attached to an inverted
to an inverted

level can also be
detachable circular

A ground or on the ceiling.

Reference points can be

difference function.

Setting Out Height

levels by

Ceiling Leveling

the height.

attitude and calculates

identifies the staff

measuring point. The

flip the staff upside down

ground directly beneath

Measure the staff on the

measurement function.

Height Difference

Height Measurement

locating a staff at a

between two staves or

instrument position

useful for determining

instrument center. This is

distance from the

entering the horizontal

a specified distance by

Find the ground point at

horizontal distance

Setting Out with

SDL30 Applications

2. Measure reference points either

on the ground or on the ceiling.

1. Measure the staff

on ground point A.

2. Reverse the staff and set on B.

2. SDL30 indicates     Hd as "Out"

or "In".

3. Measure the point A and the SDL30

indicates "Cut" value.

3. Height     H is displayed.

1. Input the horizontal distance Hd.

4. "Fill" value is displayed.1

DISTANCE ACCURACY Electronic measurement

Up to 10m (33ft.): Within ±10mm (±.04in.)

Standard deviation (Invar and Fiberglass RAB-Code staves) 10 to 50m (33 to160ft.): ±0.1% x D

HEIGHT ACCURACY Electronic measurement 0.6mm (0.03in.) (With Invar RAB-Code Staves)

1mm / 0.001 or 0.01ft.

performed in 0.1 or

reference point.

values from the

calculates the cut or fill

automatically

"Difference". The SDL30

utmost of ease using

SDL30 comes with an internal

Standard Configuration

GS60L: Circular Level for staff

DE23: Diagonal Eyepiece

Optional Accessories

GD23: Graphical Digital Level

Power Supply Battery BDC46A Rechargeble Lithium-ion, 7.2V

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

Water resistance Complies with IPX4 (IEC60529)

Display Graphic LCD, 128 x 32 dot matrix with display illumination

Sensitivity of circular level 10'/2mm

Telescope Magnification 32x

Measuring time Single, Repeat or Average mode: Less than 3s

Minimum display Height Single, Repeat or Average mode: 0.0001m / 0.001m, 0.001ft. / 0.01ft. or 1/8in.

Standard deviation for 1.0mm (0.04in.) (With Fiberglass RAB-Code Staves)

Baud rate 38400 / 19200 / 9600 / 4800 / 2400 / 1200 bps

Interface port RS-232C compatible

Stadia Multiplication constant: 100, Additive constant: 0

Resolving power 3"

Field of view 1°20' (2.3m at 100m)

Distance Single, Repeat or Average mode: 0.01m (0.1ft. or 1in.)

Tracking mode: Less than 1s

Tracking mode: 1mm, 0.01ft. or 1/8in.

(D=measuring distance, unit: m)

Over 50m (160ft.): ±0.2% x D
The SDL30 digital level makes accurate distance measuring easy. Simply aim at the unique RAB-Code staff, adjust the focus and press a single button to accurately measure height and distance. The results are shown on the LCD display and recorded in the internal memory – making the SDL30 the ideal instrument for quick and easy leveling.

### Quick and Easy

This extremely simple and efficient digital level was designed primarily for height and distance measurement. Measurements are made within three seconds of pressing a single button and are immediately stored in the internal memory.

### Accurate

The SDL30 employs a CCD camera to read Sokkia’s unique RAB-Code (RAndom Bi-directional Code) pattern that is immediately processed by an integrated processor. Even an inexperienced operator can make accurate measurements, and automatic operation eliminates conventional errors arising from misreading or variant results. Extensive field-testing has proven high accuracy with a standard deviation of only 0.6mm for 1km double-run leveling using invar staves, and 1mm using fiberglass staves. The SDL30 has a distance accuracy equivalent to ±1cm at 10m (0.4in. at 33ft.) and ±5cm at 50m (2in at 160ft.).

### Wide Range of Operability

The SDL30 can be used in a wide range of situations from low lighting to direct sunshine. Artificial lighting presents no problems allowing operation indoors or in tunnels. Measurements can even be performed in the dark using a small flashlight. The SDL30 is designed to provide consistent accuracy under different lighting conditions and harsh environments such as uneven lighting, heat shimmer and vibration.

### Four Measurement Modes

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

### RAB-Code Staves are Ideal in the Field

Sokkia staves feature high accuracy along with lightweight portability and durable construction. Invar and fiberglass have been selected for their superior strength-to-weight ratio, unparalleled durability, and the latest in printing technology is employed to ensure accuracy.

Sokkia’s unique RAB-Code (RAndom Bi-directional Code) enhances measurement capabilities in a wide range of situations while assuring the highest accuracy of measurement.

Staves can be held upside down to measure height from the ceiling and the SDL30 automatically identifies staff attitude and indicates the measurement accordingly. RAB-Code staves are available up to 5.0m (16.7ft.) facilitating operation with steep slopes.

The SDL30 Digital Level combines user-friendly convenience and performance in one compact body.
Water and Shock Resistant Construction

The SDL30 conforms to IPX4 (IEC 60529) standards. The main unit is protected against splashes from all directions. Sudden showers are no longer a reason to panic. In addition, Sokkia’s proven shock-resistant pendulum compensator with magnetic damping system ensures accuracy and dependability.

The Digital Advantage

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

- Height difference: Calculate the difference between Backsight and Foresight. Calculate multiple Foresights in succession by fixing the Backsight point.

- Elevation: Input the Backsight elevation to calculate the Foresight height in elevation.

- Setting-out: Setting-out can be performed in three ways: height difference, elevation and horizontal distance.

Data Storage and Transfer

An internal memory stores up to 2000 data points in a maximum of 20 job files. Point numbers can be defined and data attributes can be selected and checked during operation or after completion either automatically or using the instrument keys. The SDL Tool software utility allows easy data export from the SDL30 to a PC in CSV format. In addition, internal memory makes it possible to set up double-run leveling.

Advanced Power System

The SDL30 is powered by one BDC46A Lithium-ion battery. It provides a continuous supply of power for over 8.5 hours and is fully compatible with Series10 and Series30R total stations. The battery is fully recharged in less than two hours meaning you can maximize your time in the field.
### Measuring Elevation

The Elevation Measurement function automatically calculates the elevation of ground points. Enter the Backsight (BS) elevation and start measuring. The SDL30 also records the elevation of each Turning Point (TP) allowing the instrument to be repositioned to continue measurement.

#### Measuring Height Differences

The Height Difference function automatically calculates the height difference between Foresight (FS) and Backsight (BS) points. Measurements are performed in 0.1 or 1mm / 0.001 or 0.01ft.

#### Measuring Height Difference with Multiple Instrument Positions

Enter “0” for the BS elevation using the Elevation Measurement function to measure the height difference between BS and FS. The SDL30 can be repositioned, enhancing operability for wide area surveys or in the case of obstacles.

### Leveling

The Setting Out Height Difference function makes ground leveling a snap. The SDL30 indicates the cut or fill value for each point.

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**SDL30 Applications**
**SDL30 Applications**

**Slope Setting**
Set slopes with the utmost of ease using “Setting Out Height Difference”. The SDL30 automatically calculates the cut or fill values from the reference point. Measurements are performed in 0.1 or 1mm / 0.001 or 0.01ft.

**Setting Out with Horizontal Distance**
Find the ground point at a specified distance by entering the horizontal distance from the instrument center. This is useful for determining instrument position between two staves or locating a staff at a specific point while setting out.

**Height Measurement**
Determine the heights of ceilings, trees, bridges, road signs and other items with ease using the Height Difference Measurement Function. Measure the staff on the ground directly beneath the measuring point, then flip the staff upside down and set it on the measuring point. The SDL30 automatically identifies the staff attitude and calculates the height.

**Ceiling Leveling**
Level ceilings by positioning inverted staves and using the Setting Out Height Difference function. Reference points can be located either on the ground or on the ceiling. A detachable circular level can also be attached to an inverted rod.
### SDL30 Specifications

<table>
<thead>
<tr>
<th><strong>HEIGHT ACCURACY</strong></th>
<th><strong>DISTANCE ACCURACY</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard deviation for 1km double-run leveling</strong></td>
<td><strong>Standard deviation</strong></td>
</tr>
<tr>
<td>Electronic measurement</td>
<td>(Invar and Fiberglass RAB-Code staves)</td>
</tr>
<tr>
<td>0.6mm (0.003in.)</td>
<td>Up to 10m (33ft.); Within ±0.4mm</td>
</tr>
<tr>
<td>(With Invar RAB-Code Staves)</td>
<td>10 to 50m (33 to 160ft.); ±0.1% x D</td>
</tr>
<tr>
<td>1.0mm (0.004in.)</td>
<td>Over 50m (160ft.); ±0.2% x D</td>
</tr>
<tr>
<td>(With Fiberglass RAB-Code Staves)</td>
<td>(D=measurement distance, unit: m)</td>
</tr>
</tbody>
</table>

### SDL30 Applications

1. **Setting Out Height Difference**
   - Find the ground point at BS.
   - SDL30 indicates as “Out” or “In”.
   - “Cut” value is displayed.
   - Input the design height difference H.

2. **Calculate Additional Additive Constant**
   - SDL30 indicates as “Out” or “In”.
   - “Fill” value is displayed.
   - Input the horizontal distance Hd.

### Measurements

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

- **Measuring range**
  - Electronic measurement (Invar and Fiberglass RAB-Code staves): 1.6 to 100m (5.3 to 328ft.)

- **Minimum display**
  - Height: Single, Repeat or Average mode: 0.001m / 0.001m, 0.001ft. / 0.001ft. or 1/8in.
  - Tracking mode: 1mm, 0.01ft. or 1/8in.
  - Distance: Single, Repeat or Average mode: 0.01m (0.1ft. or 1in.)
  - Tracking mode: 0.1m, 1ft.

- **Telescope**
  - Magnification: 33x
  - Image: Erect
  - Objective aperture: 45mm
  - Field of view: 1°20’ (2.3m at 100m)
  - Resolving power: 3”
  - Minimum focus: 1.5m (5.0ft.)
  - Stadia: Multiplication constant: 100, Additive constant: 0

- **Compensator**
  - Type: Pendulum compensator with magnetic damping system

- **Data storage**
  - Capacity: 2000 points (64KB)
  - Job control: Up to 20 jobs (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 / SURF (selectable)

- **Sensitivity of circular level**
  - 10/22mm

- **Horizon circle**
  - Graduation: 1° (1gon) / Estimation 0.1° (0.1gon)

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

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

- **Power supply**
  - Battery: BDC46A
  - Rechargeable Lithium-iion, 7.2V
  - Working duration at 25°C (77°F): More than 8.5 hours
  - Charging time at 25°C (77°F): Less than 2 hours with CDC68 quick charger

- **Size**
  - W158 x D257 x H182mm (W6.2 x D10.1 x H7.2in.)

- **Weight with battery**
  - 2.4kg (5.3lb.)

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### SDR Series Data Collectors

- **Measurement data can be logged in Sokkia’s SDR series data collectors which have a complete library of Sokkia’s SDR series data collectors.**

### Invar RAB-Code Staves

- **RAB-Code on one side**
  - BS20: 1.9305m (6.333ft.), 1 section, 4.3kg (9.5lb.)
  - BS30: 2.9725m (9.725ft.), 1 section, 5.5kg (12.2lb.)

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### Optional Accessories

- **DE23: Diagonal Eyepiece**
  - GS60LC: Circular Level for staff

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