MR825WD
Machine Receiver Kit
with WRD10 wireless in-cab repeater Unit

Instruction Manual

CONTENTS

1. Introduction

The MR825WD kit includes the MR825 machine receiver with RF wireless connectivity to the WRD10 wireless in-cab repeater unit also included in the kit.

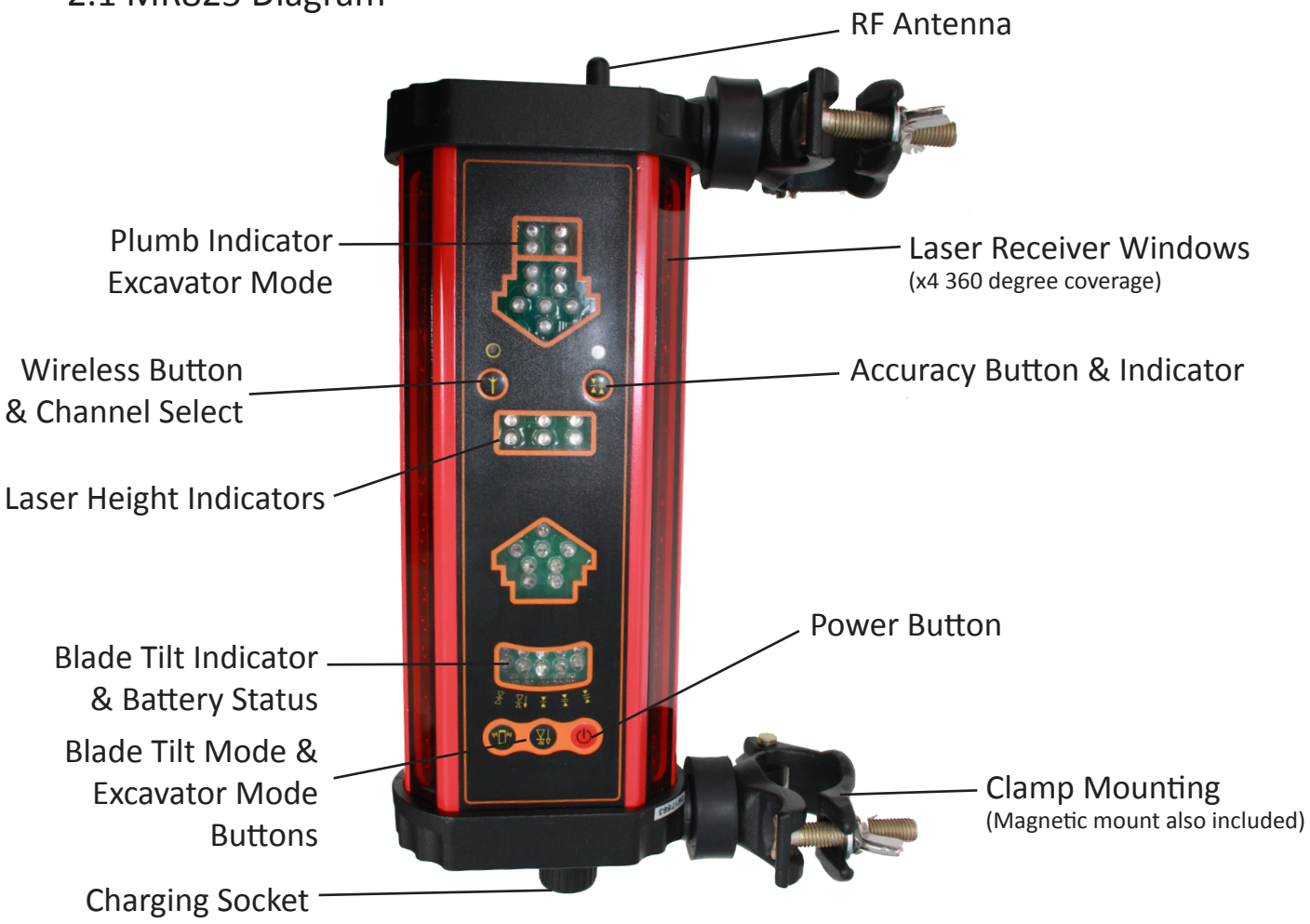
The MR825 is suitable for red rotating lasers with a class3 output (it will work with a red rotating laser with a class2 output but at a much reduced range). The MR825 has a large reception window 260mm and can detect lasers from 360 degrees. The MR825 includes a bulldozer/grader mode so when mounted on the blade can indicate the levelness of the blade. The MR825 also includes an excavator mode which when correctly mounted on the boom can indicate when the boom is upright or extended forwards or backwards.

The MR825WD kit includes a RF wireless in-cab repeater unit that duplicates the MR825 receivers results into the machine cab. This is done wirelessly using radio frequency and has 3 channels so more than one MR825WD kits can be used on the same site at the same time.

The MR825WD kit includes both clamp and magnetic mounts for the receiver and a clamp and windscreen mount for the in cab repeater. The receiver is powered by rechargeable batteries and includes a main charger and the in-cab unit runs on “AA” batteries.

2. Operation of the MR825 Receiver

2.1 MR825 Diagram



2.2 MR825 Power and Operation

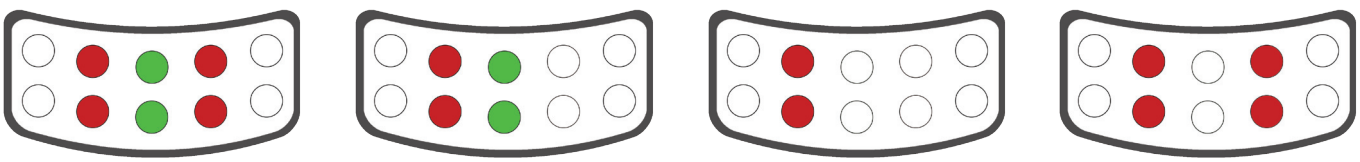
The MR825 is powered by an internal Ni-Mh rechargeable battery which is charged with the mains charging unit supplied in the kit. When fully charged the MR825 can operate for up to 50 hours, less when used with the RF wireless feature turned on. The unit is supplied with a partial charge in the batteries, we recommend you fully charge the battery before using. When charging the LED light on the charger is red and will turn green when fully charged. Charger plugs into charging socket.

To power up the receiver press the red power button a sequence of lights will flash to indicate that it is powered up. To turn off press and hold the power button for 4 seconds until the LED lights all flash then let go of the power button the receiver is now powered down.

You can determine the amount of charge in the internal Ni-mh battery by looking at the light sequence on the lower light panel (battery status panel) at the end of the powering up process. See the diagram below for which light combinations correspond with; Full Power, Half Power, Low Battery and Very Low Battery.

Note : the MR825 will auto power off if not received a laser after 60 minutes.

Battery Status Lights

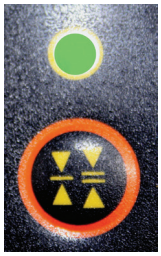


Full Battery Charge | Half Battery Charge | Low Battery Charge | No Charge

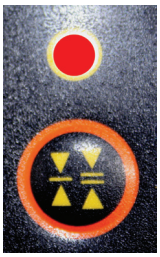
2.3 MR825 Setting Receiver Accuracy

The MR825 has three levels of receiver detecting accuracy; fine ±5mm, standard ± 10mm and coarse ±20mm. The default setting on powering up is standard which means there is a ±10mm (20mm band) tolerance of the receiver displaying level.

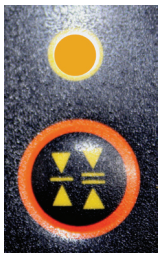
To change the receiver detecting accuracy press the accuracy button each press cycles through standard, coarse and fine. The LED light above the button indicates what accuracy level is set green is Standard, red is coarse and orange is fine.



Standard



Coarse



Fine

2.4 RF Wireless Operation On/Off

The MR825 can duplicate its display onto an in-cab repeater unit WRD10, this is transmitted from the receiver wirelessly using RF (Radio Frequency). This transmission can be turned on or off, the default setting on powering on the receiver is Wireless Off this helps to reduce batter power when not using the WRD10 in-cab unit.

To turn on the RF wireless feature press the wireless button, each press of the button toggles through 3 separate RF channels, the colour of the LED light above the button indicates which channel is selected. The default channel on turning on is channel 1. Note that the WRD10 in-cab also needs to be set to the same channel as the receiver to work. The channel feature is handy if you have more than one MR825/WRD10 working in close proximity selecting different channels for each setup prevents any interference. See section 3. on using the WRD10 in-cab repeater unit.

Wireless Off

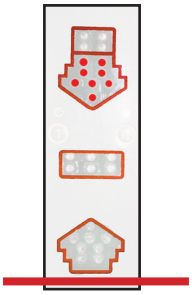
Wireless Ch1

Wireless Ch2

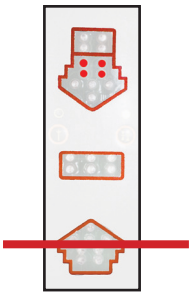
Wireless Ch3

2.5 Basic Receiver Operation

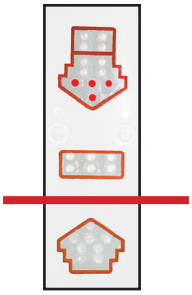
The MR825 machine receiver's basic operation is very much like a hand held receiver, just on a bigger scale. Essentially the receiver indicates when a rotating laser is positioned either above the level indicator on the receiver, below the level mark or on level. The MR825 receiver features a green LED illuminated level display in the center, an arrow down with red LED's and arrow up again with red LED's. The appropriate display illuminates depending on where the MR825 picks up the rotating laser beam i.e. if the top red arrow is illuminated it indicates the laser is DOWN below the level line, if the lower red arrow is illuminated the laser is above the level point. The arrow points in the direction where the laser actually is. Each of the two arrow displays are also divided into two sections giving further indication of roughly how far away from level the receiver is. See the following diagrams for a guide.



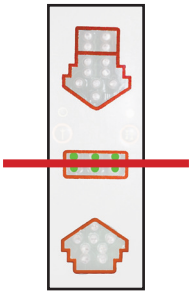
- All top arrow lights illuminated (slow flash)
- Laser has dropped below Receiver's Sensors (laser last seen bottom of receive)
- Cut



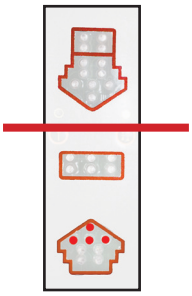
- Top part of top arrow lights illuminated
- Laser is between 40 and 105mm below level
- Cut



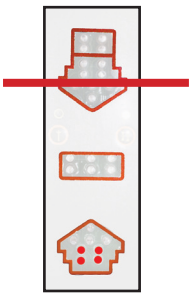
- Bottom part of top arrow lights illuminated
- Laser position is dependant on receiver accuracy setting.
  - Fine - between 5 and 40mm below level
  - Standard - between 10 and 40mm below level
  - Coarse - between 20 and 20mm below level
- Cut



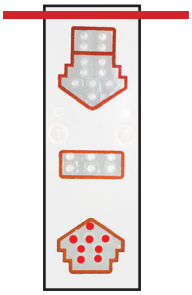
- Green Center lights illuminated
- Laser position is level dependant on receiver accuracy setting.
  - Fine - between ±5mm
  - Standard - between ±10mm
  - Coarse - between ±20mm



- Top part of bottom arrow lights illuminated
- Laser position is dependant on receiver accuracy setting.
  - Fine - between 5 and 40mm above level
  - Standard - between 10 and 40mm above level
  - Coarse - between 20 and 20mm above level
- Fill



- Bottom part of bottom arrow lights illuminated
- Laser is between 40 and 105mm above level
- Fill

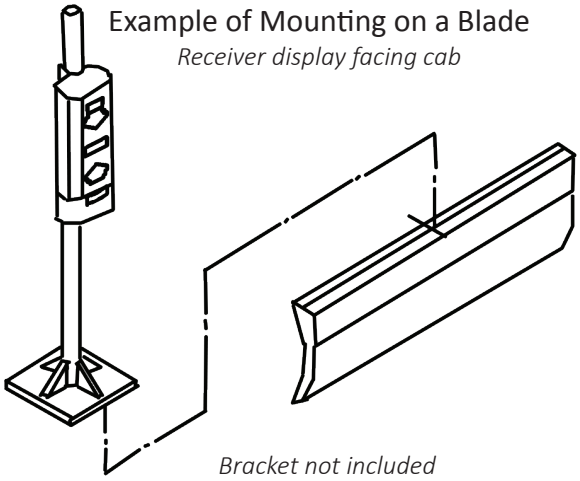


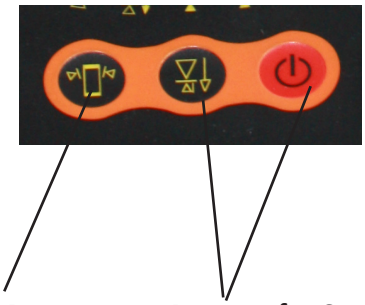
- All of bottom arrow lights illuminated (slow flash)
- Laser has dropped above Receiver's Sensors (laser last seen top of receive)
- Fill

2.6 Blade Tilt Mode

The MR825 machine receiver features Blade Tilt Mode. When the MR825 is correctly mounted onto a blade of a bulldozer or grader it can display how level that blade is left to right. This is achieved by an inbuilt inclinometer in the receiver and is displayed on the blade tilt display panel on the bottom of the receiver or top panel of the WRD10 in-cab repeater unit (see section 3).

Blade tilt mode is turned on by pressing the Blade Tilt Button located at the bottom left of the receiver, note that the receiver must first be turned on with the red power button. When the Blade Tilt Button is pressed the blade tilt display will illuminate and display the amount of tilt, left to right, on the blade (see diagram below).





Blade Level	Blade Right Up	Blade Right Up More	Blade Left Up	Blade Left Up More
Accuracy Fine ±0.5° Standard ±1.5° Coarse ±2.5°	Accuracy Fine +0.6° - +0.9° Standard +1.6° - +2.9° Coarse +2.6° - +4.9°	Accuracy Fine > +1° Standard > +3° Coarse > +5°	Accuracy Fine -0.6° - -0.9° Standard -1.6° - -2.9° Coarse -2.6° - -4.9°	Accuracy Fine > -1° Standard > -3° Coarse > -5°

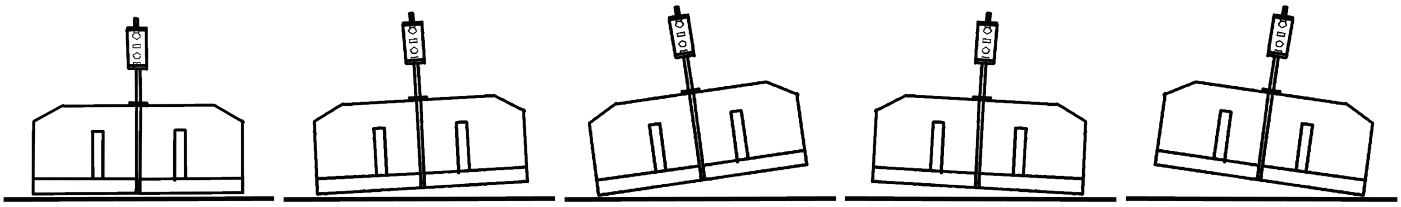
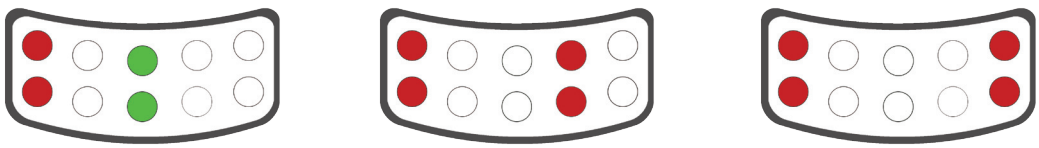


Illustration of blade looking from cab corrisponds to lights when receiver's display is facing cab.

Blade tilt mode has three level accuracy settings fine ±0.5°, standard ±1.5° and coarse ±2.5° the default on power up being fine. To select accuracy press the red Power Button together with the Excavator Mode Button, continuing to hold down both buttons will toggle through the three accuracy settings (see diagram below). let go of both buttons when you have your desired accuracy.

Fine ±0.5° Standard ±1.5° Coarse ±2.5°



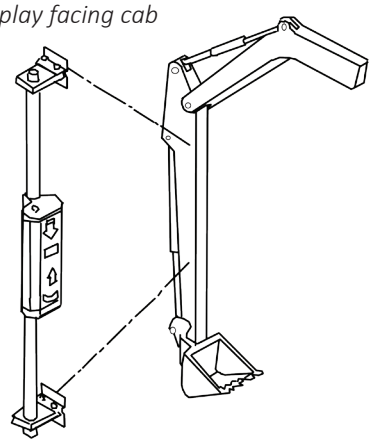
2.7 Excavator Mode - Plumb Operation

The MR825 machine receiver features Excavator Mode. When the MR825 is correctly mounted on an arm of an excavator/Backhoe it can indicate if the arm is tilted away from the cab or pumb to the ground or tilted towards the cab. This feature is important in order to maintain an accurate and consistent depth of cut. The MR825 displays the position of the arm in relation to plumb by flashing the height indication LED lights in a specific manner. If the arm is extended away from the cab too much the height indication LEDs will flash quickly, if the arm is folded too close to the cab then the height LEDs will flash slowly and if the arm is plumb to the ground front to back then the height indication LEDs are solid (no flashing).

Excavator mode is turned on by pressing the Excavator Button located at the bottom center of the receiver, note that the receiver must first be turned on with the red power button, pressing it again turns excavator mode off.

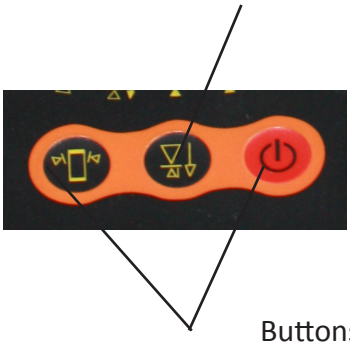
Example of Mounting on an Excavator Arm

Receiver display facing cab

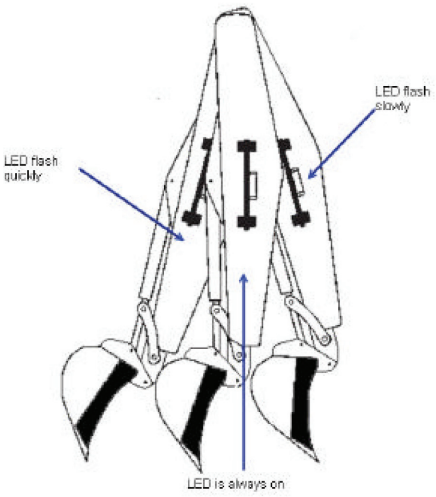


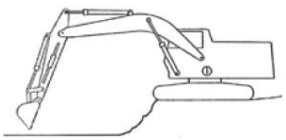
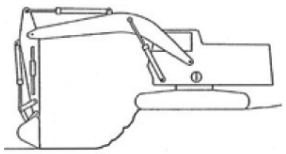
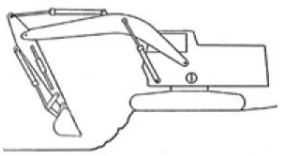
Bracket not included

Excavator Mode Button

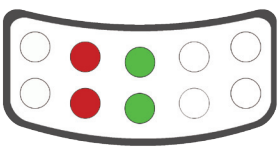
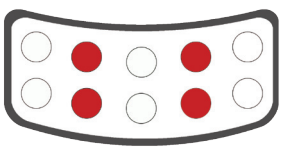
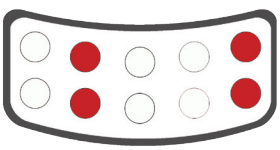


Buttons for Setting
Excavator Mode Accuracy

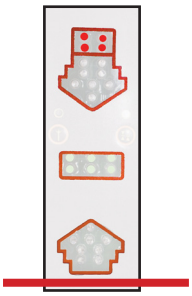


Extended Away	Extended Away	Extended Away
Accuracy Fine >0.5° Standard >1.5° Coarse >2.5°	Accuracy Fine ±0.5° Standard ±1.5° Coarse ±2.5°	Accuracy Fine >0.5° Standard >1.5° Coarse >2.5°
		
LEDs flash Quickly	LEDs are Solid	LEDs flash Slowly

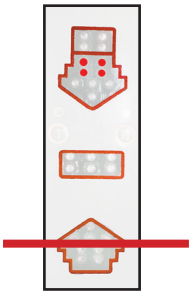
Excavator plumb mode has three level accuracy settings fine ±0.5°, standard ±1.5° and coarse ±2.5° the default on power up being fine. To select accuracy press the red Power Button together with the Blade Tilt Mode Button, continuing to hold down both buttons will toggle through the three accuracy settings (see diagram below). let go of both buttons when you have your desired accuracy.

Fine ±0.5°	Standard ±1.5°	Coarse ±2.5°
		

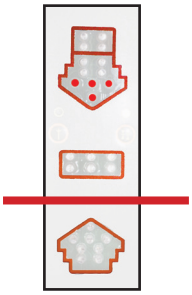
In Excavator mode the MR825 displays height in a slightly different manner to when the receiver is being used in regular mode providing a great indication of the receiver being above the laser datum than it does below it. i.e. More indication on how much to cut than to fill. See diagram below.



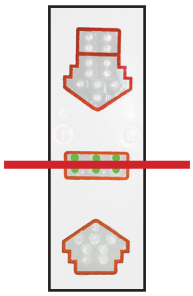
- Top four LED lights illuminated
- Laser is between 105mm and 155mm below level
- Cut



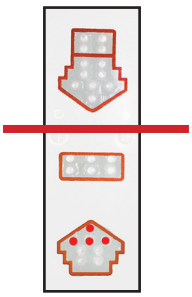
- Top part of top arrow lights illuminated
- Laser is between 40 and 105mm below level
- Cut



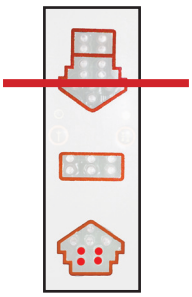
- Bottom part of top arrow lights illuminated
- Laser position is dependant on receiver accuracy setting. (cut)
  - Fine - between 5 and 40mm below level
  - Standard - between 10 and 40mm below level
  - Coarse - between 20 and 20mm below level
- Cut



- Green Center lights illuminated
- Laser position is level dependant on receiver accuracy setting.
  - Fine - between ±5mm
  - Standard - between ±10mm
  - Coarse - between ±20mm



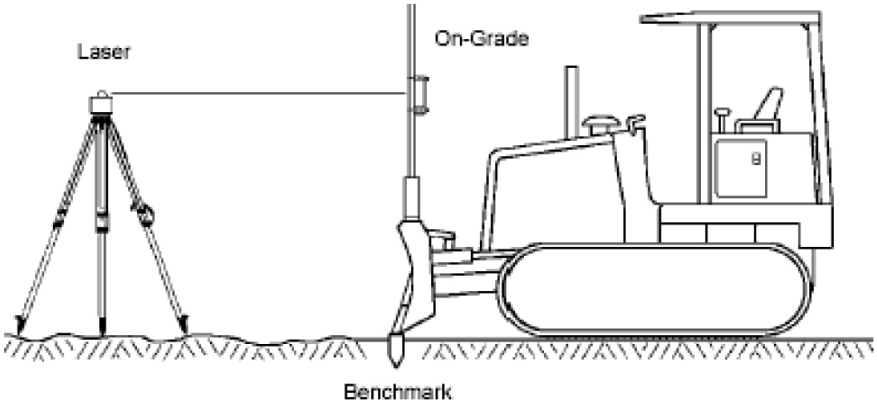
- Top part of bottom arrow lights illuminated
- Laser position is dependant on receiver accuracy setting.
  - Fine - between 5 and 40mm above level
  - Standard - between 10 and 40mm above level
  - Coarse - between 20 and 20mm above level
- Fill



- Bottom part of bottom arrow lights illuminated
- Laser is between 40 and 105mm above level
- Fill

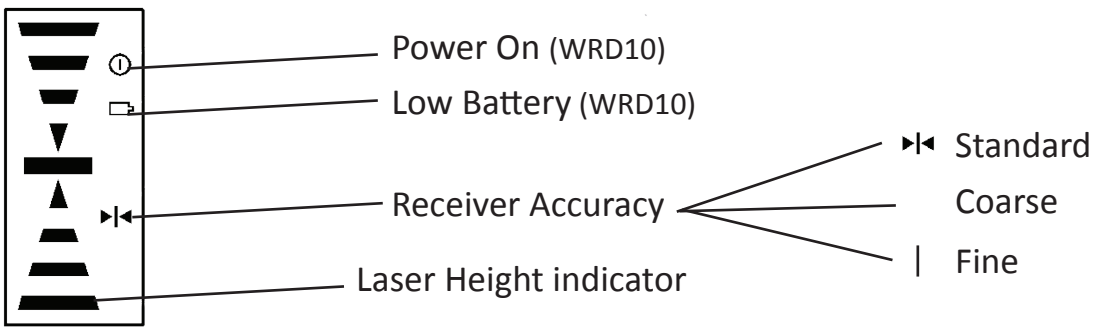
2.8 Using a Laser with the MR825

1. Set the rotating laser level up in a position that the receiver mounted on the machine will “see” it. make sure that the laser is securely mounted onto its tripod and located away from potential vibrations and out of danger to being knocked over.
2. Mount the MR825 on your machine either with the clamps using a bracket (not supplied) or by using the included magnetic pads.
3. Power up the receiver and set the desired modes and accuracy settings.
4. Match the height of the receiver and laser level in order to level or cut as required.
5. Face the LED display to the cab and power up the WRD10 in-cab repeater if desired.



3. WRD10 In-Cab Repeater Operation

3.1 WRD10 Diagram



3.2 WRD10 Introduction & Power Operation

The MR825WD kit includes the RF wireless WRD10 in-cab repeater unit. This unit is placed in the cab and duplicates the display of the MR825 receiver without the need to connect the two with cables. The WRD10 is powered by 4x “AA” batteries and can be mounted in the cab in a number of ways; Magnetic, Clamp and Suction Cup. Insert 4x “AA” Batteries as indicated under the black cover and power up by pressing the red power button, the LED display will flash and the LCD display will be powered up.

3.3 RF Wireless Operation

The MR825 can transmit its display in real time at up to 10m to the in-cab repeater unit WRD10. This is achieved by using radio frequency (RF). The MR825 first needs to be set to transmit by pressing the Wireless Operation Button as described in 2.3 and the WRD10 also needs to have its wireless feature turned on. Make sure both receiver and in-cab repeater are on the same channel. To change channel on the WRD10 long press (2 seconds) on the wireless button, each long press will cycle through the three channels.

Wireless Off

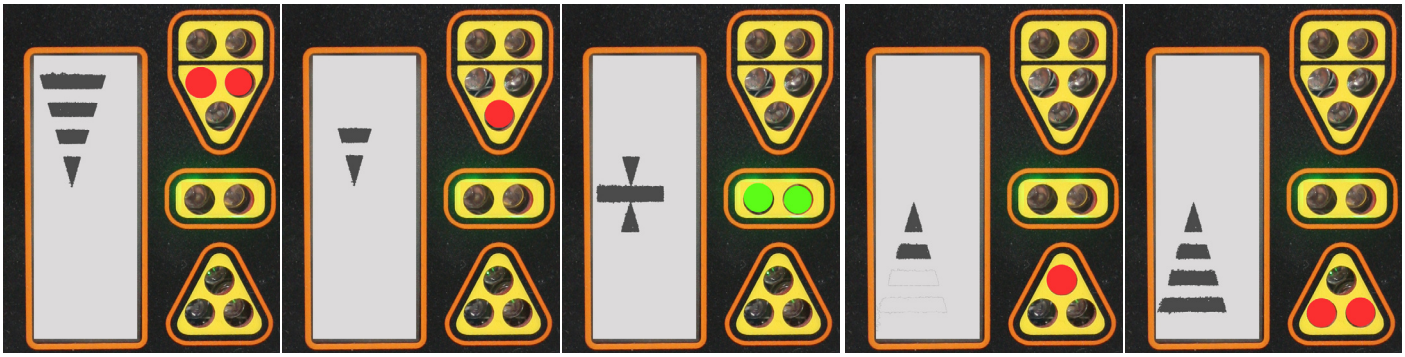
Wireless Ch1

Wireless Ch2

Wireless Ch3

3.4 Basic Receiver Operation - WRD10 Display

The WRD10 in-cab repeater features both an LED and LCD display. The LED display mimics, on a smaller scale, what is being displayed on the MR825 receiver itself. The LCD display indicates the same information, note that both displays on the WRD10 do not show anything when the laser is outside of height range. See the following diagrams for a guide.



Laser is Below Level
40mm - 105mm
Cut

Laser is Below Level
Fine 5mm - 40mm
Standard 10mm - 40mm
Coarse 20mm - 40mm
Cut

Laser is ON Level
Fine ±5mm
Standard ±10mm
Coarse ±20mm

Laser is Above Level
Fine 5mm - 40mm
Standard 10mm - 40mm
Coarse 20mm - 40mm
Fill

Laser is Above Level
40mm - 105mm
Fill

3.5 Blade Tilt Display - WRD10 Display

The WRD10 in-cab repeater again duplicates the display on the MR825 receiver for Blade Tilt Mode. On the WRD10 the Blade Tilt display is located as five LED lights at the top of the unit and indicates the tilt very much like the display on the receiver itself. See diagram below.

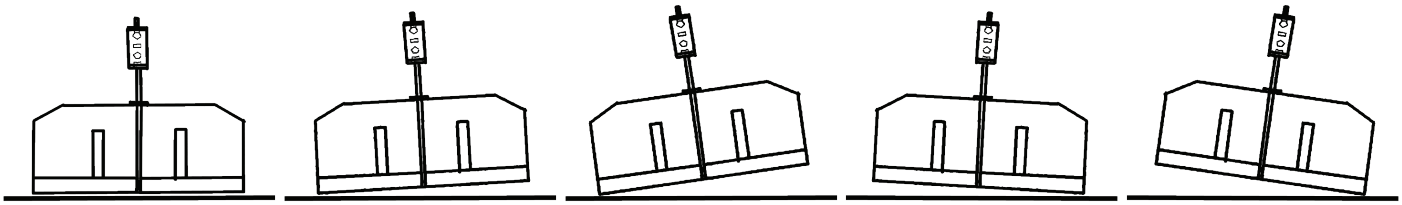
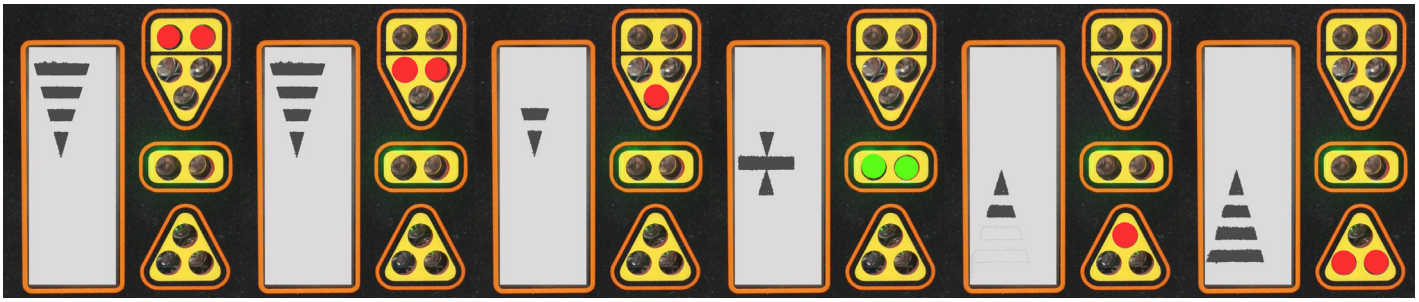
Blade Level	Blade Right Up	Blade Right Up More	Blade Left Up	Blade Left Up More
				
Accuracy Fine ±0.5° Standard ±1.5° Coarse ±2.5°	Accuracy Fine +0.6° - +0.9° Standard +1.6° - +2.9° Coarse +2.6° - +4.9°	Accuracy Fine > +1° Standard > +3° Coarse > +5°	Accuracy Fine -0.6° - -0.9° Standard -1.6° - -2.9° Coarse -2.6° - -4.9°	Accuracy Fine > -1° Standard > -3° Coarse > -5°
				

Illustration of blade looking from cab corrisponds to lights on WRD10.

3.6 Excavator Mode Display - WRD10 Display

The WRD10 in-cab repeater again duplicates the display on the MR825 receiver for Excavator Plumb Mode, but, as with the basic reception Mode there are a few differences. See Diagram Below.



Laser is Below Level	**Laser is Below Level**	**Laser is Below Level**	**Laser is ON Level**	**Laser is Above Level**	**Laser is Above Level**
105mm - 155mm Cut	40mm - 105mm Cut	Fine 5mm - 40mm Standard 10mm - 40mm Coarse 20mm - 40mm Cut	Fine ±5mm Standard ±10mm Coarse ±20mm	Fine 5mm - 40mm Standard 10mm -40mm Coarse 20mm - 40mm Fill	40mm - 105mm Fill

3.7 Mounting the WRD10 Display

The WRD10 in-cab repeater can be mounted in a number of different ways in your machines cab. Firstly the WRD10 has strong built in magnets which can attach to various points in the cab with exposed steel, secondly the WRD10 comes with a clamp which attaches to the magnets on the unit and may be able to clamp in your cab. Thirdly the kit comes with a strong suction mount for the windscreen and again this attaches to the WRD10 using the magnets.

4. Technical Specifications

MR825

Detecting Range	up to 200m
Detecting Accuracy	Fine = ±5mm, Standard = ±10mm, Coarse = ±20mm,
Laser Compatibility	Class 3r Red Rotating Laser 635-670nm (class 2 reduced range)
Receiving Window	260mm
Blade Tilt Accuracy	Fine = ± 0.5°, Standard = ±1.5°, Coarse = ±2.5°,
Excavator Plumb Accuracy	Fine = ± 0.5°, Standard = ±1.5°, Coarse = ±2.5°,
Wireless Transmission	3 Channels
Wireless Transmission Range	10m
Power Off Automatically	After no Reception of Laser after 60min
Working Voltage	DC 6V (Ni-mh internal battery)
Battery Life	up to 50 hours (continuous, wireless off)
Battery Charging Time	4 - 5 hours
Environment	-10° to + 50°, IP67 rain, dust and shock proof
Weight	Approx 4kg
Size (without Clamp)	370mm x 142mm x 90mm

WRD10

Wireless Transmission	3 Channels
Wireless Transmission Range	10m
Power Off Automatically	After no Reception of Laser after 60min
Working Voltage	DC 6V (4x “AA” Alkaline)
Battery Life	up to 45 hours (continuous)
Environment	-10° to + 50°
Weight	Approx 0.7kg
Size	190mm x 116mm x 42mm

Trouble Shooting

DO NOT Disassemble the unit as damage may result.

- Return receiver and in-cab repeater to case when not in use
- Do not pack away wet, dry units before storing
- If not used for some time remove “AA” Batteries from WRD10 unit
- Never mix old and new “AA’ Batteries in WRD10 unit
- If receiver or in-cab are not working change and charge batteries before reporting fault
- If WRD10 cannot receive the wireless signal from the receiver try another channel remember both units need to be on the same channel to operate.
- If your receiver appears to be picking up too different heights as level make sure there are no reflective surfaces such as glass on site. Re-locate the laser if required to prevent reflections causing problems.
- NOTE: some high powered strobe lights may interfere with the receiver turn off if required.
- For full range use a red beam class3r rotating laser level.
- Make sure both MR825 and WRD10 are securely fastened to machine before operation. For the receiver, clamps offer the most secure attachment.

5. RedBack Lasers Warranty

Duration of warranty is fixed and automatic, when we advertise 2 years on a particular model, its two 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 MR825WD is Two 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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