

## 슬림광디스크드라이브를 위한 고감도 3축구동액추에이터

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### High Sensitivity 3-axis Actuator for Slim Optical Disc Drive

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**Key Words** : 3-axis actuator(3축구동액추에이터), High Efficiency magnetic circuit(고감도 자기 회로), Coil Stack Unit(적층코일유닛)

**Abstract** : For high density optical storage, there should be a high NA objective lens and a shorter wavelength laser diode. To secure the disc tilt margin related to the coma aberration, moreover, it's difficult to apply the tilt compensation mechanism into the portable PC. In this paper, we proposed the 3-axis asymmetry pickup actuator with high efficiency symmetric magnetic circuit, which consisted of the top cover type inner yoke for high magnetic flux density, the coil stack unit for the 3-axis independent operation and vertically polarized magnets. This newly suggested actuator features no additional yokes and magnets for the tilting, and suppresses the subresonance due to the yawing and pitching mode by removing the solenoid force and the leakage flux. Therefore, despite the mass increase resulting from the HOE for DVD-RAM recording, we achieved the high focus & track AC sensitivity and the greatly stabilized system.

## 광디스크 드라이브의 새로운 포커스 제어모델 개발

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### Development of New Focus Control Model for Optical Disk Drives

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**Key Words** : Focus Error Signal(포커스 에러 신호), Full states feedback(전상태 되먹임)

**Abstract** : There are 4 servo systems in a DVD drive such as a focus servo system, a tracking servo system, a sled servo system and a spindle servo system. Focus servo system maintains relative distance between lens and disk. In this paper, two plant models for the focus servo system will be presented. One of them is newly developed and the other is conventional. Focus error signal between lens and disk is detected using LDV 2 beam method. The system is observable and all states are estimated. Full states feedback controller is designed using those states. Impulse and sinusoidal responses are simulated. And experiment is performed to compare with responses of conventional model.