Actuation

The drive train of Trans Am consists of two motors. Each back wheel is independently driven by a modified servo, which functions as a motor. Each back wheel is mounted directly to the servo. The servos were modified in the sense that they now rotate continuously forward or reverse, they still can have graduated speeds.

The steering system is actuated by an unmodified servo. This servo is connected to the front wheels spindle assemblies by way of tie-links constructed from a metal coat hanger.

Standard servos are controlled using a pulse width modulated (PWM) signal. This signal tells the servo how far it should turn, and at what speed. The modified servos have been changed so that they never know when they reach the location they are instructed to find, but they can discern the speed at which to get there. Therefore they become speed-varying motors essentially. The motors are controlled through a PWM signal from the 68HC11E9 on digital port PA3 for the left, and port PA7 for the right. The width of the signals themselves were calculated through trail and error and set as constants in the software. There are a total of 11 speeds. Five graduated forward speeds, five reverse graduated speeds, and a speed of zero.