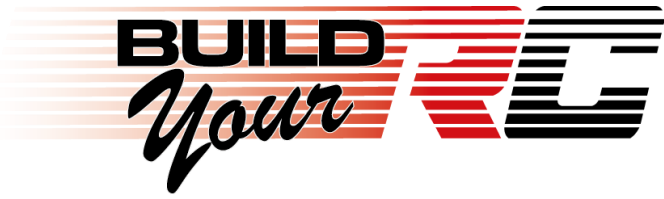


# Controller & Function Overview (MASTER V7.8)



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## 1. Introduction

The **Build Your RC Controller** is a wireless controller designed specifically for **scale RC trucks and trailers**.

It provides smooth driving control, realistic lighting functions, and advanced **Master ↔ Slave trailer control**.

This controller works in combination with the **Build Your RC Master Control PCB (V7.8)**.

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## 2. Controller Layout

The controller is based on a **gamepad-style layout** and includes:

- Dual analog sticks
- Directional buttons
- Action buttons
- **OPTIONS** button
- **SHARE** button

Each control is mapped to a specific truck or trailer function.

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## 3. Powering On & Connection

### Power On

1. Power the **truck electronics**
2. Power the **controller**
3. The controller connects automatically to the truck (Master)

When connected successfully, the truck is ready to drive.

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## 4. Driving Functions (Truck)

### Throttle (Driving)



- **Left analog stick (Y-axis)**
  - Forward → drive forward
  - Backward → reverse

## Steering

- **Left analog stick (X-axis)**
  - Left → steer left
  - Right → steer right

Motor speed and steering angle are **proportional**, allowing smooth, scale-realistic control.

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## 5. Lighting Functions (Truck)

Lighting functions are automatically controlled and/or manually triggered.

### Automatic Lighting

- Brake lights activate when braking
- Reverse lights activate when reversing
- Indicators cancel automatically after turning (firmware dependent)

### Manual Lighting Control

Depending on configuration, the controller can toggle:

- Low beam
- High beam
- Left indicator
- Right indicator
- Beacon / warning lights

Lighting outputs are handled by the **Master PCB**.

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## 6. Servo Functions (Truck)

Servos can be used for:

- Steering
- Gear shifting
- Accessories (fifth wheel, coupling, etc.)

### Servo Behavior



- Servo 1: primary steering (always truck-controlled)
- Servo 2–4: configurable (truck or trailer via Slave mode)

Servos require a **separate 5V supply**.

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## 7. Slave Function (Trailer Control)

The controller supports **Slave mode**, allowing a trailer to be controlled as a secondary system.

### Master ↔ Slave Concept

- **Truck = Master** (decision making)
  - **Trailer = Slave** (executes commands)
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## 8. Slave Buttons Explained

### OPTIONS Button – Pair & Arm Trailer

- Press **OPTIONS once**
- Trailer pairs with truck
- Slave is armed and ready

Pairing is **session-based** (power cycle requires re-pairing).

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### SHARE Button – Slave Control

#### Short Press (Tap)

- Enables or disables routing of functions to the trailer
- Selects which Slave is active (if multiple are present)

#### Long Press (±2 seconds)

- Disconnects the trailer
  - Stops all Slave functions
  - Returns control fully to the truck
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## 9. What Is Routed to the Trailer?

### Always Truck-Controlled



- Drive motor (Motor 1)
- Steering servo (Servo 1)

### **Routeable to Slave**

- Motors 2 / 3 / 4
- Servos 2 / 3 / 4
- Trailer lighting outputs

If the trailer is disconnected, all functions **automatically fall back** to truck control.

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## **10. Typical Trailer Functions**

Using the Slave system, the controller can operate:

- Trailer brake lights
  - Trailer indicators
  - Trailer reverse lights
  - Landing legs (servo)
  - Ramps or doors (servo)
  - Winches or actuators (motor)
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## **11. Safety Features**

The system includes built-in safety logic:

- No Slave control without pairing
  - Motors stop if connection is lost
  - Servos do not move unexpectedly
  - Voltage monitoring prevents brownouts
  - Trailer disconnect does not affect driving
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## **12. Typical Usage Flow**

1. Power truck and controller
2. Drive normally
3. Connect trailer
4. Press **OPTIONS** to pair
5. Tap **SHARE** to enable trailer functions
6. Use trailer features
7. Long-press **SHARE** to disconnect trailer



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## 13. Troubleshooting

### Trailer does not respond

- Check power to trailer
- Press **OPTIONS** again
- Ensure GND is shared
- Check wiring connector

### Slave functions activate on truck

- Trailer not paired
- Routing disabled (tap SHARE)

### Bluetooth / wireless instability

- Check servo power filtering
- Use separate 5V supply for servos