RedBack™ Lasers
for Professionals

RedBack Lasers
DGL2510Q

Electronic Digital Dual Grade - DGL2510Q

Instruction Manual

www.redbacklasers.com.au

CONTENTS

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.

Max Output Power
<5mW @ 635-670nm
Laser Class 3R
DIN EN 60825-1:2003-10

CAUTION: Class 3r laser <5mW at 635nm. Do NOT stare into laser beam or aim at another person.

Follow relevant Australian Standards

DGL2510Q INTRODUCTION

Congratulations on purchasing the DGL2510Q an electronic self levelling dual grade rotating laser level built tough to handle the harshest of job sites.

The DGL2510Q is ideal for plumbing and earthmoving, simply set it up on a tripod, turn on, it electronically self levels and the laser starts rotating. Then using the supplied receiver you can set up your levels or grades.

The DGL1510Q has fully automatic dual grade setting capability simply punch in the desired grade to three decimal places either on the keypad or remote and the laser does the rest. The sophisticated grade and levelling technology continually re levels and re-sets the grade if required.

The DGL2510Q also features a smart long range remote control complete with an LCD display duplicating the display on the laser level itself. This makes setting grades and the DGL2510Q other features a snap.

The DGL2510Q also features Quadrant Beam Shielding technology, this turns off laser output on selected sections of rotation, thus preventing the beam to exit the site or interfere with other laser users on site.

The DGL2510Q comes with superior rechargeable Li-ion batteries but can also use Std "D" Size batteries if needed and comes with a Five Year RedBack Warranty. (See page 16)

DGL2510Q Included Accessories

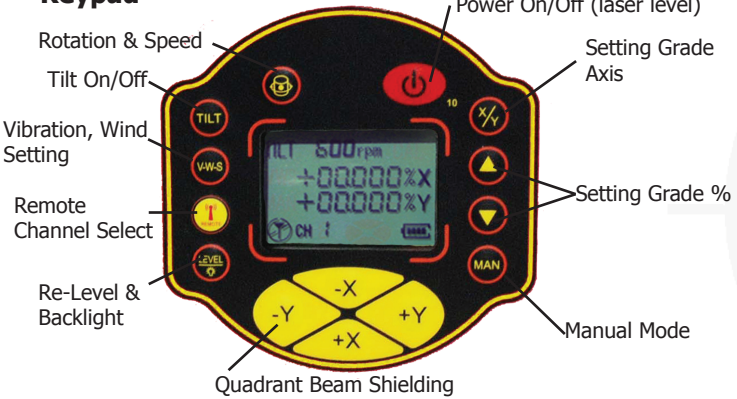
- DGL2510Q Laser Unit
- Hard Shell Carry Case
- Rechargeable Li-ion Batteries
- Charger
- Laser Receiver (LR715 or LR720)
- Receiver Staff Clamp
- Grade Alignment Scope
- Smart Remote Control
- Axis Adjustment Plate
- 8° Grade Wedge Plate
- Instruction Manual

DGL2510Q DIAGRAMS

DGL2510Q Laser Unit

1. Alignment Scope
2. Scope Mount
3. Rotating Head
4. Heavy Rubberised Casing
5. Keypad
6. LCD Display

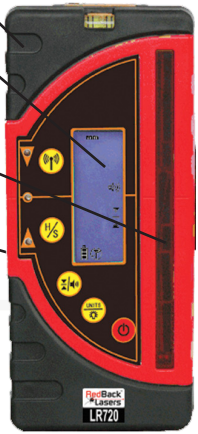
Keypad



Smart Remote Control

Receiver - LR715

Receiver - LR720



Battery Instructions

The DGL2510Q has two battery options either 3 x standard "D" size Alkaline or the Li-ion rechargeable pack. For standard 3 x "D" alkaline operation simply insert into the standard battery caddy in the direction indicated, insert caddy into recess and tighten the locking screw.

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

To charge this battery pack simply inserting the charger plug into the charging socket found on the hinged battery compartment cover. You can also charge the Li-ion pack without it inserted into the laser itself utilising the charging socket on the battery pack. The charger LED is illuminated red during the charging process and will turn green once the batteries are fully charged.

When the power symbol on the laser levels LCD shows low, the rechargeable battery needs recharging or standard batteries need replacing. Note the charger will only charge the supplied rechargeable battery pack. The battery symbol on the remote control LCD indicates the power level of the remotes batteries.

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 DGL2510Q can operate off mains by plugging the charger (for indoor use only) into the unit when re-chargeable pack is inserted.*
- *Remember the DGL2510Q can operate using standard batteries when rechargeable pack is out of charge.*
- *The rechargeable pack can be charged either when inserted into the laser or separate to it.*

Turning Laser On

Press Power button on the laser's keypad to turn on the DGL2510Q. Batteries are low if power bar on the LCD panel is showing low. After turning the laser on, the laser will auto level and rotate. Note that the power button on the remote only operates the remote and not the laser. The DGL2510Q has a massive self levelling range, in other words the body of the laser can be set up on the tripod along way out of level and the electronic mechanism will self level the rotating head to be level. If the body of the laser is set up outside of this self levelling range the laser will emit a continuous beeping sound. Turn off the laser and re-set the body of the laser more level and turn on again.

Tilt Mode

Tilt mode is somewhat similar to tilt on a pinball table in that if when running the DGL2510Q detects significant disturbance or movement that could alter the accuracy of your work the laser will "Tilt" (stop working) and the laser beams and the word "TILT" on the LCD screen will flash.

Tilt mode automatically activates after 30 seconds of laser operation. To turn the tilt feature off use the "tilt" button TILT on either the keypad or the remote control. The word "TILT" will come up on both LCD screens when activated.

If during operating the laser "tilts" then you will need to re level the laser by pressing the level button LEVEL on the remote or keypad, wait a few seconds for it to level and then re-check your work to maintain maximum accuracy.

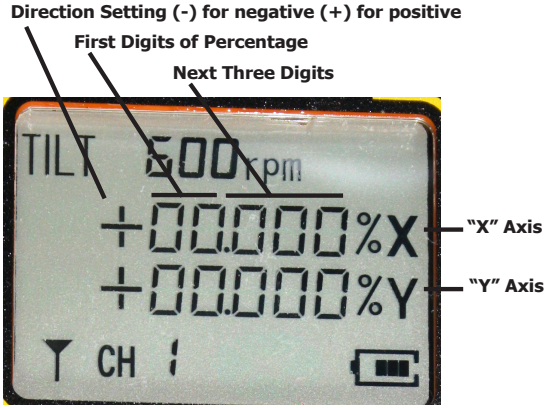
It is recommended to use tilt mode when optimal accuracy is required or when there is a chance that machinery or worker may interfere inadvertently with the lasers level.

Setting Slope/Grades (refer to diagram page 9)

The DGL2510Q can digital dial in a grade as a percentage to three decimal places. In Slope (Grade) Mode you can set a Grade in either the X (up to 10.000%) or the Y Axis (up to 25.000%) see the markings on top of laser for axis alignment. In Slope (Grade) mode the "TILT" and "V-W-S" features can still be used. The DGL2510Q is dual grade, so a grade can be set on the X and Y axis simultaneously. Slope (Grade) can be set from either the laser's keypad or the remote and the grade being selected is shown on both displays. Using the scope and axis adjustment plate aids in axis alignment.

- Turn the laser on, allow to level and begin rotating.
- To select a grade on the "X" axis (see markings on top casing) press and hold 2 seconds the "X/Y" button on the keypad/Remote. The "X" and "+" will flash on the LCD screens a grade can now be set on the "X" axis.
- To select a negative grade i.e slope up in the direction of the "-X" (on casing) press the down arrow button . To change back to a positive slope press the up arrow button .
- Next press (short press) the "X/Y" button to shift the active digit one place to the right. Use the up arrow to increase the percentage required and use the down arrow to reduce it. For example we want to set a 1.666% slope so leave this first digit to "0". (This first digit is only if you want to set the maximum possible percentage grade of 10.000% in that situation you would set the digit to "1")
- Press (short press) the "X/Y" button to shift the active digit another place to the right and use the up and down arrows to select the required number, in this example "1". Then repeat the operation again press "X/Y" button and arrows to select the next three digits to "6" until we get the 01.666% in our example.
- Next long press (2 seconds) the "X/Y" button this makes the "Y" axis active (flash) and a grade can be set in the same manner the "X" Axis was set or if no second grade is required leave all digits as "0". To seal in these grades and to tell the laser to set them another long press of the "X/Y" button is required or no not enter anything for 8 seconds, The laser will beep and after a few seconds of setting the grades the laser will rotate with the desired grade/grades. The laser will take longer to set larger and dual grades.

NOTE: In grade mode if nothing is entered for 8 seconds, whatever has already been entered will be set and the laser will grade and rotate. If you have not entered all the numbers then re-enter grade mode by pressing the X/Y button and finish entering all the digits you require.



Setting a Grade between 14% and 25% (+ve "Y" Axis)

The DGL2510Q can set a grade up to 25% (4in1) on its "Y" Axis (+ve). This is achieved by using the 8° Grade Wedge Plate. Place the grade wedge on the base of the laser, aligning the locking screw with the smaller thread and tightening up securely. This places the DGL2510Q on approximately an 8° (14%) grade on the "Y" axis and allows you to enter a grade on the "Y" axis of up to +25.000% (assuming the tripod is reasonably level). Follow instructions as per page 8 for setting the grade on the "Y" axis.

Rotation Speed Setting

The DGL2510Q has 2 rotation speeds; 600rpm and 1100rpm with the default being 600rpm. For most situations this default value will be ideal but when using machine receivers better results may be achieved with a different rotation speed at different distances. Rotation Speed Button.

LCD Display Light

The DGL2510Q has a backlight feature for the LCD display which is turned on and off with the Level/Light button a long press will toggle between on and off. The Same button on the remote control will operate the back light on the remote control LCD display only.

V-W-S Vibration and Wind Sensor Setting

The DGL2510Q when sensing any movement will temporarily stop the rotation of the laser, re-level and start up again. However, sometimes in high wind or near heavy machinery, vibrations may cause the laser to pause rotation like this so regularly that it slows your work down..

The "V-W-S" button is a vibration/wind sensor, activating this will desensitise the laser to these vibrations and so allow you to continue to work without it stopping to re-level all the time. When you turn on the "V-W-S" the "TILT" function is also activated this ensures that even though you have desensitised the laser it is still protected from major knocks or movement that may affect the accuracy of your levelling/grading job.

Manual Levelling Mode

Manual mode stops the auto levelling mechanism operating so enabling you to set the body of laser at any angle you want and have it rotating. This can be useful for setting large manual grades on dam walls or indoor alignment such as roof lines or balustrades.

"V-W-S" and "TILT" cannot be used in manual mode and any movement or change of angle of the laser will not be indicated to the user.

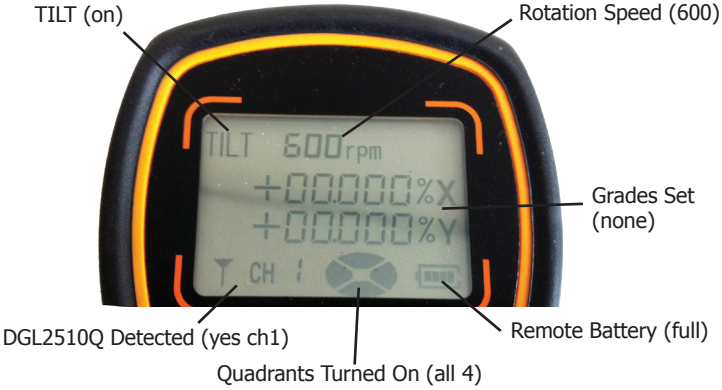
- To enter manual mode first power up laser then press and hold (2 seconds) Manual button "MAN" will be displayed on the LCD displays, press again to disable. On remote is the Man/Sleep button.

Quadrant Beam Shielding (refer to diagram page 4)

The DGL2510Q features Quadrant Beam Shielding which allows the user to turn off laser output to one or more quadrants of rotation. This is helpful to shield areas of the worksite from the rotating laser, often helpful when using multiple lasers on site.

Photo showing one quadrant (90° arc) of rotation with laser output turned off

Laser output can be turned off on one or more segments of rotation either by pressing the Quadrant Shield buttons on the DGL2510Q keypad or on the Smart Remote. The quadrants are indicated by the grade markings on the top of the unit and quadrants turned off are indicated on the LCD screen on the unit and the remote control. Note: a minimum of one quadrant must be turned on at any one time.



Remote Control Operation (refer to diagram page 5)

The DGL2510Q has a sophisticated radio frequency remote control with full LCD display that provides real time information to and from the laser. Radio frequency means that you have you an exceptional range of up to 50m it also means easier communication even from within the cab of a machine.

The LCD Display means that all the features of the laser are at you finger tips, you can even instantly see from the display if the laser has "tilted" and press the level button to getting it going again without leaving the cab.

The receiver has multiple channels the default being channel #1 the channel number is displayed on both the LCD on the DGL2510Q and the remote bottom left corner. If you have a second DGL2510Q on site the channel can be changed on the second laser and remote so as not to interfere, this is done by pressing the Remote button  and toggling to the next channel. Note this needs to be set separately on both the laser and remote unit so both show the same channel number, if the laser does not detect a turned on remote on the selected channel the antenna symbol on the bottom left corner of the laser LCD has a line through it. 

The DGL2510Q sold as a standard package includes the RedBack LR715 receiver. The DGL2510QR720P special package includes the LR720 receiver.

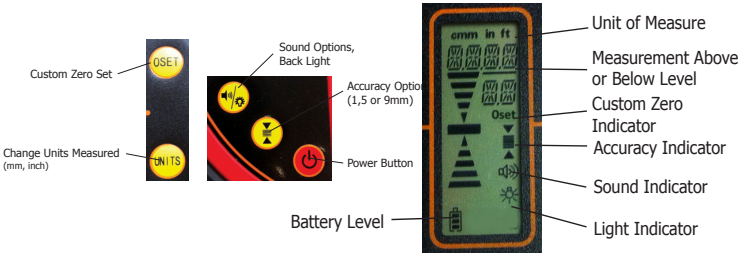
Laser Receiver LR715 **standard issue** (refer to diagram page 5)

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 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 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.

Laser Receiver LR720 special R720 package (refer to diagram page 5)



LR720 is supplied with the DGL1010SVR720 special package and differs from the LR715 in that it displays the actual millimetres from level.

- To power up the receiver press the red power button, the display will flash a solid tone will sound. The receiver will now pick up any red rotating laser beam striking the long red reception window on the front of the receiver.

The LR720 has a 130mm reception range as indicated by the long red window on the front of the receiver. When displaying the height of the laser compared to the level point in mm the LR720 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. This allows you to quickly and accurately to guide the receiver to the level of the laser beam being emitted by your rotating laser level.

- To select sound option press the Sound button (long press) which will cycle through; off, low, high (default) sound levels.
- 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.
- Units of measure can be selected with the "units" button millimetres is default, you could also select cm, and inches.
- The "OSET" button is used to set a customised level point other than the default level point as indicated by markings on the casing. A custom level point can be set between 20mm above and 20mm below the default level point. A custom level point is set to where the laser is currently striking (assuming it is within the +/-20mm band) by pressing the "OSET" button the receiver (while laser is striking it) will now show as being level at that height the LCD display will flash "Oset" to indicate a custom level point has been set. To clear this custom level and return to the default setting either press the "OSET" button once more or power off the receiver.

- The LCD backlight function is activated by the same button as Sound Options to activate press and hold button for two seconds and back light will turn on, to turn off press and hold same button for two seconds.
- Low Battery is indicated by a battery symbol appearing on the bottom left of the LCD display.

DGL2510Q Technical Specifications

Laser Wavelength	635nm <5mW
Laser Class	3r
Range with Receiver	600m Diam Rotating
Horizontal Accuracy	±1mm/20m
Gradient Setting	Single Axis ±10% (max) Dual Axis ±10% (max)
Rotation Speeds	300rpm, 600rpm
Self Levelling Range	±5°
Temperature Range	-20°C - 50°C
IP Dust Water Resistance	IP66
Power	4 x "D" Alkaline or Li-ion pack
Low Power	LCD Display
Size	220x200x280mm
Weight	5Kg

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.

- 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 DGL2510Q is a precision instrument and should not be subjected to excessive knocks, drops or vibrations.
- Self check calibration from time to time.
- For service contact Redback Lasers. **www.redbacklasers.com.au**

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 Crt, 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 DGL2510Q is 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.

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
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