KAMAN APPLICATION NOTE

Mirror Steering

GOAL

Positioning steering mirrors to control and track laser beams used for communication and research.

Maintaining accuracy in the sub-microradian range while positioning the mirror, so that a reflected laser beam will find its target hundreds of kilometers away.

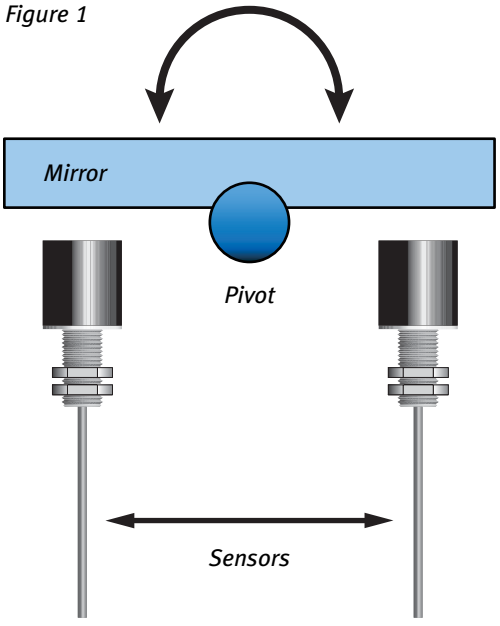
SOLUTIONS

KD-5100 DIT-5200

Four inductive sensors — one pair per axis — are mounted behind the mirror to detect its position throughout its range of motion (see Figure 1). Each sensor acts as one leg of a balanced bridge circuit; when the mirror pivots, the bridge becomes unbalanced. The sensors provide a bipolar output voltage proportional to the angular displacement of the mirror.

Result: Mirror position is measured with extremely fine resolution.

Figure 1



THE KAMAN ADVANTAGE

Good reasons to use the Kaman KD-5100/DIT-5200 measuring system:

Non-contact. Using eddy current technology, the sensor can measure position without ever touching the target. The result is an extremely reliable system with no moving parts.

High resolution. The mirror's position is measured with accuracy in the sub-microradian range, limited only by the sensor's fixturing.

Flexibility. Multiple sensor configurations are available to accommodate a variety of measuring ranges and other performance considerations, such as mirror size and displacement.

Compact packaging. The KD-5100 is small (2.12 x 2.00 x 0.75 in.) and lightweight (2.5 oz.).

Versatility. The KD-5100 system can be used to position steering mirrors in applications ranging from communication satellites to night vision systems to laser optics.

Every application is unique.
Contact Kaman for application engineering assistance.

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KAMAN PRECISION PRODUCTS