geographic information system (GIS) software for creating, visualizing, managing, and analyzing geographic data. Using SuperGIS Desktop, you can easily represent complex geographic phenomena of your data and make better decisions in an efficient way.

FOIF Geomatics Office (FGO)

- All in One: Integrate most FOIF Survey products in one platform
- Support Total station: GTA1300, RTS/RTM010, RTS100, TS650, TS680, RTS330, RTS340, RTS350, RTS360
- GNSS products: A50, A30, A3, A60, A100, A200, F52G, F55A/B
- File Manage: Import and export data files between FOIF products and PC, support SD card data read and record directly
- Data Process, manage coordinate data and code data, add or edit or delete, etc
- Mapping, present listed coordinate data can be drawn as picture, user can view or hide PT name, Pan, zoom in, zoom out, full extent, line, delete line
- GNSS: support multi-formats, calculate base-line, net adjustment, HTML report, etc
- Supported file formats: dxl, c5v, txt, dat

FOIF FieldGenius

- Same user interface for TS and GNSS
- Easy to use instrument toolbar ensures that your instrument options and settings are easily accessible
- Code-free Connectivity
  - Line connectivity is not feature code dependent. A single line may be made up of points having different feature codes
- Graphical interface, much easier to learn
- The most Powerful Road and staking Module
- Collect lines, arcs, splines and points coordinate
- With Powerful 3D graphical engine, FOIF FieldGenius can view, zoom, pan your map freely.
- Perfectly suit for any Win CE or Win Mobile controller
Gyroscopes Station

Find high precision azimuth anywhere and anytime

GTA1300 series
Automated Gyroscope Station

- High accuracy of azimuth determination: 10°/GTA1310, 15°/GTA1315
- GTA1300 incorporates a gyroscope unit on Windows CE total station, on-board gyro calculation program and professional surveying software FOIF FieldGenius or Carlson SurvCE are included, after measuring azimuth angle, it can work as well as normal total station for all survey projects
- Automatical azimuth determination, easy operation
- Self testing for measuring data can ensure reliable result
- Application: It is available for not only work under hard conditions (underground environments, buildings, etc) but also education for students

Total Station

RTS812M Motor Total Station
Automated motorized measurement
- With servo motor drive, find given angle automatically and precisely, which dramatically increases productivity over traditional layout methods!
- Utilized for dam monitoring, Rail traffic monitoring, industrial services, etc

RTM010/RTS010 High Precision Total Station
1° angle measurement
1000m reflectorless measuring distance
1mm+1ppm distance measurement in prism mode

- RTM010----distance measurement accuracy reaches to 1mm+1ppm with reflective sheet
- Ultra-narrow EDM laser beam for precise measurement (high voltage wire, walls, etc)
- Applied to high precision surveying area, such as high-speed railway construction, structural monitoring and large-scale 3D measurement
- Windows CE 5.0 operating system, onboard software: FOIF FieldGenius, Carlson SurvCE or FOIF Survey

<table>
<thead>
<tr>
<th>GTA1300 series gyroscope</th>
<th>GTA1310/GTA1315</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy of azimuth determination</td>
<td>10°/15°</td>
</tr>
<tr>
<td>Power supply</td>
<td>7000mAh, Li-ion Rechargeable battery</td>
</tr>
<tr>
<td>Running-up time</td>
<td>Approx. 120 seconds</td>
</tr>
<tr>
<td>24V, 5A, power inverter (Optional)</td>
<td></td>
</tr>
<tr>
<td>Operating area</td>
<td>Up to latitude 75°</td>
</tr>
<tr>
<td>Output voltage</td>
<td>24V</td>
</tr>
<tr>
<td>Weight (height)</td>
<td>3.2kg/0.41m x 415mm</td>
</tr>
<tr>
<td>Working time</td>
<td>Approx. 8h (20°C)</td>
</tr>
<tr>
<td>Charging time</td>
<td>Approx. 10 hours (20°C)</td>
</tr>
</tbody>
</table>

| Angle measurement |
|--------------------|------------------|
| RTS812M | RTS010 | RTM010 |
| Reading system | 2-absolute encoders |
| Accuracy | 2° |
| Distance measurement |
| Accuracy |
| Prism | 2mm+2ppm |
| Reflective sheet | 3mm+3ppm |
| Reflectiveless | 1-200m: 3mm+2ppm; +200m: 5mm+3ppm |
| Reflectorless | 2mm+2ppm |
| Measurement range (good condition) |
| Reflectiveless | 1 to 500m |
| Reflective sheet/RP30 | 1 to 1000m |
| Single prism | Class 1: 1 to 3000m; Class 3R: 1 to 5000m |

| 1 to 1200m |
| 1 to 6000m |
**RTS360 Series WinCE Total Station**

- Compact design with trigger key
- Windows CE 5.0 operating system
- Endless drives, collimate target faster with two hands operation
- 3.5" colour TFT LCD (320 x 240 dots) touch screen, transflective sunlight readable display
- Smart battery managing system, display battery life in real-time
- 500m long range Bluetooth cable-free connection offers solution of semi-automatic data collection (optional)

**RTS350 Series WinCE Total Station**

- Windows CE 5.0 operating system
- Professional onboard software: FOIF FieldGenius, Carlson SurvCE or FOIF Survey
- Illuminated keyboard with light sensor, turn on in dark surroundings automatically
- Multiple data interface, USB host, USB slave, RS-232C or Bluetooth connection are available

**RTS340 Series Colour-display Total Station**

- Trigger key
- Highlighted colour display (QVGA)
- LED-backlight alphanumerical keyboard
- Onboard software and application programs simplify and speed up work in the field
- Multiple data interfaces, mini-USB, RS-232C or SD card data transfer are available

**RTS330/330S Series Total Station**

- Trigger key
- Endless drives for RTS330, clamp drives for RTS330S
- Long reflectorless measuring distance: 500m (R500) or 1000m (R1000)
- Guide light system for fast stake out measurement (Only R500 factory optional)
- Ample measurement programs are provided, such as Traverse (Lead measure), 3D road, reference line/arc, and COGO

<table>
<thead>
<tr>
<th>Angle measurement</th>
<th>RTS360</th>
<th>RTS350</th>
<th>RTS340</th>
<th>RTS330</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading system</td>
<td>2-absolute encoders</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accuracy</td>
<td>2&quot; / 7&quot;</td>
<td></td>
<td></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Distance measurement (R1000)</th>
<th>RTS360</th>
<th>RTS350</th>
<th>RTS340</th>
<th>RTS330</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy Prism</td>
<td>1mm±1ppm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prism Reflective sheet</td>
<td>2mm±2ppm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prism Reflectorless</td>
<td>2mm±2ppm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measurement range (good condition)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reflectorless</td>
<td>1 to 1000m</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Reflective sheet/RP30</td>
<td>1 to 1200m</td>
<td></td>
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</tr>
<tr>
<td>Single prism</td>
<td>1 to 6000m</td>
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</table>

<table>
<thead>
<tr>
<th>Distance measurement (R500)</th>
<th>RTS360</th>
<th>RTS350</th>
<th>RTS340</th>
<th>RTS330</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy Prism</td>
<td>2mm±2ppm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prism Reflective sheet</td>
<td>3mm±2ppm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prism Reflectorless</td>
<td>1-200m; 3mm±2ppm; &gt;200m: 5mm±3ppm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measurement range (good condition)</td>
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<td></td>
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<tr>
<td>Reflectorless</td>
<td>1 to 500m</td>
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<tr>
<td>Reflective sheet/RP30</td>
<td>1 to 800m</td>
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<tr>
<td>Single prism</td>
<td>Class 1: 1 to 3000m; Class 3R: 1 to 5000m</td>
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<table>
<thead>
<tr>
<th>Other</th>
<th>Color-display/Touch screen</th>
<th>Color-display</th>
<th>LCD display</th>
<th>H/V drives</th>
<th>OS</th>
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<tbody>
<tr>
<td>Display</td>
<td>Endless drives</td>
<td>Clamp drives</td>
<td>Clamp drives</td>
<td>Endless drives/RTS330</td>
<td>WinCE 5.0</td>
</tr>
<tr>
<td>OS</td>
<td>WinCE 5.0</td>
<td>WinCE 5.0</td>
<td>Embedded OS</td>
<td>Embedded OS</td>
<td></td>
</tr>
</tbody>
</table>
RTS/OTS680 series Total Station

- High precision measurement, prism: 2mm+2ppm(R500)/1mm+1.5ppm(R1000)
- Record or transfer data to external SD card directly
- Bluetooth cable-free connection (Factory Optional)
- License protection for security
- Built-in temperature and pressure sensors
- Supports multiple languages, Chinese, English, Spanish, French, etc.

RTS/OTS650 Series Total Station

- Reflectorless measuring distance for OTS series: 300m(R300)/500m(R500)
- 120000 points and 40 jobs can be saved
- Can be operated with a data collector
- IP66 environmental protection
- Alphanumeric keyboard
- Display: 4 lines x 16 characters

RTS100 Series Total Station

- Reflectorless measuring distance: 300m(RTS100R3)/500m(RTS100R5)
- Bluetooth cable-free connection (Factory Optional)
- IP66 environmental protection
- Alphanumeric keyboard
- Display: 6 lines x 20 characters
- Compensator: dual-axis
- Supports external SD card

<table>
<thead>
<tr>
<th>Angle measurement</th>
<th>RTS650</th>
<th>RTS680</th>
<th>OTS650-R300</th>
<th>OTS650-R500</th>
<th>OTS680-R300</th>
<th>OTS680-R500</th>
<th>RTS100R3/R5</th>
<th>RTS100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading system</td>
<td>2-absolute encoders</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>/Accuracy</td>
<td>/</td>
<td>2</td>
<td>or 5’</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tilt sensor</td>
<td>Single axis</td>
<td>Dual-axis</td>
<td>Single axis</td>
<td>Dual-axis</td>
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<tr>
<td>Distance measurement</td>
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<td>Accuracy</td>
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</tr>
<tr>
<td>Reflective sheet</td>
<td>/</td>
<td>3mm+2ppm</td>
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<tr>
<td>Reflectiveless</td>
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<td>1 to 300m(R300/R3) or 1 to 500m(R500/R5)</td>
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<td>Single prism</td>
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<td>Class 1: 1 to 3000m</td>
<td>Class 3: 1 to 5000m</td>
<td>Class 1: 1 to 3000m</td>
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<td>Water and dust production</td>
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<td>IP55</td>
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</table>

*1 Single distance measurement every 30 seconds
Theodolite

DT400 series Electronic Theodolite

- With absolute encoder, angle measurements can be saved when power off
- Minimum reading: 1" / 5" / 10" or 0.2mgon/1mgon/2mgon
- Repeated angle program which carries out continuous measuring and average calculating to get high accuracy angle value
- Rechargeable battery and AA battery are available
- IP55 environmental protection
- Wide working temperature range: -20°C ~ +50°C

LP402L/LP405L Laser Electronic Theodolite

- Laser Spot Visible From Eyepiece
  Telescope laser emitting system provides a visible laser beam, which can be seen up to 150 metres away outside through eyepiece in daylight
- Laser pointer brightness and focus adjustable
  It is convenient to focus and adjust the laser brightness. A sharp and clear laser is available in any situation.
- Wide Range of Application
  For setting out, the person placing the nail or stake can use the laser beam to help him align in the correct direction.
- Laser Plumbet is Available
  Standard component is laser plummet, optical plummet is optional, and you can order laser plummet as you like. Also, the laser brightness can be adjusted.

J2-2 Optical Theodolite

- High angle measurement accuracy: 2"
- Safe for mining survey
- Reading microscope easily
- Telescope gives a bright, high-contrast erect image
- Automatic index improves accuracy and simplifies vertical angle measurement
- A wide range of accessories fits theodolite to many tasks, such as diagonal eyepiece

DT402-Z Auto-collimating Theodolite

- Effective working distance for indoor collimation reaches to 30m
- Directional orientation error of auto-collimator part: 5"
- DT402-Z contributes to aligning measurement and baseline precision measurement
- Compact design with wide LCD display facilitates numerical reading and operation
- Minimum reading: 1" / 5" / 10" or 0.2mgon/1mgon/2mgon
- Lower power consumption, longer working time with one battery

<table>
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<tr>
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<th>LP402L</th>
<th>LP405L</th>
<th>DT402Z</th>
<th>DT405L</th>
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<td>Optical</td>
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<td>(0.2mgon/1mgon/2mgon)</td>
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<td>5”</td>
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<td>±3’</td>
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<tr>
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<td>1”</td>
<td>1”</td>
<td>/</td>
<td>0.3”</td>
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<td>Others</td>
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<td>Circular level</td>
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<td>Laser wave length</td>
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<td>150m</td>
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</tbody>
</table>
EL03/EL302A Digital Level

- Far measuring range: 110m
- Accuracy: EL03 ≤ 0.3 mm, EL302A ≤ 0.7 mm
- Remote control measurement by Bluetooth (EL03)
- Reliable reading, even in dim light conditions
- LCD display presents all important measured data at a glance and shows the next step to take
- Onboard program, such as BF, BFFB, BFBB, BFBB, stake out, intermediate
- Quicker and easier than an optical level; Easy one-touch operation, simply push the MEAS button

EL28 Digital Level

- Easy one-touch operation, simply push the trigger key
- Quicker and easier than an optical level, Efficiency increased by 30%
- Quick height and distance result the reading is displayed almost instantly with measurement
- Advanced compensator checking button
- dh and HD displayed on screen almost instantly, you can enjoy survey work freely
- Attractive designs, high quality with lower prices

<table>
<thead>
<tr>
<th></th>
<th>ELO3</th>
<th>EL302A</th>
<th>EL28</th>
</tr>
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<tr>
<td><strong>Accuracy</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Standard deviation of 1km double run (ISO 17123-2) *</td>
<td>±0.3 mm (under staff)</td>
<td>±0.4 mm (standard staff)</td>
<td>±1.5 mm</td>
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<td>Optical measurement</td>
<td>±1.5 mm *</td>
<td>±1.5 mm</td>
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<tr>
<td>Distance measurement</td>
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<td>±1.0 mm</td>
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<td>30°</td>
<td>28°</td>
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<tr>
<td><strong>Compensator</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working range</td>
<td>±13'</td>
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<td>±15'</td>
</tr>
<tr>
<td>Setting Accuracy</td>
<td>±0.3'</td>
<td>±0.5'</td>
<td>±0.4'</td>
</tr>
<tr>
<td>Setting time</td>
<td>±25</td>
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</table>

DS03/DS05/DSZ2/DSZ2+FS1 Automatic Level

DS03 High Precision Level

- Built-in parallel plate micrometer integration
- Digital reading for micrometer
- Standard deviation of 1km double run: ±0.3 mm

DS05 High Precision Level

- Built-in parallel plate micrometer integration
- Optical reading for micrometer
- Standard deviation of 1km double run: ±0.5 mm

DSZ2 Automatic Level

- Standard deviation of 1km double run: ±1.0 mm
- DSZ2 with Parallel plate micrometer FS1: ±0.5 mm
- Wide compensating range: ±14°
- Equipped with a press button for compensator checking
- With metal and sealed body, it has high stability and good water-proof property
- Diagonal eyepiece could be used
- Each level passed vibratory test and temperature test from -25°C to +90°C

<table>
<thead>
<tr>
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<th>DS03</th>
<th>DS05</th>
<th>DSZ2</th>
<th>DSZ2+FS1</th>
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<td>Standard deviation of 1km double run (ISO 17123-2) *</td>
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<td>±1.0 mm</td>
<td>±0.5 mm</td>
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<td></td>
</tr>
<tr>
<td>Working range</td>
<td>±15°</td>
<td>±15°</td>
<td>±14°</td>
<td>±14°</td>
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<tr>
<td>Setting Accuracy</td>
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<td>±0.3°</td>
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<td>±0.3°</td>
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<tr>
<td>Setting time</td>
<td>≤25</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Depending on staff and levelling technique.
**Level**

**DSZ3 Automatic Level**
- With metal and sealed body, it has high stability and good water-proof
- Equipped with a press button for compensator checking
- Each level passed vibratory test and temperature test from -25°C to +50°C

**NAL100 Automatic Level**
- Automatic levelling
- Air damping for compensator
- Each level passed vibratory test and temperature test from -25°C to +50°C

**AL200 Automatic Level**
- With metal and sealed body, it has high stability and good water-proof
- Equipped with a press button for compensator checking
- Each level passed vibratory test and temperature test from -25°C to +50°C

**NAL24R Laser Level**
- Laser beam helps to look for the target
- AA battery for power supply of laser
- Laser range can reach to 200m
- Standard deviation of 1km double run: ≤ ±2mm

---

**Plummet Laser**

**DZJ200 Plummet Laser**
- Laser brightness and focus adjustable
- Laser spot visible from eyepiece
- Protection against water/dust
- Laser plummet

**JC100 Plummet Laser**
- Electronic auto-leveling
- Remote control
- Upward and downward laser

---

**Comparison Table**

<table>
<thead>
<tr>
<th></th>
<th>DSZ3</th>
<th>NAL100/AL200 series</th>
<th>NAL24R</th>
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<td>20°</td>
<td>24°</td>
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<tr>
<td>Compensator</td>
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<td>±15°</td>
<td>±15°</td>
</tr>
<tr>
<td>Setting Accuracy</td>
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<td>±0.4°</td>
<td>±0.5°</td>
</tr>
<tr>
<td>Setting time</td>
<td>≤25</td>
<td>≤25</td>
<td>≤25</td>
</tr>
</tbody>
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*Depending on staff and levelling technique.
Accessories

Charger

FD6-Li Charger for Li-ion battery
FD6 Charger for Ni-MH battery
FD7 Charger (LP, DT) for Ni-MH battery
FDQ7 Charger for Li-ion battery

Battery

BT91L
Li-ion battery: 7.4V/5800mAh
Used For: A20 GNSS receiver
TS810 total Station

BT82A
Li-ion battery: 7.4V/3400mAh
Used For: TS680, RTS60, RTS50, RTS340, RTS330, RTS010, RTM010 series total Station

BT82
Li-ion battery: 7.4V/3400mAh
Used For: TS680, RTS60, RTS50, RTS340, RTS330, RTS010, RTM010 series total Station

B30-400
Ni-MH battery: 6.0V/2000mAh
Used For: EL03/EL302A digital level

Diagonal Eyepiece

FJ19
Can be equipped on DT, Level and Total Station

FJ13A
Can be equipped on J2-2 theodolite

Reflective sheet

RP60
(60mm x 60mm)

RP30
(30mm x 30mm)

Reflective prism accessories for total station

YGFDO2A
Single prism system (0/-30 offset)

YGFDO2B
Single prism system (0 offset)

YGFDO2L
Single prism system (0 offset)

YGFDO2Q
Triple prism system (0 offset)

YGFDO2A
Single prism

YGFDO2Q
L Prism

Three-jaw Trivibachi

FJ16 / FJ16D
FJ16 without optical plummet
FJ16D with optical plummet

FJC9B
Trivibachi adapter with optical plummet

FJC9B
Trivibachi adapter with optical plummet

FJ21 / FJ21D
FJ21 without optical plummet
FJ21D with optical plummet

FJ21 / FJ21D
Trivibachi adapter with optical plummet
### Accessories

#### Tripod

- YGL165
- YGLJ165C
- YGM165HC
- YGMJ170H
- YGM170H
- YGR170

#### Technical Data

<table>
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<tr>
<th>Model No.</th>
<th>Description</th>
<th>Opened Length</th>
<th>Closed Length</th>
<th>Head</th>
<th>Clamp mode</th>
<th>Outer diameter Of head</th>
<th>Inner diameter Of head</th>
<th>Weight</th>
<th>Central Column</th>
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<td>Wing nut</td>
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<td>5/8” J016</td>
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#### Surveyor’s Poles

Connection of the pulling stake
Connection of the loose joint stake

#### Reading mode of graduation

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<thead>
<tr>
<th>Name</th>
<th>Specifications</th>
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<th>Error of overall length</th>
<th>At a distance</th>
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<td>JHG 2m</td>
<td>±1.0mm</td>
<td>±2.0mm</td>
<td>±2.0mm</td>
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<td>Loose joint stake</td>
<td>JHG 3m</td>
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<td>±3.0mm</td>
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<td>JHG 4m</td>
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<td>±3.0mm</td>
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<td>Pulling type stake</td>
<td>CHHG 3m</td>
<td>±1.0mm</td>
<td>±2.5mm</td>
<td>±3.0mm</td>
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<td>±3.0mm</td>
<td>±4.0mm</td>
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<td>Pulling type stake</td>
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Accessories

Levelling staff

Specifications

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<tr>
<th>Length</th>
<th>Section amount</th>
<th>Error of overall length</th>
<th>Error of each meter</th>
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</thead>
<tbody>
<tr>
<td>3 meters</td>
<td>3 sections</td>
<td>± 2mm</td>
<td>± 0.5mm</td>
</tr>
<tr>
<td>4 meters</td>
<td>4 sections</td>
<td>± 2mm</td>
<td>± 0.5mm</td>
</tr>
<tr>
<td>5 meters</td>
<td>4 sections</td>
<td>± 3mm</td>
<td>± 0.5mm</td>
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Reading model of graduation

<table>
<thead>
<tr>
<th>Serial number</th>
<th>Face side Mini-reading</th>
<th>Back side Mini-reading</th>
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<tbody>
<tr>
<td>01</td>
<td>10mm</td>
<td>1mm</td>
</tr>
<tr>
<td>02</td>
<td>10mm</td>
<td>1mm/reading from up to down</td>
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<tr>
<td>03</td>
<td>10mm</td>
<td>5mm</td>
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<tr>
<td>04</td>
<td>0.1 ft</td>
<td>1 inch</td>
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Figures of mini-reading

Technical Data

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<tr>
<th>Name</th>
<th>Model</th>
<th>Opened length/Minimum length</th>
<th>Joint type</th>
<th>Minimum reading</th>
<th>Equipment of Poles &amp; Bipods</th>
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<tbody>
<tr>
<td>Prism poles</td>
<td>D2/2m</td>
<td>2100mm / 1000mm</td>
<td>LEICA</td>
<td>10mm</td>
<td>D1, D2, D3</td>
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<td>Prism poles</td>
<td>D3/2m</td>
<td>2100mm / 1360mm</td>
<td>LEICA</td>
<td>10mm</td>
<td>D3</td>
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<td>Prism poles</td>
<td>D3/3m</td>
<td>3100mm / 1420mm</td>
<td>LEICA</td>
<td>10mm</td>
<td>D3</td>
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<td>4700mm / 1580mm</td>
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<td>D3</td>
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<td>Bipods</td>
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<td>1920mm / 1120mm</td>
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</table>
**Accessories**

**Code staff and tape**

**Communication Cable**
- D3-1600 USB cable
- D3-2200 USB Cable
- D3-1000 RS-232 cable
- 1011-05P USB Cable

**Carrying case**
- SX7: For total station and electronic theodolite
- SX6: For DS23, NAL300 automatic level
- SX5: For DS22 and NAL100 series level
- SX1: For J2-2 optical theodolite and D2J2/D2J200 laser plummet
- SX10: For total station
- SX12: For A20/A30 GNSS receiver

**Note:** Illustrations, descriptions and technical specifications are not binding and may change