

# OPTICAL1

## *Auto Dumpy Level*



Level **1**<sup>TM</sup>  
Lasers

Model: OPTICAL1

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**For Guides on how to use on site visit.**  
**[www.level1lasers.com.au/optical1.html](http://www.level1lasers.com.au/optical1.html)**

## OPTICAL1

- OPTICAL1 Auto Dumpy Level
- Hard Carry Case
- Instruction Manual

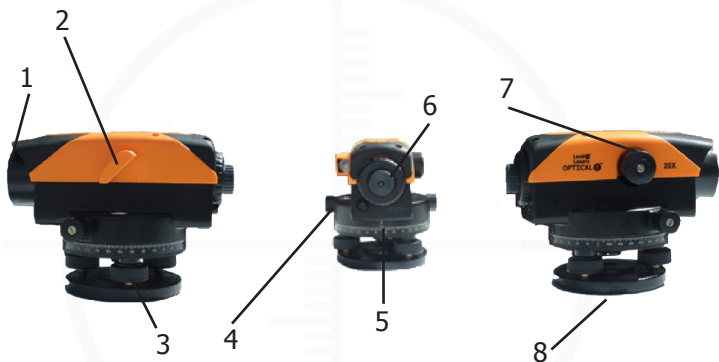


## OPTICAL1P Included Accessories

- OPTICAL1 Auto Dumpy Level
- Hard Carry Case
- Instruction Manual
- Heavy Duty Tripod
- 2.4m Telescopic Staff
- Staff Bag



## OPTICAL1 Dumpy Level



1. Objective Lens
2. Bubble Vial Mirror
3. Rough Levelling Adjustment Feet
4. Fine Rotation Adjustment
5. Rotation Estimation in Degrees
6. Adjustable Eyepiece
7. Focus Knob
8. Tripod 5/8"-11tpi Mount

# OPTICAL1 OPERATING INSTRUCTIONS

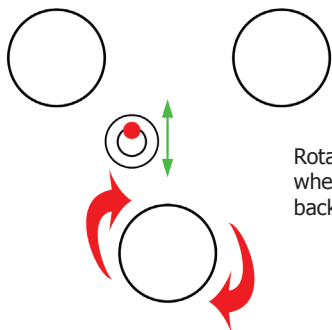
## Setting Up Instructions

The OPTICAL1 requires a stable platform to operate on such as a heavy duty survey style tripod. The OPTICAL1 has a standard survey thread (5/8" 11tpi) on its base and a tripod is attached to this thread. Make sure the tripod is located on stable ground, away from vibration and ideally pushed into the ground firmly, setting the legs far apart also provides a steady platform.

## Levelling Instructions

The OPTICAL1 Auto Dumpy Level auto levels using a highly accurate wire suspended compensator, but before it can self level the body of the dumpy level needs to be roughly level to bring it into self levelling range.

This is achieved by looking at the rough levelling bubble vial either directly or using the mirror and rotating the adjustment feet until the bubble is predominately within the circle. Remember this is only getting the compensator into levelling range, once in range the compensator levels the image through the eyepiece. making the bubble exactly central does NOT increase accuracy in any way, the bubble just needs to be anywhere within the circle to achieve maximum accuracy.



Rotating the lower adjustment wheel will move the bubble back and forth as indicated

# OPTICAL1 OPERATING INSTRUCTIONS

## Aiming and Focussing

To use the OPTICAL1 you need to aim the dumpy level to the object or staff that you wish to view. Roughly aim using the sighting marks on the top casing and rotating the body of the dumpy. Then look through the eyepiece and focus if required by rotating the focus knob back and forth. Then using the fine rotation knob the dumpy can be precisely aimed at the target whether it be an object or a staff.

## Cross Hair Instructions

When looking through the eyepiece you should be able to see a clear vertical and horizontal line crossing in the centre. If a clear cross hair is not visible then adjust the eyepiece by rotating it to bring the cross into focus.

When the dumpy is level the cross hair will be providing a horizontal level line and vertical alignment line

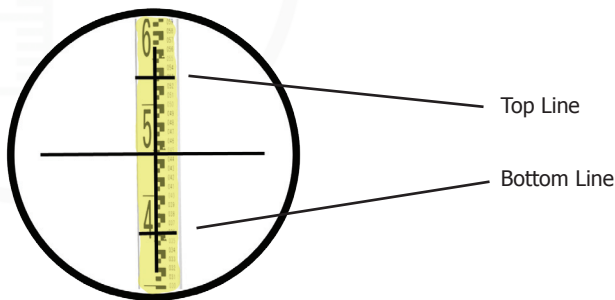
## Levelling with a Staff

To use the OPTICAL1 for levelling a site you will need a staff and someone to hold the staff, a staff is included in the OPTICAL1P (package with tripod and staff). The principle of levelling using a dumpy level is that the horizontal line is level both left to right and front to back, so if when looking through the dumpy level the same height is read on the staff at what ever point on the site the staff is, then the site is perfectly level. If, for example, at a particular point it is reading 10cm higher on the staff than elsewhere, then the ground needs to be filled 10cm to bring that part of the site up to level.

# OPTICAL1 OPERATING INSTRUCTIONS

## Estimating Distance

The OPTICAL1 can be used to estimate distance from the dumpy level to the person holding the staff. This is done by using the two small horizontal lines visible equal distance above and below of the main horizontal line. When looking through the dumpy at a staff count the distance between the two marks and multiply this by 100 and you have figure for the distance. e.g. distance between marks when looking at the staff is 0.8m so multiply by 100 gives 80m distance between dumpy level and staff.



## Calibration Self Check

### Bubble Vial

Set the instrument on tripod and adjust foot screws until circular bubble is centered. Rotate the instrument  $180^\circ$  to ensure the bubble remains centered.

\*\*\* So long as half of the bubble remains inside the circle the compensator will level. Remember the bubble is only there to get the dumpy into self levelling range.

# OPTICAL1 OPERATING INSTRUCTIONS

## Checking Auto Levelling Compensator

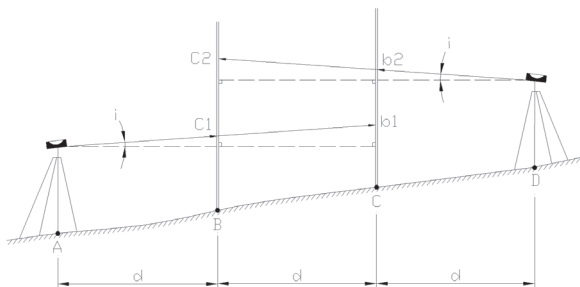
Select a flat ground with 45 to 60m in length, divide it in 3 parts with the same length (figure 4), set leveling staff on points B&C, and set the instrument on points A &D.

Set the instrument on point A, take the readings  $b_1$ ,  $c_1$  on the two leveling staffs respectively.

Then set the instrument on point D, take the readings  $b_2$ ,  $c_2$  on the two leveling staffs respectively.

If  $\Delta = (b_2 - c_2) - (b_1 - c_1) \leq \pm 3\text{mm}$ , the angle  $i$  is within tolerance.

Please return the laser to Level1Lasers if recalibration is required



## Specifications

Telescope	Erect
Magnification	26x
Std Dev Dbl run 1km	2.5mm
Object Aperture	30mm
Compensator Range	+/- 15'
Compensator ASccuracy	+/- 0.8"
Minimum Focus	0.8m
Feild Angle	1°20'

# 12 Month WARRANTY - LEVEL 1 LASERS

CMI Industries Pty Ltd provides consumers with a warranty to our products, this is in addition to requirements of any relevant legislation such as the Competition and Consumer Act 2010. Definitions: "CMI", "We" or "Our" "Level1Lasers" refers to CMI Industries Pty Ltd (ABN 29 102 713 922) of 18b Tarkin Court, Bell Park, Victoria 3215 ph (03) 5240 3999

"You" or "Consumer" refers to the initial purchaser of the product.

"Product" refers to goods manufactured by or for CMI Industries Pty Ltd under the brand of Level1Lasers.

"Material" refers to material or component used in the construction and manufacture of the product.

"Workmanship" refers to handling, assembly and manufacturing processes done by or for CMI Industries Pty Ltd in order to manufacture the products.

"Warranty Period" For Level1Laser Products is **12 Months**. Warranty period is from original purchase date, no extension is made in the event of warranty replacement products supplied or time spent being repaired.

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

CMI warrants that our products will be free from defects in material and workmanship for the warranty period.

CMI promises to repair or replace, free of charge, the product or part of product if found to be faulty due to defective workmanship or materials within the duration of the warranty as long as the following terms and conditions are met;

- Product must not have been misused or abused, must not have incurred accidental damage or had un-authorised repair or tampering that has caused or contributed to its fault or failure.
- You must contact CMI by phone, mail or email immediately when a fault or defect has become apparent and within the warranty period.
- Product must be returned to store of purchase or directly to CMI, we will cover cost of postage only when sent by our reply paid Australia Post service (Australian Main land and Tasmania only) details will be provided upon phone, post or email communications with us.
- CMI will cover cost of freight back of repaired or replaced product to original purchase store or you directly (depending on how it was sent Australian Main Land and Tasmania only).
- CMI will determine whether to repair or replace the product or part of product on a case by case basis.
- Further exclusions in this warranty include damage or defect caused by use of non-original accessories or parts, damage in transportation, normal wear and tear, damage through moisture, damage due to electric surge, failure due to neglect or damaged caused by adjustments not outlined in CMI's instructions.

Subject to the requirements of all applicable Australian Acts or legislation and to the extent permitted by law, CMI accepts no liability (whether expressed or implied) of any nature whatsoever for any loss of earnings, hiring of replacement equipment, Inaccurate work carried out by the consumer or agent, damage or injury arising as a result of any fault in the product. It is the consumers responsibility to maintain good working practices and regularly test their tools for accuracy and serviceability.

Calibration of the product is not covered by warranty subject to the requirement of all applicable Australian Acts or legislation and to the extent permitted by law,

A CMI product returned that fails to fall within the terms and conditions of this warranty will be quoted for repair.