

**ABSTRACT****DISPLACEMENT SENSOR AND METHOD FOR  
PRODUCING TARGET FEATURE THEREOF**

A device for measuring the displacement of a movable object includes a stationary light source  
5 that produces an incident light beam. A target feature, attached to, or integral with, the object,  
reflects the incident light beam and forms a first image of the light source in close proximity of the  
target feature. An imaging lens receives the reflected light beam and reforms the first image of the  
light source as a second image on the photodetector. The photodetector, spaced from the object,  
receives the reflected light beam and, in response thereto, produces an electric signal having a  
10 characteristic (such as amplitude) which is proportional to a received location on the photodetector  
of the second image and which represents a position of the object. The target feature includes a  
curved surface that reflects the light beam such that a small, point-like or line-like first image of the  
light source is formed and reformed as a second image on the photodetector. The displacement  
sensor device is particularly useful in a disk drive servo system application. The target feature is  
15 formed by ruling a groove within a surface of the object.

(Figure 1)