



for Professionals

RedBack Lasers EL614

Electronic Levelling Rotating Laser - EL614

Models Covered; BASIC614, EL614, EL614S & EL614GM

Instruction Manual



www.redbacklasers.com.au

CONTENTS

User Safety	2
Introduction and EL614 Accessories	3
EL614Diagram	4
Operating Instructions	7
Batteries	7
Power	8
Tilt Mode	8
V-W-S	9
Rotation Speed	9
Setting Grades (needs remote - EL614S & EL614GM)	10
Laser Receiver LR718 (BASIC615)	11
Laser Receiver LR728 (EL614 & EL614S)	12
Laser Receiver LR730T (EL614GM Kit only)	13
Calibration Self Check & Technical Specifications	15
Care & Maintenance, Trouble Shooting	16
Warranty	17

User Safety

- Laser output sign lies near the output aperture.
- Do not stare directly into laser beam.
- Do not disassemble the instrument or attempt to perform any internal servicing. Repairs and service should be performed only authorised service centres of Redback Lasers.
- This instrument complies with the safety Classification standards of laser radiation.



CAUTION: Class II laser <1mW at 635nm.
Do NOT stare into laser beam or aim at another person.

Follow relevant Australian Standards

EL614 INTRODUCTION

Congratulations on purchasing the EL614 an electronic self levelling builders/concreters rotating laser level built tough.

The EL614 can be purchased in a number of different configurations;

- 1) BASIC614 - LR718 Receiver, "C" Batteries
 - 2) EL614 - LR728 Receiver, Ni-mh Battery
 - 2) EL614S - Remote Control (grade) + LR728 Receiver, Ni-mh Battery
 - 3) EL614GM + Remote + LR730T mm Receiver (grade Tracking), Ni-mh
- These instructions cover all these configurations so may refer to Components such as remote or receiver type or battery types that you may not have purchased in your 614 laser level kit.

The EL614 has all the features you need for general site levelling; Tilt provides protection from knocks and bumps shutting down rotation warning you that the laser has moved. V-W-S (Vibration and Wind setting control) allows you to continue to work in high wind or on sites close to machinery. If you have purchased your EL614 with Remote then there is also a single grade match feature.

The EL614 Comes with Ni-Mh rechargeable batteries and charger (Not BASIC614) as well as being able to operate with standard "C" Alkaline batteries.

The EL614 features RedBack Laser's "Safety Cage" technology with consists of a full steel internal chassis which protects the levelling components in the event of an accident, Its Built Tough. Finally the EL614 has a Five Year Redback Warranty. (See page 16)

BASIC614 Kit Included Accessories

- EL614 Laser Unit
- Protective Carry Case (Soft for Basic614 hard for rest)
- "C" Cell Battery Holder
- Laser Receiver LR718 & Clamp

EL614 Has in Addition

- Ni-mh Rechargeable Battery
- Laser Receiver LR728 & Clamp

EL614S Has in Addition

- Remote Control for manual grade
- Laser Receiver LR728 & Clamp

EL614GM Has instead of LR728 Receiver

- Millimetre Tracking Receiver for Auto Grade Match LR730T & Clamp

EL614 DIAGRAMS

EL614 Laser Unit

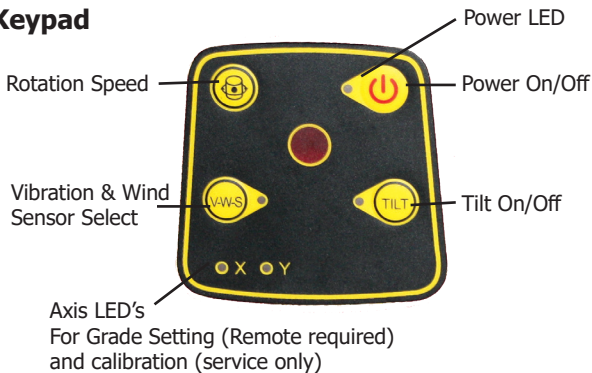


EL614 Safety Cage



1. Laser Output Window
2. Rubberised Casing
3. Keypad
4. Battery Compartment

Keypad



Receiver - LR718



Receiver - LR728

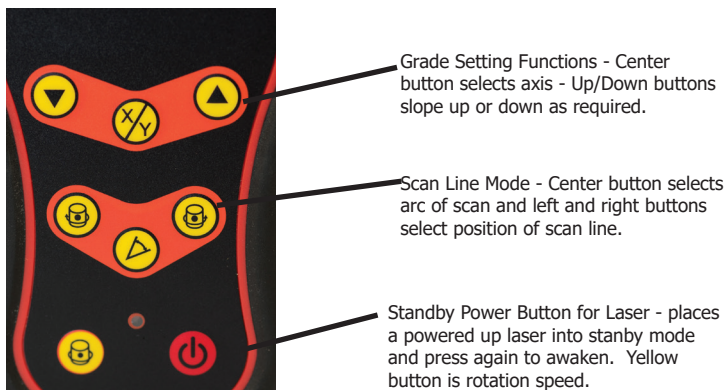


EL614 DIAGRAMS

Receiver - LR730T mm Display (EL614GM Kit only)



Remote Control - Grade Setting (EL614S & EL614GM Kits only)



EL614 OPERATING INSTRUCTIONS

Battery Instructions

The EL614 has two battery options either 4 x standard "C" size Alkaline or the Ni-Mh rechargeable pack. For standard 4 x "C" alkaline operation simply insert into standard battery holder in the direction indicated and slide into battery recess and tighten the locking screw. (BASIC614 does not include rechargeable battery and charger)

To use the rechargeable battery pack first remove standard pack if inserted and place into the same battery recess and tighten locking screw.



To charge this battery pack simply inserting the charger plug into the charging socket above the locking screw. The LED on the charger is illuminated red during the charging process and will turn green once the batteries are fully charged. Battery pack can be charged while inserted in the laser or independently.


When the power LED on the keypad flashes, the rechargeable battery pack needs recharging or standard batteries need replacing. Note the charger will only charge the supplied rechargeable battery pack.

Handy Hints

- *Prior to initial use, charge the rechargeable batteries for at least 8 hours.*
- *Running rechargeable batteries completely flat will increase battery life.*
- *The EL614 can operate off mains by plugging the charger (for indoor use only) into the unit.*
- *Remember the EL614 can operate using standard batteries when rechargeable pack is out of charge.*


EL614 OPERATING INSTRUCTIONS cont.

Turning Laser On


Press Power button  on the keypad to turn on the EL614, power LED will light. Batteries are low if power LED flashes. After turning the laser on, the laser will auto level and rotate. The EL614 has a large self levelling range, if the laser happens to be set up outside this range, a warning will sound and the lasers will flash. Re-set the laser more level if this occurs.




Tilt Mode

Tilt mode is somewhat similar to tilt on a pinball table in that if when running the EL614 detects significant disturbance or movement that could effect the accuracy of your work the laser will "Tilt" (stop working) and the laser beams will flash to indicate this. You will need to then re level the laser by pressing the tilt  button, note that the tilt is then disabled to re-enable press the TILT button again so its LED light illuminates. After a few seconds the laser will re-level, then re-check your work to maintain maximum accuracy.


Tilt mode is turned on and off with the tilt button on the keypad, the default setting is off. Once the tilt button has been pressed the tilt LED will light indicating it is on.

To deactivate the tilt mode press the tilt button  the LED goes out. It is recommended to use tilt mode when optimal accuracy is required or when there is a chance that machinery or worker may interfere inadvertently with the lasers level.

Rotation Speed Settings

- A short press of the Rotating Speed Button  will switch the rotating speed between 3 different rotational speeds. Sometimes different rotation speeds will provide better reception with the LR715 receiver when being used at different distances from the laser. For most situations the default speed (800rpm) will provide best results.

V-W-S Vibration & Wind Sensor Setting

The EL614 continuously self levels for utmost accuracy, in high winds or vibrations the laser will stop rotating to re-level this may be inconvenient by slowing down your work, however, by selecting V-W-S button  the laser continually re-levels but does not stop rotating whilst doing so.



EL614 OPERATING INSTRUCTIONS cont.

Setting Grades (requires remote control that comes with Grade & Grade +MM kits)

The EL614S & EL614GM kits come with a remote control that can set a manual grade on one axis, it can be set to either the "X" or "Y" axis but not both.

First set up the laser aligning the X axis with the direction of the required grade rise/fall, the laser can be placed anywhere on site as long as the X axis runs parallel or in line with the desired grade.

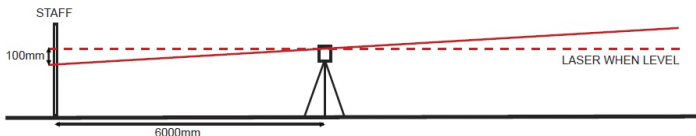
For this example we want a grade of 1 in 60 or 1.667% or in other words for every 6m (6000mm) travelled away from the laser along the X axis we want the laser plain to tilt down/up 0.1m (100mm).

To achieve this measure out 6m away from the laser along the X axis and hold the staff at this point slide the receiver up/down the staff until the receiver indicates level.

Then making a note of the height on the staff slide the receiver up/down the staff 100mm from the level point, this is now the height the laser needs to be hitting to be setting a 1 in 60 slope or grade.

Using the remote, select grade mode on the X axis and use the Slope Grade Direction buttons to slope the laser until the receiver shows level (see page 6 for remote diagram).

The Grade is now set at 1 in 60 or 1.667% on the X axis and anywhere on or parallel to the X axis on site.









See Addition Instructions on page 13 Grade Match Tracking Instructions using the LR730T Tracking Millimetre Receiver.

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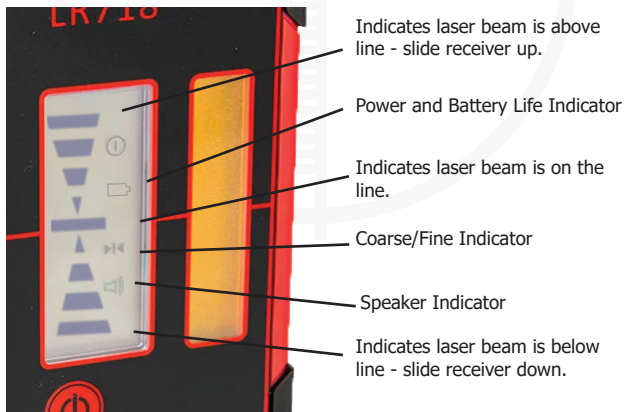
LR718 RECEIVER INSTRUCTIONS

Laser Receiver LR718 (Standard & Grade Kits)

The LR718 is a heavy duty dual sided display rotating laser receiver, it can be either hand held or with the staff bracket clamped onto a staff. The bubble vials can be used to keep the receiver level.

- A press of the power button  toggles the receiver on and off.
- The Speaker button  toggles through 3 speaker volumes.
- Pressing the Coarse/Fine Mode button  toggles through 3 levels the first being fine mode indicated by  on the LCD the accuracy of level is at its highest with 1mm tolerance movement by the receiver before showing it off level. The next coarser mode  allows 2mm before showing off level the third press shows no symbol on the LCD and allows 3mm before showing off level, these two coarser modes are more suitable for general site levelling.
- The Back Light button  toggles the LCD display back light.







The LR718 has two large LCD displays with progressive bars indicating when the laser gets closer to the level mark. Move the receiver up and down slowly and watch the display change when the solid tone is heard and the centre line is shown then the receiver is at the height of the laser beam plane. The receiver will auto power down after 10 minutes when not receiving laser pulses.



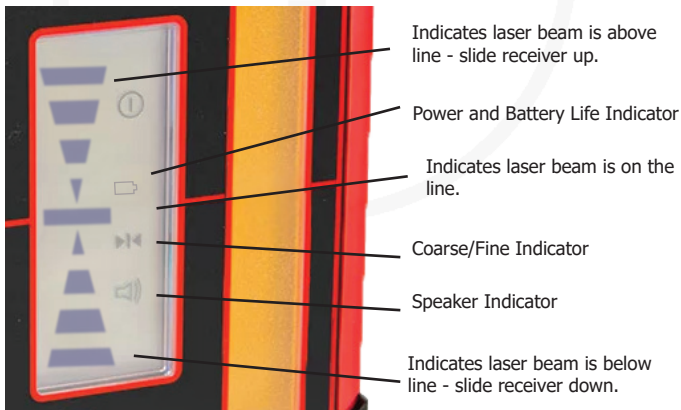
LR728 RECEIVER INSTRUCTIONS

Laser Receiver LR728 (Standard & Grade Kits)

The LR728 is a heavy duty dual sided display rotating laser receiver, it can be either hand held or with the staff bracket clamped onto a staff. The bubble vials can be used to keep the receiver level.

- A press of the power button  toggles the receiver on and off.
- The Speaker button  toggles through 3 speaker volumes.
- Pressing the Coarse/Fine Mode button  toggles through 3 levels the first being fine mode indicated by  on the LCD the accuracy of level is at its highest with 1mm tolerance movement by the receiver before showing it off level. The next coarser mode  allows 3mm before showing off level the third press shows no symbol on the LCD and allows 5mm before showing off level, these two coarser modes are more suitable for general site levelling.
- The Back Light button  toggles the LCD display back light.








The LR728 has two large LCD displays with progressive bars indicating when the laser gets closer to the level mark. Move the receiver up and down slowly and watch the display change when the solid tone is heard and the centre line is shown then the receiver is at the height of the laser beam plane. The receiver will auto power down after 10 minutes when not receiving laser pulses.

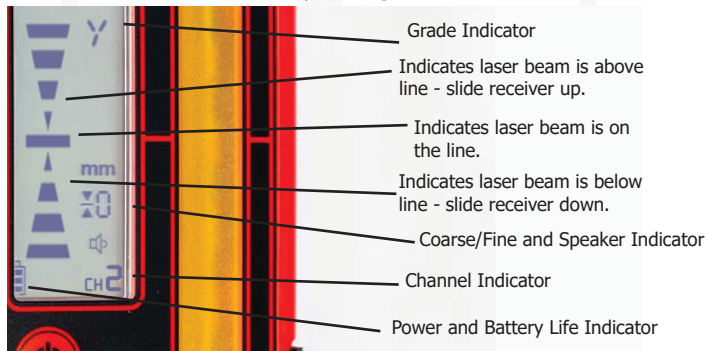


LR730T RECEIVER INSTRUCTIONS

Laser Receiver LR730T (EL614GM kit only)

The LR730T is a heavy duty dual sided display rotating laser receiver, it can be either hand held or with the staff bracket clamped onto a staff. The bubble vials can be used to keep the receiver level.

- A press of the power button  toggles the receiver on and off.
- The Speaker button  toggles through 3 speaker volumes.
- Pressing & holding the Speaker button toggles the backlit LCD.
- Pressing the Level Accuracy button  toggles through 5 accuracy levels indicated on the LCD. The accuracy of level can be selected from 0.5, 1, 2, 5, and 10mm before showing it off level.
- Press & hold the blue Channel Selection button  to activate Auto Track function.
- Once active, pressing the Channel Selection button toggles channels.
- Pressing the X/Y button  selects the axis (x and y) to work with when using Auto Track function.
- The Units button  toggles the receiver between metric units, i.e millimetres and inches.
- The Offset button  changes the point of level on the receiver to where the laser is currently reading, within 20mm of either side



The EGL624GM model include all the features of the base model but also has the ability to auto grade match using the LR730T millimetre tracking receiver. The GM model can be distinguished from the base model by the word tracking printed on the control panel. All controls for using the grade match feature are on the receiver itself, the laser's control panel and remote operates exactly as in the main instruction manual.

LR730T RECEIVER & GRADE MATCHING



When displaying the height of the laser compared to the level point in mm the LR730T will display up to +/- 45mm from level, between 45mm and 65mm above or below the LCD display will indicate "OUT" and the appropriate LED lights will flash. When a measurement is displayed it indicates the distance between level and where the laser is actually striking the receiver, the arrows and LED lights indicate which side of level the laser is.

To select Accuracy press the Level Accuracy button which will cycle through level bands of; 0.5, 1, 2, 5, and 10mm.

LR730T Using Grade Match Feature

Place the Grade Match laser at the position and height you require, making sure one of the lasers axis (X or Y) is facing towards where you are going to match the grade, then power up as per normal. Place the receiver at the position, in line with one of the lasers axis. Then set the height of the receiver to where you want to match the grade to. Power up the receiver, then long press (hold 2 seconds) the Transmitter button until the blue LED lights up. The laser level will emit a beeping sound to indicate it is matching grade. Next set the axis you require to grade match, X or Y.

The laser will now track to the receiver, this may take a few minutes. The receiver will start to indicate reception of the laser once it is located within the receivers reception window. Once at level the laser will lock onto this grade and the laser will make a solid beep and then the sound will turn off. The receiver Grade Match blue LED will also turn off. You can turn off or move the receiver to any position and when the receiver now indicates level it is indicating the height at the constant grade that has been set.

EL614 TECHNICAL SPECIFICATIONS

Technical Specifications

Laser Wavelength	635nm <1mW
Laser Class	II
Range with Receiver	500m Diam Rotating
Horizontal Accuracy	±1.5mm/20m
Rotation Speeds	800rpm, 300rpm, 5rpm
Self Levelling Range	±5°
Temperature Range	-10°C - 45°C
IP Dust Water Resistance	IP66
Power	4 x "C" Alkaline or Ni-Mh pack
Low Power	Power LED Flash
Size	178x146x188mm
Weight	2.25Kg

Calibration & Self Check

All Redback Lasers have been checked for calibration and certified by one of our technicians here in Australia prior to despatch and should under normal conditions not go out of calibration. A calibration certified sticker with the date and name of technician is located on the laser itself. It is worth checking calibration from time to time particularly after any known knocks or drops. An easy way to continually check calibration is to always double check you work with the laser located in a different position or use an alternate vertical line. Various other methods for checking calibration can be found at www.redbacklasers.com.au/downloads or the laser can be returned to our service department for checking and re-calibration. We at Redback Lasers provide a once off free calibration and check within the duration of the warranty period see page 16 for details.

Care & Maintenance

- Keep laser and accessories stored in protective case.
- Make sure laser is stored dry, dry out before storage to prevent damage.
- Remove batteries when not used for an extended period of time to prevent leakage. (battery leakage not covered by warranty)
- The EL614 is a precision instrument and should not be subjected to excessive knocks, drops or vibrations.
- Self check calibration from time to time. See page 14
- For service contact Redback Lasers. www.redbacklasers.com.au

Trouble Shooting - FAQ

Q. *The Laser does not power up!*

A. *Check the rechargeable batteries are charged and connected correctly and or replace standard "C" size Alkaline batteries and check they are inserted correctly.*

Q. *Using the receiver I get multiple heights showing as level!*

A. *This is a common problem with all laser levels and is usually due to the laser being reflected off a window or other reflective surface. So the original laser beam plus the reflection are both hitting the receiver at slightly different heights. To prevent this, set the laser unit up so that you cannot see a reflective surface from where you are holding the receiver i.e. Any glass behind receiver not the laser.*

REDBACK LASERS WARRANTY

Duration of warranty is fixed and automatic, when we advertise 5 years on a particular model, its five years. No drop down to a lesser time if you forget to register, registration is NOT required just proof of purchase showing date.

Although the duration of our warranties are for a particular period it does not mean we will charge you for a genuine warranty failure a month or two outside that warranty period, we believe in a fair go.

Even though a product shows signs of accidental damage, scratches and the like, we will not automatically fail the warranty claim, if the fault is NOT caused by a drop or misuse and is a genuine warranty failure then we will cover it.

Calibration is not covered by warranty much the same as the wheel balance on your car is not covered by warranty, we do however offer a one off free re-calibration service during the period of warranty, conditions and details below.

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" refers to CMI Industries Pty Ltd (ABN 29 102 713 922) of Unit 2 381-383 Thompson Rd, Bell Park Victoria 3215 ph 1800 769 858

"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 brands of RedBack Lasers, Level1Laser and CMI Lasers.

"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 the EL614 Five Years. 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. LR715/LR720 receivers 2 Year warranty, Ni-Mh Battery/Charger 1 Year Warranty.

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, CMI does however offer a free re-calibration service (once within the period of the warranty) you are liable for the cost to send the product to us then we will recalibrate and return the product to you free of charge. Note this offer is invalid if the product shows signs of misuse or accidental damage that has caused it to go out of calibration.

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

RedBack Lasers™ distributed by CMI Industries Pty Ltd
P.O. Box 7324 - Geelong West - Victoria - 3218 - Australia
Ph: 1800 769 858 email: admin@redbacklasers.com.au

www.redbacklasers.com.au