

차세대 DVD 시스템용 Actuator 연구

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Study on Dual-Lenses Actuator for HD-DVD System

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Key Words : Dual-lenses, Actuator, DC tilt, AC sensitivity, CD, DVD, HD-DVD

Abstract : Recently, an optical disc system has been proposed using blue laser diode, high NA objective lens and groove only disc structure. A new method is needed to readout CD and DVD in the blue system. In order to readout CD and DVD in HD-DVD system, we adopted dual-lenses actuator in consideration of optical utilization efficiency, optical performance and insurance of sufficient W.D (working distance). This dual-lenses actuator has two objectives in radial direction, one is for CD/DVD and the other is for HD-DVD. We had to solve the induced problems of DC tilt increase, 2nd resonance deterioration and AC sensitivity drop caused by disposing two lenses in an actuator. Especially, to solve AC sensitivity drop, We introduced two 2-pole magnets and separated focus and track magnetic circuits. Consequently we presented that dual-lenses actuator has been possessed good performance. And we measured eye patterns of CD, DVD and HD-DVD by using HD-DVD optical pick-up with dual-lenses actuator.

틸트제어를 위한 광픽업 구동기의 특성 분석에 관한 연구

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Analysis of Characteristics of Optical Pickup Actuator for Tilt Control

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Key Words : Sensitivity(감도), Linearity(선형성), Tilt compensation(틸트 보상)

Abstract : In optical disk drives (ODD), the demands of high data density and high speed have been increasing rapidly to achieve high data capacity and data transfer rate. The use of short wavelength laser and high track following performance are needed to raise data density and data rate. For high-performance actuator, the improvement of linearity and acceleration become more important. Also, 3-axis actuator for active tilt compensation is introduced to overcome the decrease in disk tilt tolerance which is induced by short wavelength laser.

In this paper, a newly designed 3-axis actuator is presented and its performance is evaluated by analyzing driving sensitivity, acceleration, linearity, and etc.