

# dynamite Brushless Motor / ESC Combo Instruction Manual

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# dynamite Brushless Motor / ESC Combo

dynamite Brushless Motor ESC Combo

#### **NOTICE**

All instructions, warranties and other collateral documents are subject to change at the sole discretion of Horizon Hobby, LLC. For up-to-date product literature, visit horizonhobby.com or towerhobbies.com and click on the support or resources tab for this product.

#### **MEANING OF SPECIAL LANGUAGE**

The following terms are used throughout the product literature to indicate various levels of potential harm when operating this product:

**WARNING:** Procedures, which if not properly followed, create the probability of property damage, collateral damage, and serious injury OR create a high probability of superficial injury.

**CAUTION:** Procedures, which if not properly followed, create the probability of physical property damage AND a possibility of serious injury. NOTICE: Procedures, which if not properly followed, create a possibility of physical property damage AND a little or no possibility of injury.

**WARNING:** Read the ENTIRE instruction manual to become familiar with the features of the product before operating. Failure to operate the product correctly can result in damage to the product, personal property and cause serious injury.

This is a sophisticated hobby product. It must be operated with caution and common sense and requires some basic mechanical ability. Failure to operate this Product in a safe and responsible manner could result in injury or damage to the product or other property. This product is not intended for use by children without direct adult supervision. Do not attempt disassembly, use with incompatible components or augment product in any way without the approval of Horizon Hobby, LLC. This manual contains instructions for safety, operation and maintenance. It is essential to read and follow all the instructions and warnings in the manual, prior to assembly, setup or use, in order to operate correctly and avoid damage or serious injury.

Age Recommendation: Not for children under 14 years. This is not a toy.

# **FEATURES**

- Perfect upgrade for brushed 280 motors with the same diameter and industry standard mounting hole patterns
- High torque
- Counter-clockwise operation only
- High-quality construction with ball bearings and hardened steel 2mm motor shaft

Easy installation

## SYSTEM SPECIFICATIONS

| P/N                         | DYNS0501                           |  |
|-----------------------------|------------------------------------|--|
| Description                 | Brushless Motor/ESC 2-in-1, 6000Kv |  |
| KV                          | 6000                               |  |
| No load at 7.2V             | 2.5A                               |  |
| Operation Voltage           | 6.0V – 8.4V                        |  |
| Max Power W                 | 160                                |  |
| Efficiency                  | 85%                                |  |
| Operational Temp. Limit C/F | 100/212                            |  |
| Case Dimension              | (D) 24 x (L) 36mm                  |  |
| Shaft Extension Length      | (D) 2 x (L) 11.75mm                |  |
| Max Current                 | 20A                                |  |
| BEC Output                  | 6V/1A                              |  |

## **GEARING**

Improper gearing will cause excessive heat buildup in the motor and speed control. Use your vehicle's kit manual in order to find the manu-facturer's recommended pinion size. It is best to monitor the system's operating temperature when you are operating on new and different tracks or racing surfaces. Your system's operating temperature should never exceed 200°F (93°C). The best place to monitor the system's temperature is at the center of the end bell. If the temperature is higher than 200° F (93° C) after a 5 minute run, the gearing should be lowered (change to a smaller pinion gear).

# **INSTALLATION OF THE SYSTEM**

Always ensure the mounting screws are long enough to properly seat into the motor. However, ensure the screws do not enter into the motor too far, which could cause damage.

The maximum depth that the mounting screws can enter into the motor is approximately 1/8 in (3mm). We suggest using the mounting hardware included with your vehicle. The use of screws that are too long will damage the system and void any warranty.

When installing the motor into your vehicle, it is very important that the gear mesh is correct and smooth with no binding. The vehicle's motor mounts usually feature adjustable slotted mounting holes so that you can adjust the gear mesh properly.

Proper gear mesh (how gear teeth meet) is important to the perfor-mance of the vehicle. When the gear mesh is too loose, the spur gear could be damaged by the pinion gear of the motor. If the mesh is too tight, speed could be limited and the system will overheat. Insert a small piece of paper in between the pinion and spur gears as you are installing them. Push the gears together while tightening the screws that mount the system. When the mesh is at the correct distance, remove the small piece of paper by rotating the spur gear until the paper comes out. Check the mesh at multiple points around the larger spur gear before finalizing the motor mounting position.

#### **QUICK START GUIDE**

The quick start setup guide will get you running quickly using the component's default settings.

- 1. Mount the system in the car.
- 2. Connect the system's receiver lead to the throttle channel on your receiver.
- 3. Bundle any excess wire lengths with zip ties.
- 4. Ensure that the system switch is OFF.
- 5. Connect a fully charged battery to the system.

Ensure all wiring connections can be reached prior to mounting. Use double-sided foam tape to secure the switch to a convenient location in the vehicle.

### SYSTEM CALIBRATION PROCEDURE

Ensure proper system function by calibrating the system to your transmitter inputs.

- 1. Power OFF the system.
- 2. Ensure your transmitter is powered ON, the throttle is not reversed, the throttle trim is neutral and the throttle travel range is at 100%. Disable any special functions such as ABS, etc.
- 3. Press and hold the SET button while powering ON the system, then release it. The motor will emit a continuous beeping tone.
- 4. Calibrate the ESC according to the steps below:
  - Neutral point Keep the throttle at the neutral/middle position, untouched. Press the SET button. The continuous beeping tone stops.
  - Full throttle Pull the throttle fully back and hold. Press the SET button. The motor beeps twice.
  - Full brake/reverse Push the throttle fully forward and hold. The motor beeps three times.
- 5. After the last step is complete, the motor will beep twice to confirm the system is ready. The motor will run after this point.

#### WIRING DIAGRAM

#### SYSTEM PROGRAMMING PROCEDURE

Use the SET button on the ON/OFF switch to program the system. Programming the system:

- 1. Connect a fully charged battery to the system.
- 2. Power ON the system.
- 3. Press and hold the SET button for 2–3 seconds or until the ESC emits a beep, then release the SET button to enter programming mode.
- 4. Press and release the SET button to navigate each parameter. The motor will correspond to each parameter. For example, in pa-rameter one, a single tone will beep continuously. In parameter two, a double tone will beep continuously.
- 5. At the desired parameter, press and hold the SET button for 2–3 seconds to select the parameter. The motor will beep according to the current value of that parameter. For example, if the parameter value for Running Mode is set at Fwd/Brk/Rev, the motor will beep twice continuously.
- 6. Press and release the SET button to move along each param-eter's value. Refer to the table below for more information.
- 7. Press and hold the SET button for 3 seconds to save the setting. The motor will emit a long beep to indicate the setting is saved.
- 8. Power OFF the system. Repeat Steps 2–8 to change each parameter's value.

The system programming can be returned to the default settings by powering on the system then press and hold the set button for 5 seconds until a long beep is emitted from the motor. Power the system OFF and back ON before use. Recalibrate the system to the transmitter.

### SYSTEM FUNCTIONS AND MODES

This system includes programming options so you can adjust the way your vehicle performs. Refer to the included settings table to adjust the system for your driving conditions.

| Para | ameter Value                  | ]                | Default Settings       |           |           |
|------|-------------------------------|------------------|------------------------|-----------|-----------|
|      | Parameter                     | 1                | 2                      | 3         | 4         |
| 1    | Running Mode                  | Forward w/ Brake | Forward/Brake/Rever se | _         | _         |
| 2    | Drag Brake Force              | 0%               | 5%                     | 10%       | 15%       |
| 3    | Low Voltage Cutoff Thre shold | Off              | 3.0V/Cell              | 3.2V/Cell | 3.4V/Cell |
| 4    | Start Mode                    | Level 1          | Level 2                | Level 3   | Level 4   |
| 5    | Max Brake Force               | 25%              | 50%                    | 75%       | 100%      |
| 6    | Punch                         | Level 1          | Level 2                | Level 3   | Level 4   |

#### **DESCRIPTIONS**

## 1. Running Mode

Forward Only with Brake—Intended for competition use, this mode allows only forward and brake controls. Forward/Reverse with Brake —This mode is the basic all-around mode, allowing forward, reverse and brake controls. To engage reverse while moving forward, apply the brake until the vehicle has come to a complete stop, release brake, then apply the brake again. While braking or in reverse, engaging the throttle will result in the vehicle immediately accelerating forward.

- 2. **Drag Brake Force:** Applies drag brake when the throttle is released.
- 3. Low Voltage Cutoff Threshold: This function helps to prevent battery over-discharge. The system continuously monitors the battery's voltage. If the voltage falls below the voltage threshold for 2 seconds, the output power shuts off.
- 4. Start Mode: Sets the throttle response when the car accelerates.
- 5. **Max Brake Force:** Adjusts the maximum braking force. A higher value provides stronger braking, but can also cause the wheels to lock, resulting in loss of control of the car.
- 6. **Punch:** Adjusts throttle acceleration. Level 1 gives a very soft initial acceleration and Level 4 gives a stronger initial acceleration.

# TROUBLESHOOTING GUIDE

| System switch powered ON, but no motor function and no audible tone | Recharge or replace battery  |  |
|---|--|--|
|   | Ensure all connections are secure  |  |
|   | Repair or replace system switch or system  |  |
|   | Ensure system programming for battery is correct for your battery                      |  |
| System turns in the wrong direct ion                                | This system is only compatible with vehicles that require a motor with a CC W rotation |  |
| System stops  | Ensure system programming is correct for voltage and battery                           |  |
|   | Disconnect battery and let system cool   |  |
|   | Ensure system programming is not causing overheating                                   |  |
|   | Replace gearing  |  |
|   | Ensure gearing is not causing overheating  |  |
|   | Replace with a high-power battery  |  |
| System accelerates irregularly                                      | Replace battery  |  |
|   | Replace damaged wiring   |  |
|   | Adjust or replace gearing  |  |
|   |  |  |

| System does not turn continuously in response to thro | Ensure good reception between transmitter and receiver                                |
|---|---|
| ttle  | Replace system  |
|   | Ensure all system programming matches your installed systems requirement s for safety |
| Steering servo operates but the system does not run   | Ensure all receiver connections are correct and secure                                |
|   | Test the system apart from the vehicle system and replace system as needed            |
|   | Recharge or replace batteries   |
|   | Ensure all system connections are secure  |
|   | Adjust throttle travel or other throttle settings on the transmitter and the syste m  |
|   | Ensure all connections to receiver are correct and secure                             |
| Steering and system do not function                   | Refer to manufacturer's instructions to repair or replace transmitter                 |
|   | Recharge or replace batteries   |
|   | Recharge or replace batteries   |
|   | Ensure system programming is correct for voltage and battery                          |
|   |   |

| Vehicle does not operate at full s peed | Adjust transmitter settings, such as trim, throttle travel, etc.   |
|---|--|
|   | Ensure ESC settings are correct for system   |
|   | Calibrate throttle control to system   |
|   | Adjust transmitter settings, such as trim, throttle travel, etc.   |
| System slows but will not stop          | Ensure system settings are correct for system  |
|   | Calibrate throttle control to system   |
|   | Repair or replace system antennas  |
|   | Repair or replace damaged motor, wiring and electrical parts   |
| Decreased transmitter range             | Move receiver or adjust antenna location so that no metal parts are between the antenna and the transmitter                    |
|   | Recharge or replace batteries  |
|   | Refer to receiver and transmitter manufacturer's instructions to adjust reception or change to a free and open radio frequency |

# **US & CANADIAN LIMITED WARRANTY**

What this Warranty Covers – Horizon Hobby, LLC (Horizon) warrants to the original purchaser that the product purchased (the "Product") will be free from defects in materials and workmanship at the date of purchase.

What is Not Covered – This warranty is not transferable and does not cover (i) cosmetic damage, (ii) damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or due to improper use, installation, operation or maintenance, (iii) modification of or to any part of the Product, (iv) attempted service by anyone other than a Horizon Hobby authorized service center, (v) Product not purchased from an authorized Horizon dealer, or (vi) Product not compliant with applicable technical regulations or (vii) use that violates any applicable laws, rules, or regulations.

OTHER THAN THE EXPRESS WARRANTY ABOVE, HORIZON MAKES NO OTHER WARRANTY OR REPRESENTATION, AND HEREBY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE PURCHASER ACKNOWLEDGES THAT THEY ALONE HAVE DETERMINED THAT THE PRODUCT WILL SUITABLY MEET THE REQUIREMENTS OF THE PURCHASER'S INTENDED USE.

**Purchaser's Remedy** – Horizon's sole obligation and purchaser's sole and exclusive remedy shall be that Horizon will, at its option, either (i) service, or (ii) replace, any Product determined by Horizon to be defective. Horizon reserves the right to inspect any and all Product(s) involved in a warranty claim. Service or replacement decisions are at the sole discretion of Horizon. Proof of purchase is required for all warranty claims. SERVICE OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY.

Limitation of Liability – HORIZON SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY, REGARDLESS OF WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, TORT, NEGLIGENCE, STRICT LIABILITY OR ANY OTHER THEORY OF LIABILITY, EVEN IF HORIZON HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. Further, in no event shall the liability of Horizon exceed the individual price of the Product on which liability is asserted. As Horizon has no control over use, setup, final assembly, modification or misuse, no liability shall be assumed nor accepted for any resulting damage or injury. By the act of use, setup or assembly, the user accepts all resulting liability. If you as the purchaser or user are not prepared to accept the liability associated with the use of the Product, purchaser is advised to return the Product immediately in new and unused condition to the place of purchase.

**Law** – These terms are governed by Illinois law (without regard to conflict of law principals). This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Horizon reserves the right to change or modify this warranty at any time without notice.

#### **WARRANTY SERVICES**

Questions, Assistance, and Services – Your local hobby store and/or place of purchase cannot provide warranty support or service. Once assembly, setup or use of the Product has been started, you must contact your local distributor or Horizon directly. This will enable Horizon to better answer your questions and service you in the event that you may need any assistance. For questions or assistance, please visit our website at www.horizonhobby.com, submit a Product Support Inquiry, or call the toll free telephone number referenced in the Warranty and Service Contact Information section to speak with a Product Support representative.

Inspection or Services – If this Product needs to be inspected or serviced and is compliant in the country you live and use the Product in, please use the Horizon Online Service Request submission process found on our website or call Horizon to obtain a Return Merchandise Authorization (RMA) number. Pack the Product securely using a shipping carton. Please note that original boxes may be included, but are not designed to withstand the rigors of shipping without additional protection. Ship via a carrier that provides tracking and insurance for lost or damaged parcels, as Horizon is not responsible for merchandise until it arrives and is accepted at our facility. An Online Service Request is available at <a href="http://www.horizonhobby.com/content/service-center\_render-service-center">http://www.horizonhobby.com/content/service-center\_render-servi

**NOTICE:** Do not ship Li-Po batteries to Horizon. If you have any issue with a Li-Po battery, please contact the appropriate Horizon Product Support office.

**Warranty Requirements** – For Warranty consideration, you must include your original sales receipt verifying the proof- of-purchase date. Provided warranty conditions have been met, your Product will be serviced or replaced free of charge. Service or replacement decisions are at the sole discretion of Horizon.

Non-Warranty Service – Should your service not be covered by warranty, service will be completed and payment will be required without notification or estimate of the expense unless the expense exceeds 50% of the retail purchase cost. By submitting the item for service you are agreeing to payment of the service without notification. Service estimates are available upon request. You must include this request with your item submitted for service. Non-warranty service estimates will be billed a minimum of ½ hour of labor. In addition you will be billed for return freight. Horizon accepts money orders and cashier's checks, as well as Visa, MasterCard, American Express, and Discover cards. By submitting any item to Horizon for service, you are agreeing to Horizon's Terms and Conditions found on our website <a href="http://www.horizonhobby.com/content/service-center\_render-service-center">http://www.horizonhobby.com/content/service-center\_render-service-center\_

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OTHER THAN THE EXPRESS WARRANTY ABOVE, HORIZON MAKES NO OTHER WARRANTY OR REPRESENTATION, AND HEREBY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE PURCHASER ACKNOWLEDGES THAT THEY ALONE HAVE DETERMINED THAT THE PRODUCT WILL SUITABLY MEET THE REQUIREMENTS OF THE PURCHASER'S INTENDED USE. Purchaser's Remedy – Horizon's sole obligation and purchaser's sole and exclusive remedy shall be that Horizon will, at its option, either (i) service, or (ii) replace, any Product determined by Horizon to be defective. Horizon reserves the right to inspect any and all Product(s) involved in a warranty claim. Service or replacement decisions are at the sole discretion of Horizon. Proof of purchase is required for all warranty claims. SERVICE OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY.

Limitation of Liability – HORIZON SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY, REGARDLESS OF WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, TORT, NEGLIGENCE, STRICT LIABILITY OR ANY OTHER THEORY OF LIABILITY, EVEN IF HORIZON HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. Further, in no event shall the liability of Horizon exceed the individual price of the Product on which liability is asserted. As Horizon has no control over use, setup, final assembly, modification or misuse, no liability shall be assumed nor accepted for any resulting damage or injury. By the act of use, setup or assembly, the user accepts all resulting liability. If you as the purchaser or user are not prepared to accept the liability associated with the use of the Product, purchaser is advised to return the Product immediately in new and unused condition to the place of purchase.

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event that you may need any assistance. For questions or assistance, please visit our website at <a href="https://www.horizonhobby.com">www.horizonhobby.com</a>, submit a Product Support Inquiry, or call the toll free telephone number referenced in the Warranty and Service Contact Information section to speak with a Product Support representative.

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**Warranty Requirements** – For Warranty consideration, you must include your original sales receipt verifying the proof-of-purchase date. Provided warranty conditions have been met, your Product will be serviced or replaced free of charge. Service or replacement decisions are at the sole discretion of Horizon.

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## WARRANTY AND SERVICE CONTACT INFORMATION

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|                             | Horizon Service Center<br>(Repairs and Repair Re<br>quests)   | servicecenter.horizonhobb<br>y.com/RequestForm/ |  |  |
| United States of<br>America | Horizon Product<br>Support (Product Techn<br>ical Assistance) | productsupport@horizonh<br>obby.com             | 2904 Research Rd Champaign, II<br>inois, 61822 USA |  |
|                             |   | 877-504-0233                                    |  |  |
|                             | Sales   | websales@horizonhobby.c<br>om                   |  |  |
|                             |   | 888-959-2306                                    |  |  |
| European Union              | Horizon Technischer Se<br>rvice Sales: Horizon Ho<br>bby GmbH | service@horizonhobby.eu                         | Hanskampring 9 D 22885 Barsbü                      |  |
|                             |   | +49 (0) 4121 2655 100                           | tel, Germany                                       |  |



# **Documents / Resources**

| dynamite Brushless Motor / ESC Combo [pdf] Instruction Manual dynamite, DYNS0501, Brushless, Motor, ESC, Combo |
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| 1, 11  |

#### References

- RC Airplanes and Helicopters, RC Cars and Trucks, RC Boats, RC Radios | Horizon Hobby
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