Servo Control for Missile System

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Abstract.
The ability to make control systems is very limited, especially high-speed two-dimensional motion controls such as missile controls, for that reason researchers try to examine the title Servo Control For Missile System. As a researcher, his goals and hopes from this simple one can become a prototype, the endurance test and then can be used as mass production. Where the stages of this research method make Servo Control For Missile System, the control signal is received through the radio to be processed. Here the researchers used codevision software to create a software application, the signal from the radio then combined with the optical encoder position signal, to get smoother and more precise motion, stopping at a position that is has been ordered then as feedback is input from the encoder servo motor, then the signal is amplified to drive motor power amplifier driver circuit. In this case, the signal processing uses a microcontroller, with several considerations, including a fairly small physical dimension where the outer diameter of the casing is 120mm, the inner diameter is 116mm. Overall Servo Control For Missile System which is a real-time software and hardware control signal application to drive fin.

1. Introduction.
1.1 Background.
The background of this research is in order to achieve the long-term design of the development of a servo control¹¹ for the missile system. The long-term goal of this research activity is to design the servo control for the missile system, with the hope of being able to develop servo control for the missile system. The need servo control for missile system for the development of knowledge in college institutions is a must, for that it does not hurt us to start from now, even though in the world today, for the industrial servo control for missile system segment is very advanced, it is difficult to compete in this field. Developing servo control for missile system is the rationale for researchers to conduct this research, although this research topic includes high technology in the fields of informatics, electronics, and other supporting technologies which are not included in this study such as chemistry for rocket motors, mechanics for manufacturing processes and its aerodynamic calculations. Actually, for now, it is independent in servo control for the missile system, becoming very urgent and including promising industrial products.

1.2 Formulation.
In this paper, researchers limit themselves to researching the development of the prototype servo control for the missile system, and to further develop the prototype locking target on missile system is another title, continued this research, so that when combined into a missile control system known as fin control.
1.3 Identification.
Servo Control For Missile System research objects consist of: receiver, software, hardware driver control, printed circuit board, Kalman filter\(^{(2,3,4,5,6,7)}\) driver software for geared dc servo motor drivers with rotary encoder so that the movement is smoother and more precisely where it stops in accordance with the commands given by the signal command, power electronic driver, drivers for two geared dc servo motors with rotary encoder.

1.4 Research Purpose and Objectives.
In the case of special objectives, researchers limit themselves only to the Servo Control For Missile System related to the microcontroller, electronics, electrotechnology programs, including mechanical design of the casing and the procurement of control actuators\(^{(8,9,10,11)}\).

1.5 Use of research.
Making application software, hardware with the title Servo Control For Missile System is expected to be useful to make a fundamental contribution to the field of control system science in supporting the development of science and technology. Servo control for missile system is a part of a weapon system with a high degree of accuracy because it is equipped with controls as guidance. Servo control for missile system which is also called in other words fin control is an important part of the missile system, with this fin control we can direct the missile that is sliding to the target\(^{(12)}\) that would be destroyed. The price of missile systems is expensive because of the high price of Servo control for the missile system. Stressing in this research and paper: developing a servo control for missile system is much more possible because it does not require large costs. The description of activities in this explanation is assisted by Fig. 1 up to Fig. 3 In this study, there are limitations as follows: 1. Fast-moving objects of order 2 mach = 600 m/s. 2. The controlled also moves quickly to order 2 mach = 600 m/s. For that to be controlled and the object can overlap, of course, the track must have a certain heading angle, if the angle of 0° certainly will not be able to overlap because the speed is controlled and the target object is the same.

![Figure 1. Servo control for missile system.](image-url)
2. Research Methods.
The research method is the method of design and manufacture of prototypes, prototype testing, prototype test data retrieval and analysis of test results. Figure 4 illustrates this research method.

For this reason, researchers try to make a research method in the form of signal processing flowcharts as follows:
3. Results And Discussion.

3.1 Results.

Figure 5. Signal processing flowchart.

Figure 6. Ready-made PCB.

Figure 7. Outer diameter 120mm control housing.
3.2 Discussion.
First receive the signal via radio, using codevision software to create a software application in its processing. In this case signal processing uses a microcontroller, with some consideration, the physical dimensions are quite small where the outer diameter of the casing is 120mm, the inner diameter is 116mm, the PCB diameter must be 110mm or the square dimension of the PCB is 80mm, the I/O pin is sufficient, available other features needed such as the number of interrupts, the number of timers/PWM pulse wide modulation, including the clock microcontroller which is sufficient 8MHz and above.

4. Conclusion.
From the results of this study, aesthetics, performance, reliability, response time and other functions went well. servo control can receive radio signals and scan according to the format [13,14] Morse, frequency, Rs232c formula that has been determined and is shown by the left pin motion if it receives left orders and right if it receives right orders. This Servo Control For Missile System is in accordance with the expected results and is ready to be integrated with the research on locking target on missile system which is another title, continued this research.

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**Figure 8.** PCB has been assembled.
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