ApisQueen Thunder-80-01

ApisQueen Thunder-80-01 80A ESC Instruction Manual

Model: Thunder-80-01 | Brand: ApisQueen

1. INTRODUCTION

This manual provides detailed instructions for the safe and efficient operation of your ApisQueen Thunder-80-01 80A Electronic Speed Controller (ESC). Please read this manual thoroughly before use to ensure proper setup and to prevent damage to the unit or connected components.

What's in the Box:

- 1 x ApisQueen Thunder-80-01 80A ESC

2. FEATURES

- **Advanced Microcontroller:** Utilizes a C8051 F850 microcontroller with a pipelined 8-bit C8051 core for robust performance.
- **Parameter Setting:** Parameters can be set directly via the remote control, eliminating the need for a separate programming card.
- **Stable Performance:** Delivers high output power and low power loss, ensuring stable power delivery to the motor.
- **Multiple Protection Functions:** Includes abnormal start protection, overheating protection, throttle signal loss protection, and battery low voltage protection.
- **Adjustable Low Voltage Protection:** The low voltage protection threshold can be customized.
- **Enhanced Safety:** Features a safety mechanism that prevents immediate motor startup regardless of throttle lever position.
- **Configurable Start Mode:** Allows for setting of the motor start mode.
- **Responsive Control:** Offers fast throttle response and smooth, linear speed control.
- **Built-in Adjustable BEC:** Integrated 5V/6V/7.4V, 5A adjustable Battery Eliminator Circuit (BEC). The desired voltage can be selected via a switch (default is 5V). Ensure correct BEC voltage before

connection.

3. SAFETY PRECAUTIONS

Always observe the following safety guidelines when handling and operating the ESC:

- Ensure all connections are secure and properly insulated to prevent short circuits.
- Verify the battery voltage and polarity before connecting to the ESC. Incorrect voltage or reverse polarity can cause severe damage.
- Keep hands and loose clothing away from rotating propellers or other moving parts when the motor is connected and powered.
- Operate in a well-ventilated area to prevent overheating.
- Disconnect the battery from the ESC immediately after use and before performing any maintenance or adjustments.
- Do not expose the ESC to water or moisture unless it is specifically designed for waterproof applications.
- Children should only operate this device under adult supervision.

4. PRODUCT OVERVIEW AND CONNECTIONS

The ApisQueen Thunder-80-01 ESC features standard connections for power input, motor output, and signal input. Familiarize yourself with the components as shown below.

Image 4.1: ApisQueen 80A ESC with labeled connections. The image highlights the XT60 connector for battery input, the BEC gear switch for selecting 5V, 6V, or 7V output, the PWM signal line (white wire), BEC output (red wire), ground wire (black wire), and the three 4.0mm plugs for motor connection.

- **XT60 Connector:** For connecting the LiPo battery (2-6S).
- **BEC Gear Switch:** Allows selection of BEC output voltage (5V, 6V, or 7V). Default is 5V.
- **PWM Signal Line (White Wire):** Connects to the receiver's throttle channel.
- **BEC Output (Red Wire):** Provides regulated power to the receiver and servos.
- **Ground Wire (Black Wire):** Common ground for the BEC output.
- **4.0mm Plugs:** Three output wires for connecting to the brushless motor.

5. SETUP AND WIRING

Follow these steps for initial setup and wiring of your ESC:

1. **BEC Voltage Selection:** Before connecting, ensure the BEC gear switch is set to the correct voltage (5V, 6V, or 7V) required by your receiver and servos. The default setting is 5V.

2. **Motor Connection:** Connect the three 4.0mm plugs from the ESC to the three wires of your brushless motor. The order of connection may affect motor rotation direction; if the motor spins in the wrong

direction, swap any two of the three wires.

3. **Receiver Connection:** Connect the PWM signal line (white wire) from the ESC to the throttle channel of your RC receiver. The red and black wires (BEC output and ground) also connect to the receiver to provide power.

4. **Battery Connection:** Connect your 2-6S LiPo battery to the XT60 connector on the ESC. Ensure correct polarity.

Important: Please ensure all solder joints are insulated with heat shrink where necessary. Double-check all connections before applying power.

6. OPERATING INSTRUCTIONS

This section details the normal startup procedure, throttle range calibration, and programming steps for your ESC.

Image 6.1: Operational flow chart for Normal Start-up, Throttle Range Calibration, and Programming. This diagram illustrates the sequence of actions and corresponding ESC responses (beeps) for each procedure.

6.1 Normal Start-up

1. Turn on your transmitter and move the throttle stick to the bottom (minimum) position.

2. Connect the ESC to the battery.

3. Wait for 2 seconds. The motor will emit a series of short "BEEP" sounds, indicating the number of LiPo battery cells.

4. Wait for 1 second. The motor will emit a continuous long and short "BEEP" sound, indicating "No Brake" mode.

5. The motor will then emit a long "BEEP" sound, indicating "Brake is available" mode.

6. The ESC is now ready for operation.

6.2 Throttle Range Calibration

Calibrating the throttle range ensures the ESC accurately recognizes the full throttle input from your transmitter.

1. Turn on your transmitter and move the throttle stick to the top (maximum) position.

2. Connect the ESC to the battery.

3. Wait for 2 seconds. The motor will emit a long "BEEP" sound, indicating that the full throttle position is memorized.

4. Move the throttle stick to the bottom (minimum) position within 1 second. The motor will emit a short "BEEP" sound, indicating that the zero throttle position is memorized.

5. The motor will then emit a series of short "BEEP" sounds, indicating the number of LiPo battery cells.

6. Wait for 1 second. The motor will emit a continuous long and short "BEEP" sound, indicating "No Brake" mode.

7. The motor will then emit a long "BEEP" sound, indicating "Brake is available" mode.

8. The ESC is now ready for operation with the calibrated throttle range.

6.3 Programming

The ESC can be programmed via your remote control. Refer to the specific programming sequence for detailed options.

1. Turn on your transmitter and move the throttle stick to the top (maximum) position.

2. Connect the ESC to the battery.

3. Wait for 2 seconds. The motor will emit two short "BEEP-BEEP" sounds.

4. Continue to wait for 5 seconds. The motor will then emit a special tone ">>12321<", indicating that it has entered programming mode.

5. Follow the specific programming instructions provided with your remote control or ESC for selecting and setting parameters.

7. SPECIFICATIONS

Feature	Specification
Product Name	80A ESC
Brand	ApisQueen
Model Number	Thunder-80-01
Current	80A
Voltage Input	2-6S LiPo (24 Volts max)

Built-in BEC	5V/6V/7.4V, 5A (Adjustable)
Material	Composites
Product Dimensions	1.25 x 0.53 x 0.2 inches
Item Weight	3.52 ounces
UPC/GTIN	714684860583

8. TROUBLESHOOTING

If you encounter issues with your ESC, refer to the following common problems and solutions:

- **Motor Not Starting:**
  - Check battery connection and charge level.
  - Ensure throttle stick is at the minimum position during startup.
  - Verify receiver and ESC signal connections.
  - Perform throttle range calibration.

- **Motor Runs in Wrong Direction:**
  - Swap any two of the three motor wires connected to the ESC.

- **ESC Overheating:**
  - Ensure adequate airflow around the ESC.
  - Check for motor or propeller binding that could cause excessive load.
  - Verify that the motor and propeller combination is suitable for the ESC's current rating.

- **Intermittent Operation or Signal Loss:**
  - Check all wiring for loose connections or damage.
  - Ensure the receiver is powered correctly by the BEC.
  - Check for radio interference.

9. MAINTENANCE

Proper maintenance will extend the life of your ESC:

- Keep the ESC clean and free from dust, dirt, and moisture.
- Regularly inspect all wires and connectors for signs of wear or damage. Replace any damaged components immediately.
- Ensure the ESC is mounted securely to prevent vibration damage.
- Avoid exposing the ESC to extreme temperatures.

10. WARRANTY AND SUPPORT

For warranty information or technical support, please refer to the ApisQueen official website or contact your retailer. Keep your purchase receipt as proof of purchase.