RedBack™ Lasers
for Professionals

RedBack Lasers EGL624

Electronic Levelling Rotating Laser - EGL624

Instruction Manual

For Models - EGL624 & EGL624GM (red & green)

www.redbacklasers.com.au

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For Extra Instructions check out our Videos at www.redbacklasers.com.au

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
LASER RADIATION
DO NOT STARE INTO BEAM
DIODE LASER
1 mW MAX OUTPUT at 630-670 nm
CLASS II LASER PRODUCT

CAUTION: Class II laser, 1mW at 635nm.
Do NOT stare into laser beam or aim at
aperture.

Follow relevant Australian standards

Congratulations on purchasing the EGL624™ an electronic self levelling contractors rotating lasers level built tough to handle the harshest of job sites.

The EGL624 can be purchased in a number of different configurations;
1. Standard kit which includes EGL624 laser & LR715 receiver
2. Millimeter Grade Tracking Receiver Kit EGL624GM.

The EGL624™ is ideal for general site levelling, earth movers and landscapers, simply set it up on a tripod, turn on, it electronically self levels and the laser starts rotating.

The EGL624™ has manual dual grade setting capability and can be mounted on its side for vertical alignment and site squaring.

The EGL624™ also can be used indoors both for horizontal levelling and vertical alignment. Variable rotation speeds and scan modes increase visibility indoors.

Other features of the EGL624™ include Vibration and Wind setting control, rechargeable Ni-Mh and Std "C" Size battery operation and Five Year Redback Warranty. (See page 16)

EGL624™ Included Accessories

- EGL624™ Laser Unit
- Protective Carry Case
- Rechargeable Ni-Mh Batteries
- Charger
- Std Battery Compartment
- Laser Receiver LR715
- Receiver Staff Clamp
- Remote Control
- Magnetised Target
- Glasses to Assist Viewing of Laser
- Instruction Manual

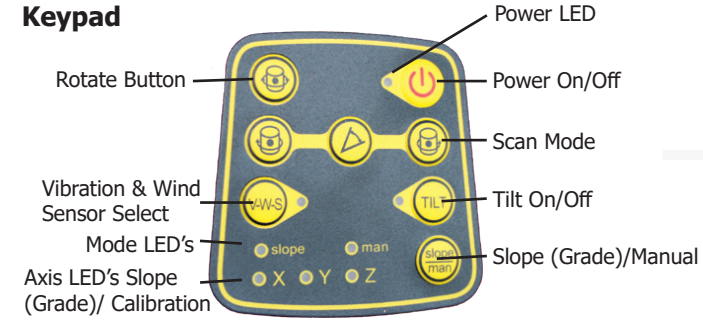
EGL624™ Laser Unit

RedBack™ Lasers

EGL624

1. Laser Output Window
2. Adjustment Vertical Operation
3. Bubble Vial Vertical Operation
4. Keypad (below)
5. Datum Point Vertical Operation
6. 5/8" – 11tpi Screw (Vert)
7. Battery Compartment
8. 5/8" - 11tpi Screw (Horiz)

Keypad



Remote Control

Receiver - LR715

Battery Instructions

The EGL624 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.

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 EGL624™ can operate off mains by plugging the charger (for indoor use only) into the unit.*
- *Remember the EGL624™ can operate using standard batteries when rechargeable pack is out of charge.*

Turning Laser On

Press Power button  on the keypad to turn on the EGL624™, power LED will light. Batteries are low if power LED flashes. After turning the laser on, the laser will auto level and rotate. The power button on the remote will not operate until the laser has been powered up from the keypad direct, the power button on the remote then acts as a standby button. The EGL624™ 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 EGL624 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 either pressing the level button  on the remote or pressing the tilt button  twice on the keypad, wait a few seconds to level and 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, 800 rpm (default), 300 rpm and 5 rpm and rotating can also be stopped to create a dot. Rotation speed will effect receiver performance at different distances.

Setting Slope/Grades (refer to diagram page 4)

The EGL624™ can be used to set grades. In Slope (Grade) Mode you can set a Grade in either the X or the Y Axis of up to 8% see the markings on top of laser for axis alignment. With the EGL624 both "TILT" and "V-W-S" modes can be used. The EGL624 is dual grade capable so a grade can be set on the X and Y axis simultaneously, however, only when in manual mode page 10.

- Turn the laser on, allow to level and begin rotating.
- On either the key pad of the laser or on the remote control a short press of the Slope (Grade)/Manual Mode button will activate slope mode indicated by LED and the X LED will also illuminate. Note a long press will enter Manual mode see page 10.
- Select the axis you wish to grade by again pressing this same button and the selected X or Y axis LED will light. A long press when already in slope mode will exit back to normal levelling.
- Move the laser plane on the selected axis up or down using the Slope Grade Direction buttons . For dual grade use manual mode see page 10.
- To reset and re-level press and hold the Slope Grade button .

Setting a Grade

Following is a method of setting a grade using the slope (grade) buttons as previously discussed. Here we will show setting a single grade on the X axis, for a dual grade simple repeat the process on the Y axis (Manual Mode Only).

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 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 (see receiver instructions page 10).

Then making a note of the height on the staff slide the receiver up/down the staff 100mm, 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.

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

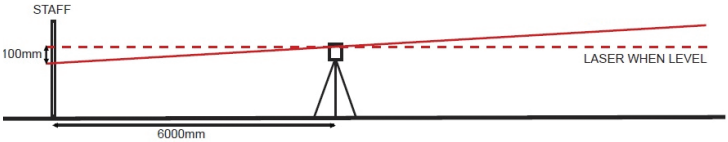


Chart below gives a range of grades and the distance the receiver shifts all based a 5m distance of staff away from laser.

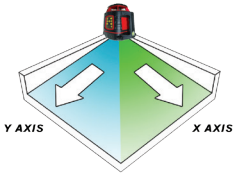
GRADIENT	%	DISTANCE LASER (M)	MOVE RECEIVER (MM)
1 IN 20	5	5	250
1 IN 30	3.3	5	167
1 IN 40	2.5	5	125
1 IN 60	1.66	5	83
1 IN 80	1.25	5	63
1 IN 100	1	5	50

Manual Levelling Mode

Manual mode can be used to simulate a manually levelling laser thus allowing you to set the laser up at any angle and allow the laser to rotate. This can be usefull for setting large manual grades on dam walls or indoor alignment such as roof lines or balustrades.

In manual mode you can also set slopes (grades) on both axis at the same time, however, "V-W-S" and "TILT" cannot be used and any disturbances of the laser will not be indicated to the user.

- To enter manual mode press and hold Slope/Manual button (slope man) note short press will enter slope mode see page 8. Press and hold to exit.
- To set dual grade follow same instructions as pages 8/9, select axis and slope beam, select second axis and slope that beam.



An added feature in vertical rotation and using manual mode can be used to slope the dot laser for setting manual pipe grades. Press the Slope/manual button (slope man) 3 times quicklt on the keypad (press hold on remote) manual LED will light and use slope direction buttons on the remote to slope up and down the dot.

V-W-S Vibration & Wind Sensor Setting

The EGL624 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 (V-W-S) the laser continually re-levels but does not stop rotating whilst doing so.

Vertical Rotation Operation (refer to diagram page 4)

The EGL624 can be used on its side for vertical alignment or together with the dot laser out of the front to produce a 90 degree square for site layout. The EGL624 can be placed on its side with the datum marker open or closed and roughly levelled using the adjustment feet and bubble vial in the handle, this brings the laser into self levelling range where the electronics take over.

Note in vertical rotation mode features such as "TILT", "V-W-S" and "Scan" can still be used the same as when in normal horizontal rotation mode.

When on its side press Slope button  the "X" LED will light and the Slope/ Manual direction buttons  on remote can be used to shift the dot/ rotating line to the left or right. This is ideal for site layout squaring;

- Place datum marker over the datum point marking the conjunction of the 90 degree lines.
- Roughly align laser housing so dot is striking target point along the one line of the 90 degrees, then use the direction buttons to electronically fine tune this alignment.
- Once the dot is on the target use the receiver to pick up the rotating line on the second line of the 90 degree. Your square is now set.

Rotation Scan Modes - For Indoor Visibility

The Scan Mode stops the laser from rotating and toggles the beam left to right, intensifying the beam making the laser more usable indoors as a visible laser. You can set the scan angle to 180°, 90°, 45° and 10° and shift the beam both left and right. The Scan Mode can be operated by both the Control key pad on the laser and also the Remote Control.

- Press the Scan button  to enter scan mode.
- The first press, area scan 180 °, second press 90°, third press 45°, fourth press 10°, fifth press 180° etc….
- Rotate the scan line left or right by pressing Scan Shift  buttons as indicated by direction arrow on button.
- Press and hold Scan Shift button to rotate the scan line quickly.
- To return to rotation mode press the Rotate button  .

Laser Receiver LR715 (refer to diagram page 5)

The LR715 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 LR715 has two large LCD displays with progressive bars indicating when the laser gets closer to the level mark. Move the receiver up and down (side to side vertical rotation) 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. Note receivers do not work in Scan mode.

LR720T™ RECEIVER & GRADE MATCHING

The EGL624GM model include all the features of the base model but also has the ability to auto grade match using the LR720T millimetre tracking receiver. The GM model can be distinguished from the base model by the work 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.

Rubberised Casing

Grade Match Axis Selection

Staff Mounting Point on Rear

Grade Match Activate LED

Laser Reception Window

Grade Match Mode On/Off and Channel Selection

LCD Display (duplicated display on rear)

Axis Indicator for Grade Match feature (note: each press toggles between X and Y the current Axis will flash up on the screen momentarily)

Receiver Accuracy indicator (note: changes to 5mm when in grade match mode)

Receiver RF Channel Indicator (note: must be is **CH2)**

When displaying the height of the laser compared to the level point in mm the LR720T 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 Accuracy Options button which will cycle through level bands of; 5mm, 9mm and 1mm (default). The default single line between the two arrows on the display indicates fine mode 1mm, 3 lines 5mm and 5 lines is 9mm, the mm value flashes up on the LCD display momentarily.

LR720T 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.

LR720T Using Auto Vertical Alignment Feature

The EGL624GM can be operated on its side with vertical rotation, using the LR720T tracking receiver the laser can be made to auto track to find the receiver handy for aligning fence lines or producing 90 degree site layout etc.

First place the EGL624GM on its side at the start point of your alignment. Direct the vertical rotation in the general direction where you want the alignment to finish. Place the LR720T receiver on its side with the level indicator at the point you want the alignment to be made.

Power up Receiver, Long Press (2 seconds) the CH/Grade Mode Button so blue LED lights. No need to set an axis this time. The laser will now track left or right to find the receiver's level position and lock on, much the same as it does in grade mode. Check out RedBack's Videos at www.redbacklasers.com.au search EGL624GM

Technical Specifications

Laser Wavelength	635nm <1mW
Laser Class	II
Range with Receiver	500m Diam Rotating
Horizontal Accuracy	±1.5mm/20m
Vertical Accuracy	±3mm/20m
Rotation Speeds	800rpm, 300rpm, 5rpm
Self Levelling Range	±5°
Temperature Range	-10°C - 45°C
Scan Angles	180°, 90°, 45°, 10°
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.
- The EGL624™ 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. ***I cannot set grades on both axis simultaneously!***
A. *Check you are in manual mode, dual grades cannot be set in slope mode.*

Q. ***I have difficulty using the remote control!***
A. *When you press a button each tone is equal to one press, so on a toggle button like the power button if you press and hold and hear 2 tones then it will have turned it on and then off again.*

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 he 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 18b Tarkin Court, 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 EGL624 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 receiver 2 Year warranty, Ni-Mh Battery & Charger have 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.

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