

Establishment of Vertical Control on Mare Island by Chaudhary & Associates

Reference Benchmark

BM #82 – A survey disk located in the City of Vallejo, 0.5 miles west along Tennessee Street from the main gate to Mare Island Naval Shipyard, at the northeast end of the concrete causeway over Mare Island Strait, in the top of the south end of the east abutment, 24.7 feet south of the center line of the highway, 1.5 feet north of a fence, 0.8 feet east of the east base of a granite light pole, 0.5 feet higher than the highway, and flush with the sidewalk.
Elevation = 19.89' (NGVD 29)

Instrument Used in Differential Leveling-Loop

TOPCON DL-102 (digital level) – See attached brochure

Vertical Datum

National Geodetic Vertical Datum of 1929

Level of Accuracy

3rd Order

This information was provided by Helmut Korstick, PLS, via phone with Joshua F. Sanchez (Engineering Technician II) on 9/18/08. Helmut was the head surveyor during the establishment of temporary and permanent benchmarks on Mare Island for Chaudhary & Associates during Lennar's initial residential and infrastructure developments.

We intend on receiving from Chaudhary & Associates a signed & stamped, written description reflecting this information to have available for the public as needed in the future.



Begin 21
Beginning the 21st century

ELECTRONIC DIGITAL LEVEL

DL-101C/102C



ELECTRONIC DIGITAL LEVEL DL-101C/102C

The "Electronic Eye" Makes Error-Free Measurements, Increases Speed, Accuracy and Productivity!!

TOPCON's DL-101C/102C takes accuracy and ease of operation to a higher level with its Advanced Image Processing Technology. The outstanding features make the DL-101C/102C ideal for high precision applications including the performance of 1st and 2nd order leveling and deformation monitoring.

DL-101C (precision digital level)

Dist
25.199m

*Accuracy (Standard deviation for 1km)

Electronic reading: 0.4 mm (w/Invar Staff)

Rod
1.44041m

Optical reading: 1.0 mm

*Least count: 0.1mm/0.01mm

DL-102C (engineer's digital level)

Dist
25.02m

*Accuracy (Standard deviation for 1km)

Electronic reading: 1.0 mm (w/Fiberglass Staff)

Rod
1.4734m

Optical reading: 1.5 mm

*Least count: 1mm/0.1mm

MAIN FEATURES

Faster Automatic Measurement

When used with TOPCON's unique patterned staff, height and distance can be automatically determined digitally by the DL-101C/102C.

Since it's a fully automatic electronic measurement, there is no need to make an optical reading! You just sight the staff, focus, and press the measurement button. It's that simple! The results appear in the clearly visible display window after about three seconds.

Highly Accurate Measurements

The fully automatic measuring ability and digital display of the DL-101C/102C excludes any reading errors, writing mistakes in the field book, and other possible human-made errors. Consequently, the electronic measurement data is always more precise and more reliable as compared to the conventional visual measurement.



Increased Productivity up to 50%

With TOPCON's DL-101C/102C, all leveling work can be carried out automatically, quickly and more economically as compared to the performance of conventional optomechanical levels. This effortless and error-free measurement makes it possible to have up to a 50% increase in productivity.

PCMCIA Memory Card System

The PCMCIA world standard memory card system can be used with DL-101C/102C. Memory cards up to 2MB are available for memory storage in addition to the instrument's internal memory capacity of 256KB. The internal memory can store up to 8,000 levelled points. The PCMCIA memory card slot is concealed behind the battery compartment.

This ensures watertight protection of the PCMCIA card. Data recording directly to either internal memory or PCMCIA card is selectable.



Screen Backlight

The display screen has a software controlled backlight that can be set on or off and brightness control at 9 levels to ensure easy viewing of the screen in bright, shadow and dark conditions.

5m staff

Leveling staffs of a variety of materials and length are available with the special Topcon pattern to allow Digital Measurements with DL-101C/102C.

Data Output Function

Standard RS-232C port provides an instant communications link with a data collector or direct output to a personal computer.

OPERATING FUNCTIONS /SOFTWARE

- ◆ N-times measurements (to get averaged result and standard deviation)
- ◆ Horizontal distance measurement (to the staff)
- ◆ Height determination of intermediate points
- ◆ Calculation of difference in elevation (from the Backsight to the Foresight)
- ◆ Design elevations can be recalled from the PCMCIA card and a count down to zero for stake out the height is displayed.
- ◆ Repeat measurement for recollection
- ◆ Modification of point number (before foresight measurement)
- ◆ Selectable minimum units for reading (DL-101C: 0.1 mm/0.01mm, DL-102C: 1mm/0.1mm)
- ◆ Manually input data
- ◆ Alpha/Numeric input function
- ◆ Swing correct function to reduce the effect of vibrations. This ensures accurate and stable reading even under windy or heavy traffic conditions.
- ◆ Alarm function when distance between Foresight and Backsight is out of tolerance.

BF-FB, BB-FF Measurement

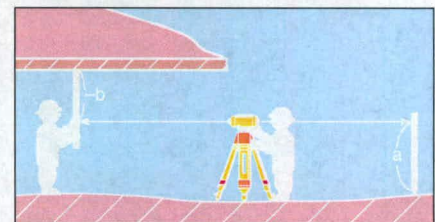
In addition to the general procedure of Backsight → Foresight, the DL-101C/102C has two other collections procedures. Either Backsight 1 → Foresight 1 → Foresight 2 → Backsight 2 or Backsight 1 → Backsight 2 → Foresight 1 → Foresight 2 methods can be used. Using these measurement techniques, you can make your measurements more accurate.



Inverse Staff Mode

When heights of elevated points are required to be measured eg. For ceiling heights, or in tunnels etc., the DL-101C/102C can measure the height from the ceiling points with staff inverted, using the "reverse reading" mode.

Inverse Staff Mode is effective for any application in which the height is measured from elevated points.



ADVANCED APPLICATIONS

- ◆ Network leveling
The performance from 1st to 4th order leveling
- ◆ Deformation monitoring
Monitoring and surveillance of ground subsidence.
- ◆ Industrial surveying
- ◆ Topographical surveys
Line leveling, Area leveling, Leveling networks, Contour-line surveys.
- ◆ Road and Rail-laying construction
Longitudinal profiles, Cross-sections, Setting-out of heights
- ◆ Tunneling and mining

SPECIFICATIONS

	DL-101C	DL-102C
TELESCOPE		
Magnification	32x	30x
Objective Aperture	45mm	
Field of view	1°20'	
Resolving power	3"	
COMPENSATOR		
Working Range	±12'	±15'
Setting Accuracy	±0.3"	±0.5"
HEIGHT MEASUREMENT		
Accuracy (Standard deviation for 1km double-run levelling)		
Electronic reading	0.4mm w/Invar staff	1.0mm w/Fiberglass staff
Optical reading	1.0mm	1.5mm
Least Count	0.1mm/0.01mm (0.001ft/0.0001ft)	1mm/0.1mm (0.01ft/0.001ft)
DISTANCE MEASUREMENT		
Least Count	1cm/1mm	1cm
Accuracy	1cm to 5cm	
MEASURING RANGE		
	2m to 100m (7ft to 328ft): Fiberglass staff/Aluminum staff	
	2m to 60m (7ft to 197ft): Invar staff	
MEASURING TIME		
	3 sec.	
CIRCULAR LEVEL SENSITIVITY		
	8"/2mm	10"/2mm
OTHERS		
Display	2-line, 8-digit per line. Dot matrix LCD with backlight	
Data Storage	PCMCIA card (64KB to 2MB) Internal memory approx. 8,000 data	
Data Transmission	RS-232C port provided	
Keyboard	Alphanumeric input	
Timer	Built-in timer	
Horizontal Circle	360° or 400gon	
Power Supply	AA size dry cell batteries × 6 [Option: Rechargeable Battery BT-31Q]	
Operating Time	10 hours (Dry cell – Alkaline) [10 hours (BT-31Q Rechargeable Battery)]	
Ambient Temperature Range	-20°C to +50°C [-4°F to +122°F]	
Dimensions	237 × 196 × 141mm [9.33 × 7.72 × 5.55 inch]	
Weight	2.8 kg [6.16 lbs] (including on-board battery)	
Data Card	PC card based on PCMCIA (SRAM: 64K~2M byte)	
STAFF		
Aluminum staff SA-5M	Length: 5.0m [16.40ft] (Slide Type: 3 pcs.)	
Fiberglass staff SG-3M	Length: 3.0m [9.84ft] (1.5m [4.92ft] × 2 pcs.) Graduation: 1cm graduation with 5mm pattern (front surface)	
Invar staff SI-3/T or SI-3	Length: 3.0m [9.84ft]	

• Designs and specifications herein are subject to change without notice.

Important In order to obtain the best results with this instrument, please be sure to review all user instructions prior to operation.



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STANDARD SET COMPONENTS



Instrument DL-101C or DL-102C (with lens cap).....1 pc.
Carrying case.....1 pc.
Plastic rain cover.....1 pc.
Silicon cloth.....1 pc.
Plumb bob set.....1 set
Adjusting pin.....1 pc.
Instruction manual.....1 vol.
Dry battery holder DB-31.....1 pc.
AA size dry cell batteries.....6 pcs
OPTION
Rechargeable Battery BT-31Q
Battery charger BC-23B or BC-23C.....1 pc.
(AC120V) (AC230V)



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