

49 MHz Dodge Ram Street Beast Product Description (FCC Application)

Dodge Ram Street Beast has two main parts, a controller and a car.

The car is powered by 9.6V Ni-cd battery and a power switch is on the back of the car. Antenna is built inside the car.

The controller is powered by one 9V battery and has 4 switches incorporated on two buttons, forward and backward are on left-hand side of the controller, Left turn and right turn are on right hand-side of the controller. There is no power switch on the transmitter because it is working only when either Forward/Backward or Left/Right switch is activated (pressed).

When both controller and car are installed with batteries and the power switch of the car is set to on, user can control the car moving forward or backward or, turning left or right when running forward/backward simultaneously.

Electrical description of the controller (transmitter)

The RF link (control method) is established by encoding a pulse train which includes 4 codes. These codes will be interpreted by receiver decoder for forward/backward and left/right control.

The controller is a pulse wide modulation transmitter which has 3 main parts, an encoder, an oscillator and a RF amplifier.

Whenever a key is pressed (SW1-L/R, SW2-F/B), the VSS of the encoder IC1 (U1) will be connected (via D3~D6) to the negative terminal of 9V battery and the battery power is applied to the VDD of the encoder via R3. The operating voltage (4.3V) is regulated by a zener diode (D1). At the same time, the IC(U1) is operating and generating a pulse train from pin8 to Q4. The content of pulse train depends on key(s) pressed.

Q2 is a crystal control oscillator and the power is applied when a key (SW1-L/R, SW2-F/B) is pressed. It outputs to RF amplifier via C16.

Q4 is a RF amplifier and it receives signal from oscillator (RF frequency) and modulating pulse from encoder. A band pass filter (C13, T1 & C14) is placed between the amplifier and antenna to reduce upper harmonic & spurious emission.

Electrical description of the car (receiver)

Q15, D9 is voltage regulator circuit. After power switch is on, the regulated voltage (3.3V) is applied to super-regenerative circuit and encoder IC.

Q1 and its circuit is a super-regenerative receiver, the modulated RF signal is received by antenna and interpreted to function code (forward, backward, left and right).

The function code is sent to pin14 of encoder IC (U1) via R4, C7 and encoded by IC, and then the control signal is output from pin6, pin7, pin10, pin11.

The control signal from pin10 and pin11 is sent to driving circuit consisted of Q13, Q14, Q16, Q17, relay RL1 and RL2, the back motor will be driven forward or backward.

The control signal from pin6 and pin7 is sent to steering circuit consisted of Q2, Q3, Q9, Q10, Q5, Q6, Q7 and Q8, the front motor will be driven left and right. Servo PCB, Q4, D1 and D2 also control the steering motor to turn left or right, or control front wheel to center position when there is no left/right control signal.