

SOKKIA

SDL30

DIGITAL LEVEL

0.6mm Standard Deviation for 1km Double-run Leveling



POWER/LEVEL

m

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 $\pm 0.1\% \times D$ (D=measuring distance)

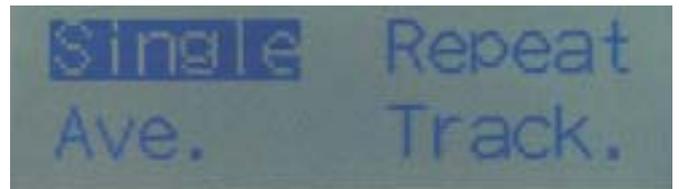
equivalent to 1cm at 10m ($\pm 2/5$ in. at 33ft.) and ± 5 cm at 50m (± 2 in. at 160ft.).



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

The **POWERLEVEL SDL30** has a large internal memory : combining user-friendly operation with unprecedented cost performance.

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.



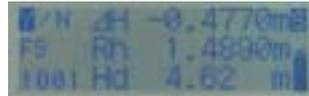
Water and Shock Resistant Structure

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.

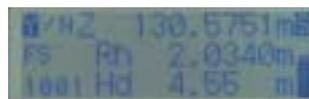
Other Benefits of "Digital"

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.



Height difference measurement



Elevation measurement



Reticle cross-hair adjustment



Setting-out measurement

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.

30 with internal friendly convenience performance.



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.

3. After measuring Turning Point, select "Yes". The SDL30 stores TP1 elevation Z3.

4. Move the instrument and observe the TP1 as BS.

1. Input BS elevation Z0 and measure.

2. Foresight elevations Z1, Z2, Z3 are calculated.

5. Foresight elevations Z4, Z5, Z6 are calculated.

<input checked="" type="checkbox"/> Z	Input Elev.	<input checked="" type="checkbox"/> S
BS	Z 0041.7210m	

<input checked="" type="checkbox"/> Y/N	Z	41.9352m	<input checked="" type="checkbox"/> S
FS	Rh	1.7420m	<input checked="" type="checkbox"/> S
10001	Hd	35.09 m	<input checked="" type="checkbox"/> S

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.

1. Measure the reference point BM.

2. The SDL30 measures the height difference ΔH and distance D2 simultaneously.

<input checked="" type="checkbox"/> Y/N	BS Rh	2.5332m	<input checked="" type="checkbox"/> S
1000	Hd	45.17 m	<input checked="" type="checkbox"/> S

<input checked="" type="checkbox"/> Y/N	ΔH	0.4316m	<input checked="" type="checkbox"/> S
FS	Rh	2.1016m	<input checked="" type="checkbox"/> S
10001	Hd	24.08 m	<input checked="" type="checkbox"/> S

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.

3. Select "Yes" and elevation Z1 is stored in memory.

4. Move the instrument and observe point A as BS.

1. Input BS elevation "0".

2. Height difference Z1 is calculated.

5. Height difference Z2 is calculated.

<input checked="" type="checkbox"/> Z	Input Elev.	<input checked="" type="checkbox"/> S
BS	Z 0000.0000m	

<input checked="" type="checkbox"/> Y/N	BS Rh	3.0210m	<input checked="" type="checkbox"/> S
10001	Hd	20.46 m	<input checked="" type="checkbox"/> S

<input checked="" type="checkbox"/> Y/N	Z	0.5210m	<input checked="" type="checkbox"/> S
FS	Rh	0.3170m	<input checked="" type="checkbox"/> S
10001	Hd	15.94 m	<input checked="" type="checkbox"/> S

<input checked="" type="checkbox"/> Y/N	Z	0.2570m	<input checked="" type="checkbox"/> S
FS	Rh	3.2850m	<input checked="" type="checkbox"/> S
10002	Hd	21.71 m	<input checked="" type="checkbox"/> S

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.

2. Measure the reference point BM.

3. Measure the point A and the SDL30 indicates "Fill" value.

1. Input height difference "0".

<input checked="" type="checkbox"/> Yes/No?	<input checked="" type="checkbox"/> S
BS Rh	0.5970m
Hd	30.68 m

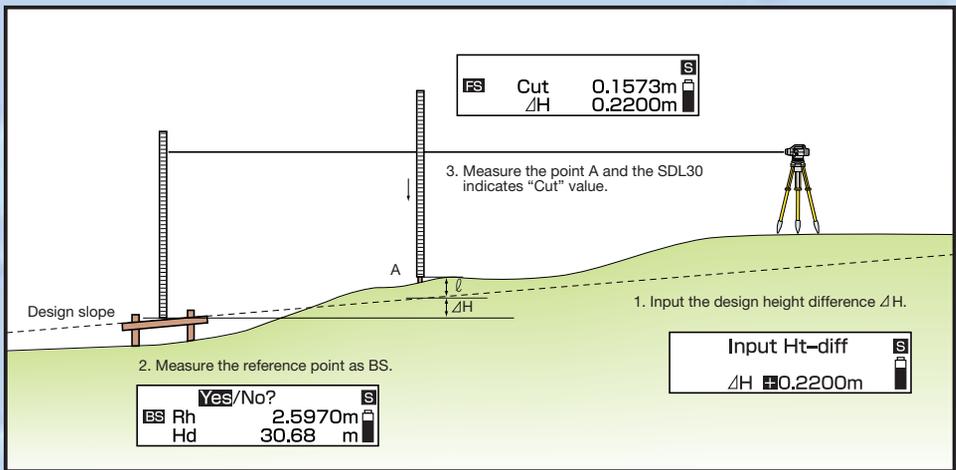
<input checked="" type="checkbox"/> FS	Fill	0.0497m	<input checked="" type="checkbox"/> S
	ΔH	0.0000m	<input checked="" type="checkbox"/> S

<input checked="" type="checkbox"/> Input Ht-diff	<input checked="" type="checkbox"/> S
ΔH	0.0000m

SDL30 Applications

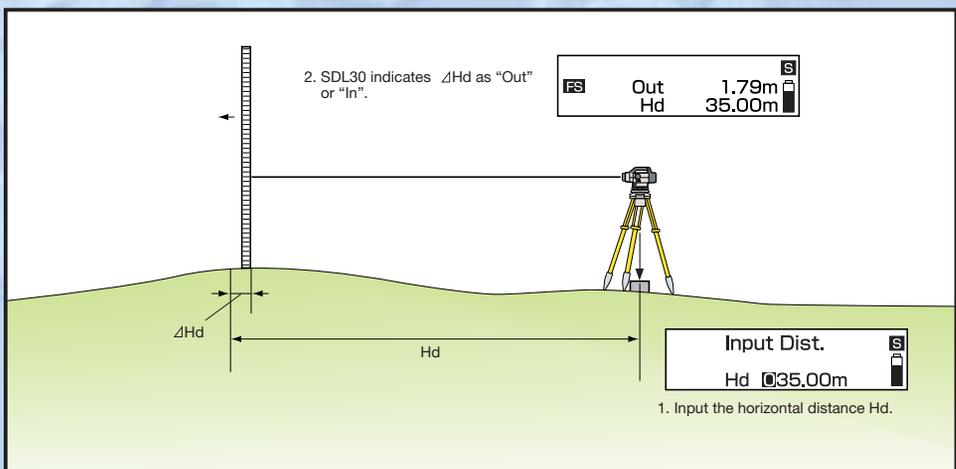
Slope Setting

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.



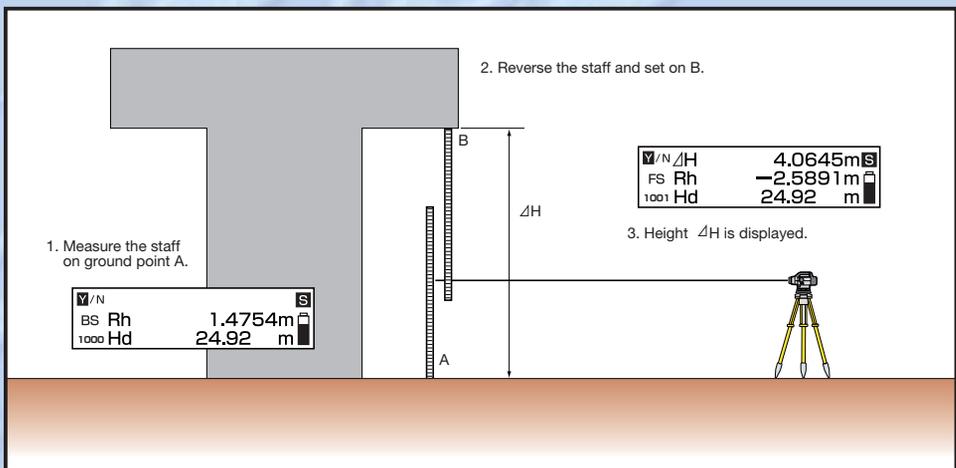
Setting Out with Horizontal Distance

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.



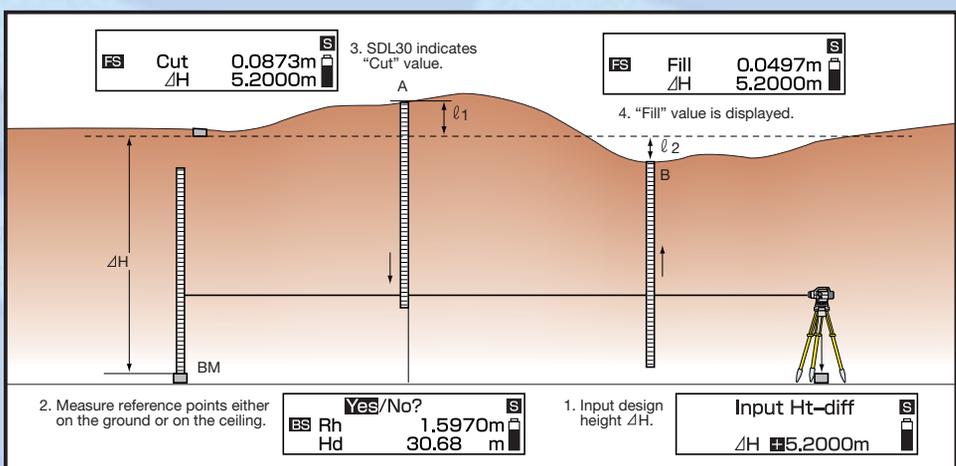
Height Measurement

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.



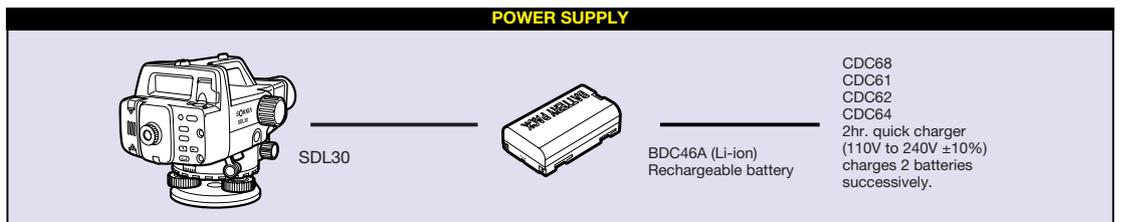
Leveling of Ceilings

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 Standard deviation for 1km double-run leveling	Electronic Measurement	0.6mm (With Invar RAB-Code Staves) 1.0mm (With Fiberglass RAB-Code Staves)
	Visual measurement	1.0mm (With Fiberglass RAB-Code Staves)
DISTANCE ACCURACY Standard deviation	Electronic Measurement (Invar and Fiberglass RAB-Code staves)	Up to 10m (33ft.): Within ±10mm (±2/5 in.) 10m (33ft.) to 50m (160ft.): ±0.1%xD Over 50m (160ft.): ±0.2%xD (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 (Internal Memory)	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° (1gon)
	Estimation	0.1° (0.1gon)
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



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.



Invar RAB-Code Staves

RAB-Code on one side
BIS20: 2.0m (6.6ft), 1 section, 4.3kg (9.5lb.)
BIS30: 3.0m (9.8ft), 1 section, 5.5kg (12.1lb.)

Fiberglass RAB-Code Staves

Front: RAB-Code, Reverse: graduated
BGS40: 4.0m (13.3ft), 3 sections, 2.5kg (5.5lb.)
BGS50: 5.0m (16.7ft), 4 sections, 3.2kg (7.1lb.)
BGS50G3: 5.0m (16.7ft), 4 sections, 3.2kg (7.1lb.), feet / 10th / 100th

Aluminum RAB-Code Reflective Staff

Front: RAB-Code, Reverse: graduated on reflective surface
BRS55: 5.0m (16.7ft), 5 sections, 1.95kg (4.3lb.)

Aluminum RAB-Code Staff

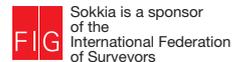
Front: RAB-Code, Reverse: graduated
BAS55: 5.0m (16.7ft), 5 sections, 1.9kg (4.3lb.)

Optional Accessories

DE23: Diagonal Eyepiece
GS60L: Circular Level for staff

Standard Configuration

SDL30 comes with an internal battery (BDC46A), a quick charger (CDC61/62/64/68), dust cover, tool kit, operator's manual and a carrying case.



Designs and specifications are subject to change without notice.

SOKKIA CO., LTD.

ISO9001 Certified (JQA-0557)

<http://www.sokkia.co.jp/english/>

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