Servo Motor

Precise Steering Actuator

The Servo Motor is the critical actuator responsible for translating the path-planning commands from the .Raspberry Pi into physical steering motion

1. Integration with Ackermann Geometry

Function: The servo is connected via a custom linkage to the front wheels, enabling the precise, differential steering angles required by the Ackermann Steering Geometry

Model: Based on its characteristics (and likely MG996R designation), the model used is a Digital, High-Torque kg‧cm) Servo with Metal Gears. The high torque rating ensures sufficient force to overcome the mechanical friction and maintain the steering angle under .load

2. Control and Power

Control Protocol: The servo angle is precisely controlled by sending Pulse Width Modulation (PWM) signals from the Raspberry Pi's GPIO header. The duration of the pulse dictates the angular position of the angular position .of the wheel

Power: The servo requires a stable operating voltage typically in the 5V - 6V range. This power is reliably supplied by the Step-down Module (Voltage Regulator), ensuring steady operation independent of the main 9V battery fluctuations


Miuzei
MG90S
Micro Servo