SDL30
DIGITAL LEVEL

0.6mm Standard Deviation for 1km Double-run Leveling

POWERLEVEL

with Internal Memory
Sokkia proudly presents the POWERLEVEL SDL30, a digital level with a large internal memory. All you have to do to measure height and distance is aim the unique RAB-Code staff, adjust the focus and press a single key. The results are immediately indicated digitally on the LCD display and can be recorded in the internal memory - making the SDL30 the ideal instrument for quick and easy leveling.

**“Digital” Makes Measurement Quick and Easy**

“How can we make leveling work quicker and easier?” was the question foremost in the minds of the SDL30 designers. Sokkia boldly eliminated complex functions that complicate operation, resulting in an extremely simple and efficient digital level designed primarily for height and distance measurement - the essential role of the “Level”. Measurements are made within three seconds with a single touch of a key, and can be stored immediately in the internal memory.

**“Digital” Means Accurate**

The SDL30 employs a CCD to read the unique code pattern which is immediately processed by its integral CPU. The digital display reduces miss-reading and eliminates operator interpretation errors. Sokkia’s extensive field tests verified excellent accuracy: standard deviation of only 0.6mm for 1km double-run leveling using invar staves, and 1mm using fiberglass staves. The distance measurement accuracy is ±0.1% x D (D=measuring distance) equivalent to 1cm at 10m (±2/5in. at 33ft.) and ±5cm at 50m (±2in. at 160ft.).

**Suited to Various Environments**

The SDL30 can be used in a wide variety of differing environments. It can be used in low light conditions as long as the cross hair is visible, as well as in very bright direct sunshine. Artificial lighting presents no problems, so you can survey indoors or in tunnels. Even in the dark, measurement can be carried out using a small flashlight. The SDL30 has been designed to provide stable accuracy under these conditions and in adverse operating environments such as uneven light and shade, heat shimmer, and vibration.

**Four Measurement Modes**

Four measurement modes are available: Single-Fine, Repeat-Fine, Average and Tracking.

**“RAB-Code Staff” Is Ideally Suited to Field Work**

When designing staves, Sokkia not only strives to achieve the highest accuracy, but also to provide staves that are lightweight and durable. Sokkia has chosen invar and fiberglass for their superior strength-to-weight ratio and unparalleled durability, while accuracy is ensured by the latest printing technology. Sokkia’s unique “RAB-Code (RAndom Bi-directional Code)” improves measurement capabilities in a variety of conditions and enhances distance measurement accuracy. The staff can also be held upside-down to measure the height from ceilings. The SDL30 automatically...
identifies staff attitude and indicates in negative (-) values. The maximum length of the RAB Code Staff is 5.0m (16.7 ft.) facilitating survey work where there are steep slopes.

**Water and Shock Resistant Structure**

The SDL30 boasts excellent water-resistance. Complying with IPX4 (IEC60529), the SDL30 is protected from water splash from any direction. Sokkia’s proven shock-resistant pendulum compensator with magnetic damping system ensures accuracy and durability.

**Other Benefits of “Digital”**

The SDL30 is equipped with a host of easy-to-use calculation functions. You can now leave your calculator in the office.

- Height difference: The SDL30 calculates the height difference between backsight and foresight. As the backsight point can be fixed, multiple foresight heights can be calculated successively.
- Elevation: By inputting the backsight elevation, the SDL30 calculates the foresight heights in elevations.
- Setting-out: The SDL30 enables setting-out in three ways: by height difference, by elevation and by horizontal distance.
- Reticle cross-hair adjustment with guide displays: The SDL30 indicates the procedure of reticle cross-hair adjustment step by step.

**Data Storage**

To further enhance the leveling work, an internal memory with a recording capacity of up to 2000 points of data is incorporated. This also enables you to create up to 20 JOB files. Either automatically or by using the keys on the instrument, you can define point numbers and select attributes of recorded data and check them while doing or after finishing the job. The data can be output in CSV and SDR format. Moreover, thanks to the internal memory it is possible to set up double-run leveling as well. (It is possible to upgrade a conventional SDL30 by adding the memory function program*)

*In some cases the memory function program cannot be installed. Please contact your dealer for more information

**Advanced Power System**

The SDL30 is powered by a Lithium-ion battery which is capable of supplying power continuously for 8.5 hours. Long battery life is assured even with frequent recharging.
**SDL30 Applications**

**Measuring Elevation**

By using the “Elevation Measurement” function, elevation of ground points are automatically calculated. Input the Backsight (BS) elevation and start measurement. The SDL30 also memorizes the elevation of each Turning Point (TP) so that you can move the instrument position and continue measurement.

**Measuring Height Difference**

With the “Height Difference Measurement” function, the SDL30 automatically calculates the height difference between Foresight (FS) and Backsight (BS) points. Measurement units are 0.1/1mm or 0.001/0.01ft.

**Measuring Height Difference with multiple instrument positions**

When using the “Elevation Measurement” function, by inputting the BS elevation “0”, the SDL30 can measure the height difference between BS and FS. As the instrument can be repositioned, it is useful for wide area surveys or cases where there are physical obstacles.

**Leveling**

It is easy to level the ground using the “Setting Out Height Difference” function. Just input the height difference “0” and the SDL30 indicates the “Cut” or “Fill” value for each point.
**Slope Setting**

With the “Setting Out Height Difference” mode, you can set the slope with the ultimate of ease. Inputting the design height difference from the reference point, the SDL30 calculates the “Cut” or “Fill” value for each point. Measurement units are 0.1/1mm or 0.001/0.01ft.

**Setting Out with Horizontal Distance**

By entering the horizontal distance from the instrument center, you can find the ground point at a specified distance. This is useful for determining the instrument position between two staves, or for locating a staff at a specific point for setting out. In conjunction with the SDL30 horizontal circle, setting out using horizontal distance and horizontal angle can be performed.

**Height Measurement**

With the “Height Difference Measurement” function, the heights of ceilings, trees, bridges, road signs, and other items can be determined with ease. Observe the staff set directly below the measuring point, then position the staff upside-down and set it at the measuring point. The SDL30 automatically identifies the staff attitude and calculates the height.

**Leveling of Ceilings**

Using the “Setting Out Height Difference” function, you can level the ceiling with inverse staff positions. Reference points can be located either on the ground or on the ceiling. The staff can freely be used either erect or inverted. The detachable circular level can also be installed on the staff while inverted.
For demonstration purpose, the RAB-code appearing here may be used with the SDL30 for actual measurement.

### SDL30 Specifications

**HEIGHT ACCURACY**
- Electronic Measurement: 0.6mm (With Invar RAB-Code Staves)
- Visual measurement: 1.0mm (With Fiberglass RAB-Code Staves)

**DISTANCE ACCURACY**
- Standard deviation (Invar and Fiberglass RAB-Code staves):
  - Up to 10m (33ft.): ±0.1mm (±2/5 in.)
  - 10m (33ft.) to 50m (160ft.): ±0.114mm
  - Over 50m (160ft.): ±0.2%D
  - D=measuring distance (unit: m)

**Measuring Mode**
- Single/Repeat/Average/Tracking (selectable)

**Measuring Range**
- Electronic Measurement (Invar and Fiberglass RAB-Code staves): 1.6 to 100m

**Minimum Display**
- Height: Single, Repeat or Average mode: 0.0001/0.001m (0.001/0.01ft.)
- Tracking mode: 1mm (0.01ft.)
- Distance: Single, Repeat or Average mode: 0.01m (0.1ft.)
- Tracking mode: 0.1m (1ft.)

**Measuring Time**
- Single, Repeat or Average mode: Less than 3 sec.
- Tracking mode: Less than 1 sec.

**Telescope**
- Magnification: 32x
- Image: Erect
- Objective Aperture: 45mm
- Field of View: 1°20’ (2.3m at 100m)
- Resolving Power: 3”
- Minimum Focusing Distance: 1.5m (5.0ft.)
- Stadia: Multiplication Constant: 100, Additive Constant: 0

**Compensator**
- Type: Pendulum compensator with magnetic damping system
- Working Range: More than ±15’

**Data storage**
- Capacity: 2000 points (64KB)
- JOB Control: Up to 20 JOB (JOB name definable)
- Point Number: Auto Incremental / definable
- Attribute: Selectable
- Interface Port: RS-232C compatible
- Baud rate: 38400 / 19200 / 9600 / 4800 / 2400 / 1200 bps
- Data Output Format: CSV / SDR (selectable)

**Sensitivity of Circular Level**
- 10'/2mm

**Horizontal Circle**
- Graduation: 1° (1 gon)
- Estimation: 0.1° (0.1 gon)

**Display**
- Graphic LCD, 128 x 32 dots, with display illumination

**Water Resistance**
- Complies with IPX4 (IEC60529)

**Operating Temperature**
- -20°C to 50°C (-4°F to 122°F)

**Power Supply**
- Battery BDC46A: Rechargeable Lithium-ion, 7.2V
- Working Duration: More than 8.5 hours
- Charging Time: Less than 2 hours (using CDC61 / 62 / 64 / 68)

**Size**
- SDL30 Instrument: W158 x D257 x H182mm (W6.2 x D10.1 x H7.2in.)
- Case: W258 x D395 x H224mm (W10.2 x D15.6 x H8.8in.)

**Weight**
- SDL30 Instrument: 2.4kg (5.3lb.), including battery

**OPTIONAL ACCESSORIES**
- DE23: Diagonal Eyepiece
- GS60L: Circular Level for staff

**SDR Series Data Collectors**
Measurement data can be logged in the Sokkia’s SDR series data collectors which have a complete library of surveying programs that can be used with Sokkia’s total stations and GPS receivers.

**ISO9001 Certified** (JQA-0557)
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