



# Integrated Compact Ball Bank

**HMBB0400**



## **INTEGRATED COMPACT BALL BANK**

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**THE HUMMINGBIRD INTEGRATED COMPACT BALL BANK IS USED TO MEASURE ROLL WITH THE USE OF AN INTEGRATED ACCELEROMETER.**

**IT IS EASY TO OPERATE WITH 3 SOFTKEY PUSH BUTTONS AND A FULL COLOUR DISPLAY.**

### **WARNING & SAFETY INSTRUCTIONS**

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**THIS MANUAL CONTAINS IMPORTANT INSTRUCTIONS FOR THE INTEGRATED COMPACT BALL BANK.**

**DO NOT OPERATE THE BALL BANK UNLESS YOU HAVE READ AND UNDERSTOOD THIS MANUAL AND THE DEVICE IS INSTALLED AS PER THE INSTALLATION INSTRUCTIONS.**

# INTEGRATED COMPACT BALL BANK

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## POWERFUL PERFORMANCE

The Integrated Compact Ball Bank requires no costly installation; simply plug in the cigarette adapter or directly connect power and ground to start measuring.

The Integrated Compact Ball Bank requires no external sensor and will update roll measurements ten times a second.

The full colour screen allows for easy interpretation of roll angle in degrees. Will indicate up to 20 degrees.

This unit is multi voltage and can work in 12V and 24V vehicles.

## Features

- Roll measurement
- Configurable warning and alarm levels
- Full colour display
- Sensor damping configurable
- Internal buzzer
- Rugged RAM mounting system
- Multi Voltage

## 2 SPECIFICATIONS

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### TECHNICAL SPECIFICATIONS & ORDERING INFORMATION

<b>PART NUMBER</b>	<b>HMBB0400</b>
<b>MOUNTING SYSTEM</b>	<b>WINDSHIELD MOUNT</b>
<b>INPUT VOLTAGE</b>	<b>9-32V</b>
<b>POWER CONSUMPTION</b>	<b>LESS THAN 1W</b>
<b>DIMENSIONS (DISPLAY UNIT)</b>	<b>70MM (WIDTH) X 50MM (HEIGHT) X 18MM (DEPTH)</b>
<b>SENSOR RESOLUTION</b>	<b>1 DEGREE</b>
<b>SENSOR ACCURACY</b>	<b>3 DEGREES</b>
<b>OPERATING TEMPERATURE</b>	<b>-40 TO 85 DEGREES CELCIUS 5% TO 95% RELATIVE HUMIDITY</b>

### THE KIT CONTAINS

- 1. 1.8" DISPLAY SCREEN**
- 2. WINDSHIELD MOUNT**

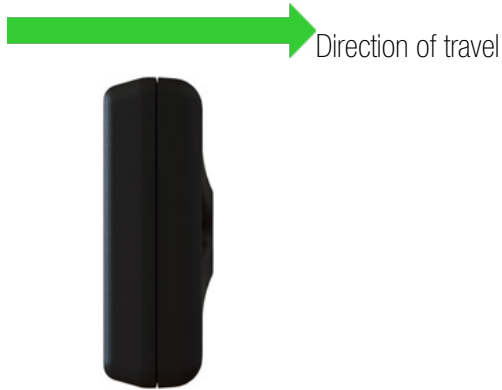
### 3 INSTALLATION

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Ensure the device is mounted securely and safely. To install correctly, the device must be orientated appropriately.

#### DETERMINE DEVICE ORIENTATION

The device must be orientated with the **back of the device facing the forward direction of the vehicle and the device is not tilted**. This is demonstrated in figures 1 and 2 below, where the green arrow represents the direction of travel i.e. the 'forward' direction of the vehicle. The device must be vertically straight up with no forward-backward tilt. Likewise, the device must be horizontally flat with no left-right tilt.



**Figure 1**

Side view of device showing orientation without calibration.

**Notice device is vertically straight and not tilted.**

## 3 INSTALLATION

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Direction of travel is into the page

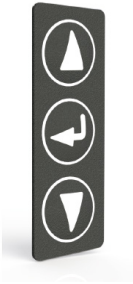
**Figure 2**

Front view of device showing orientation without calibration.

**Notice the device is horizontally straight and not tilted**

1. Mount the Integrated Compact Ball Bank in the orientation described with the aid of figures 1 & 2.
2. Power the device by inserting the cigarette adaptor into the vehicles power supply.
3. The device is now ready to be used.

### NAVIGATING THE MENU



**Up** - press up to increment a value when in configuration screens

**Enter** - press enter to access the configuration menu.

**Down** - press down to decrement a value when in the configuration screens

## 3 INSTALLATION

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### **Max angle**

Shows the maximum angle achieved.

### **Reset Angle**

Clears the current angle and resets the indicator to a reading of zero.

### **Alarm Angle**

Sets the angle in which the buzzer will sound. Values from 0-20 can be selected. The alarm function can be turned off by scrolling past 20 and the tab will say 'off'.

### **Sensitivity**

This function allows the user to set how sensitive the device is.

E.g. Setting the sensitivity to '9' will cause the device to be very resistant to quick changes in acceleration like a rough road. Setting the sensitivity to '1' will cause the device to be more sensitive to changes in acceleration.

## 4 DISCLAIMER

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### USE OF PRODUCTS

1. You, (the "Purchaser"), acknowledge that you have the sole responsibility of satisfying yourself that the goods supplied by Redarc Electronics Pty Ltd (ACN 009 971 794) atf the Redarc Trust trading as Hummingbird Electronics ("Hummingbird Electronics") are suitable for the use of the Purchaser or any contemplated use of the Purchaser and that the Purchaser has conducted its own investigations and has not relied upon any information, statement, advice or representation by Hummingbird Electronics of or in relation to:

1.1 the operating and/or performance parameters of the goods;

1.2 the outcomes that the goods may achieve;

1.3 the suitability of the goods to any particular application, installation or physical environment; and

1.4 the appropriateness of the use of the goods outside Australia.

2 The Purchaser acknowledges and agrees that:

2.1 any representation as to the operating parameters of the goods provided by Hummingbird Electronics are representative of laboratory conditions;

2.2 the actual performance of the goods in situ might be affected by external factors (including without limitation environmental conditions) beyond Hummingbird Electronics' control;

2.3 incorrect and/or negligent installation, application or use of the goods may cause loss of life, injury and/or damage to property;

2.4 Hummingbird Electronics makes no representation, warranty or assurance as to any of the matters listed in clause 1 and that Hummingbird Electronics shall not be liable for any loss or cost arising from those matters to the maximum extent permitted by law.

3. Hummingbird Electronics gives the warranties specified in the Warranty as being given by Hummingbird Electronics, and subject to and to the maximum extent permitted by law, excludes all other warranties in relation to the goods, whether express or implied, including without limitation any warranty regarding merchantability or fitness for a particular purpose.

4. To the maximum extent permitted by law, Hummingbird Electronics excludes all liability in respect of the goods. To the extent that Hummingbird Electronics is not able to exclude liability under law, then to the maximum extent permitted by law Hummingbird Electronics' liability under the Warranty or otherwise in respect of the goods is limited as in accordance with the Warranty.



## 4 DISCLAIMER

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5. Other than specifically stated in this document and to the maximum extent permitted by law, Hummingbird Electronics is not liable for and the Purchaser hereby releases Hummingbird Electronics from any consequential loss or damages of any type including without limitation incidental, special, indirect, punitive or otherwise, including loss of profit, whatever the claim (tort, breach of contract or warranty or otherwise) and whatever the forum, whether arising out of or in connection with the goods or any other cause whatsoever.

6. The Purchaser releases Hummingbird Electronics from all liability, in respect of personal injury or death or damage or loss of property of any person including the Purchaser or the Purchaser's employees agents or contractors, arising wholly or in part from the Purchaser's acts, omissions, negligence, breach of duty or breach of contract.

7. In any event and without limiting the generality of the foregoing, Hummingbird Electronics' liability for any breach of a term, condition or warranty not excluded in this document will be limited to the replacement of goods delivered or the payment of the cost of replacing the goods or acquiring equivalent goods from an alternate supplier and/or the resupply of any services rendered or the cost of having those services resupplied.

8. The Purchaser shall be responsible for and indemnify and hold harmless Hummingbird Electronics from and against all claims, damages, costs (including without limitation legal costs on a full indemnity basis), losses, liabilities and expenses caused by the Purchaser's acts, omissions, negligence, breach of duty or breach of contract.

## 5 WARRANTY

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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.

Hummingbird Electronics offers a warranty in respect of its Products where the Products are purchased from an authorised distributor or reseller of Hummingbird Electronics by the Purchaser, on the terms and conditions, and for the duration, outlined below in this document ("Warranty"). The benefits of this Warranty are in addition to other rights and remedies available at law in respect of the Products and shall not derogate from any applicable mandatory statutory provisions or rights under the Australian Consumer Law.

9. In this Warranty, the term Products means:

9.1 all products manufactured or supplied by Hummingbird Electronics; and

9.2 any component of or accessory for any product in clause 9.2 manufactured or supplied by Hummingbird Electronics.

Offer and duration of product warranties

10. Hummingbird Electronics warrants that its Products will be free, under normal application, installation, use and service conditions, from defects in materials and workmanship affecting normal use, for 12 months from the date of purchase ("Warranty Period").

11. Where a Product malfunctions or becomes inoperative during the Warranty Period, due to a defect in materials or workmanship, as determined by Hummingbird Electronics, then subject to further rights conferred by the Australian Consumer Law on the Purchaser, Hummingbird Electronics will, in exercise of its sole discretion, either:

11.1 repair the defective Product;

11.2 replace the defective Product; or

11.3 provide a refund to the Purchaser for the purchase price paid for the defective Product, without charge to the Purchaser.

12. The warranty given by Hummingbird Electronics in clause 11 covers the reasonable costs of delivery and installation of any repaired or replaced Products or components of Products to the Purchaser's usual residential address notified to Hummingbird Electronics, together with the reasonable costs of removal and return of any Products determined by Hummingbird Electronics to be defective.

## 5 WARRANTY

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13. If the Purchaser incurs expenses of the nature referred to in clause 12 in the context of making a claim pursuant to this Warranty that is accepted by Hummingbird Electronics, the Purchaser will be entitled to claim for reimbursement of those expenses which Hummingbird Electronics determines, in exercise of its sole discretion, to be reasonably incurred, provided that the claim is notified to Hummingbird Electronics in writing at the postal address or email address specified in clause 29 and includes:

13.1 details of the relevant expenses incurred by the Purchaser; and

13.2 proof of the relevant expenses having been incurred by the Purchaser.

Exclusions and limitations

14. This Warranty will not apply to, or include any defect, damage, fault, failure or malfunction of a Product, which Hummingbird Electronics determines, in exercise of its sole discretion, to be due to:

14.1 normal wear and tear or exposure to weather conditions over time;

14.2 accident, misuse, abuse, negligence, vandalism, alteration or modification;

14.3 non-observance of any of the instructions supplied by Hummingbird Electronics, including instructions concerning installation, configuring, connecting, commissioning, use or application of the Product, including without limitation choice of location;

14.4 failure to ensure proper maintenance of the Product strictly in accordance with Hummingbird Electronics' instructions or failure to ensure proper maintenance of any associated equipment or machinery;

14.5 repairs to the Product that are not strictly in accordance with Hummingbird Electronics' instructions;

14.6 installation, repairs or maintenance of the Product by, or under the supervision of, a person who is not a qualified auto electrician or technician, or if non-genuine or non-approved parts have been fitted;

14.7 faulty power supply, power failure, electrical spikes or surges, lightning, flood, storm, hail, extreme heat, fire or other occurrence outside the control of Hummingbird Electronics;

14.8 use other than for any reasonable purpose for which the Product was manufactured;

14.9 any indirect or incidental damage of whatever nature outside the control of Hummingbird Electronics.

## 5 WARRANTY

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15. Warranty claims in respect of a Product must be made in writing to Hummingbird Electronics at the postal address or email address specified in clause 29 within the Warranty Period. Such claims must include the following:

15.1 details of the alleged defect or fault and the circumstances surrounding the defect or fault;

15.2 evidence of the claim, including photographs of the Product (where the subject of the claim is capable of being photographed);

15.3 the serial number of the Product, specified on the label affixed to the Product; and

15.4 proof of purchase documentation for the Product from an authorised distributor or reseller of Hummingbird Electronics, which clearly shows the date and place of purchase.

The return of any Products without the prior written instructions of Hummingbird Electronics will not be accepted by Hummingbird Electronics.

16. Without limiting any other clause in this Warranty, Hummingbird Electronics has the right to reject any Warranty claim made by a Purchaser pursuant to this Warranty where:

16.1 the Purchaser does not notify Hummingbird Electronics in writing of a Warranty claim within the Warranty Period;

16.2 the Purchaser does not notify Hummingbird Electronics in writing of a Warranty claim within 1 month of becoming aware of the relevant circumstances giving rise to the claim, so that any further problems with the Product are minimised;

16.3 the serial number of the Product has been altered, removed or made illegible without the written authority of Hummingbird Electronics;

16.4 the Purchaser is unable to provide proof of purchase documentation in accordance with clause 15.4 or evidence that the Product was properly installed and removed (if relevant), and that proper maintenance has been performed on the Product, by, or under the supervision of, a qualified auto electrician or technician, in accordance with the instructions of Hummingbird Electronics.

17. If the Product is found to be working satisfactorily on return to Hummingbird Electronics or upon investigation by Hummingbird Electronics, the Purchaser must pay Hummingbird Electronics' reasonable costs of testing and investigating the Product in addition to shipping and transportation charges. Where Hummingbird Electronics is in possession of the Product, the Product will be returned to the Purchaser on receipt of the amount charged.

18. Any replaced Products or components of Products shall become the property of Hummingbird Electronics.

## 5 WARRANTY

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19. Hummingbird Electronics may, in exercise of its sole discretion, deliver another type of Product or component of a Product (different in size, colour, shape, weight, brand and/or other specifications) in fulfilling its obligations under this Warranty, in the event that Hummingbird Electronics has discontinued manufacturing or supplying the relevant Product or component at the time of the Warranty claim, or where such Product or component is superior to that originally purchased by the Purchaser.

### **Other conditions of Warranty**

20. If the Purchaser acquired a Product for the purpose of resupply, then this Warranty shall not apply to that Product.

21. In particular, the sale of a Product via an online auction, online store or other internet website by a party that is not an authorised distributor or reseller of the Product will be deemed to be a resupply within the meaning of the Australian Consumer Law and will render this Warranty void, as Hummingbird Electronics has no control over the storage, handling, quality or safety of Products sold by such persons.

22. A Purchaser shall only be entitled to the benefit of this Warranty after all amounts owing in respect of the Product have been paid.

23. While Hummingbird Electronics warrants that the Products will be free from defects in materials and workmanship in the circumstances set out in this Warranty, to the maximum extent permitted by law Hummingbird Electronics does not warrant that the operation of the Products will be uninterrupted or error-free.

24. To the maximum extent permitted by law, Hummingbird Electronics' determination of the existence of any defect and the cause of any defect will be conclusive.

25. Spare parts or materials for the Products are guaranteed to be available for a period of 12 months after purchase of the Products.

26. The agents, officers and employees of any distributor or reseller of the Products and of Hummingbird Electronics are not authorised to vary or extend the terms of this Warranty.

## 5 WARRANTY

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27. Hummingbird Electronics shall not be responsible or liable to the Purchaser or any third party in connection with any non-performance or delay in performance of any terms and conditions of this Warranty, due to acts of God, war, riots, strikes, warlike conditions, plague or other epidemic, fire, flood, blizzard, hurricane, changes of public policies, terrorism and other events which are beyond the control of Hummingbird Electronics. In such circumstances, Hummingbird Electronics may suspend performance of this Warranty without liability for the period of the delay reasonably attributable to such causes.

28. If a clause or part of a clause in this Warranty can be read in a way that makes it illegal, unenforceable or invalid, but can also be read in a way that makes it legal, enforceable and valid, it must be read in the latter way. If any clause or part of a clause in this Warranty is illegal, unenforceable or invalid, that clause or part is to be treated as removed from this Warranty, but the rest of this Warranty is not affected.

Hummingbird Electronics' contact details

29. Hummingbird Electronics' contact details for the sending of Warranty claims under this Warranty are:

29.1 Redarc Electronics Pty Ltd

23 Brodie Road (North), Lonsdale SA 5160

Email: [power@redarc.com.au](mailto:power@redarc.com.au) Telephone: +61 8 8322 4848

**Free technical assistance!**

please contact

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