

EDA400

The New Sensor-Driver System for FSM Applications and Differential Sensing

Featuring state-of-the-art Lion Precision Eddy Current Sensors, the new EDA400 controller is the ideal off the shelf solution for Fast Steering Mirror and differential sensing applications.

The EDA400 system comes with two matched pairs of high resolution noncontact Eddy Current Sensors, the driver with four sensor inputs (two per axis), an analog or digital output and a 9-Pin connector interface for easy connectivity.

The EDA400 System is Designed for:

- Fast Steering Mirrors (FSM)
- Telescope and microscope stabilization
- Image stabilization

How the System Works

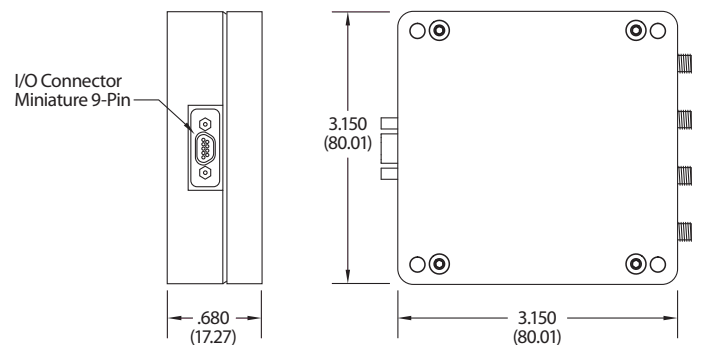
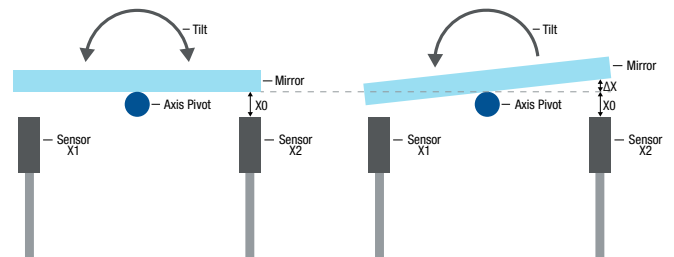
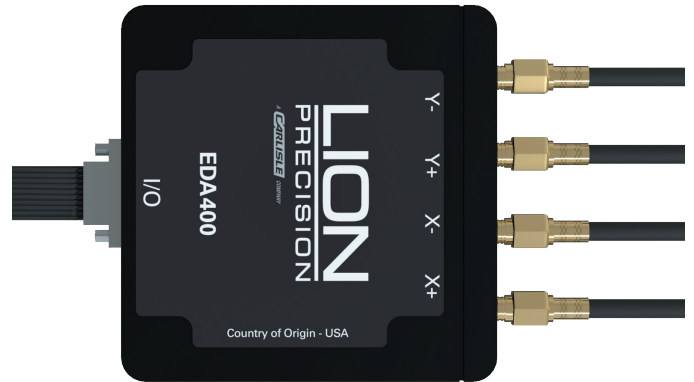
The differential system provides feedback from any change in the null position. As shown below, small changes in the tilt of the target are measured and sent to the actuator to allow fast and accurate control and positioning.

The EDA400 is available with either an analog or digital (SPI) output.

System Features

- High bandwidth
- Extremely low power consumption
- Excellent temperature stability
- Very low mass
- Nanometer resolution
- Matched sensors for high stability and repeatability
- +/-15 VDC input power

The system can be customized for specific applications and is also available as a board without an enclosure for space savings and easy integration into a control system.



Specifications

Input Voltage	±15 VDC
Input Power	0.7 watts
Output	±10 VDC
Linearity Error	±0.3 % F. S
Operating Temperature	10 - 55°C
Probe Operating Environment	-25°C to +125°C
Weight (Electronics)	35 grams board only (157 grams in optional enclosure)

Weight (Probe with 1 meter cable)	13.4 grams
Null Gap	0.2 mm
Measuring Range	±0.2 to ±0.9 mm
Thermal Sensitivity at Null	0.01 % F. S/°C
Frequency Response	20 kHz
RMS Noise at Null	10 nm @ 1.5 kHz
RMS Noise Full Range	20 nm @ 1.5 kHz

Application Content



How do Fast Steering Mirrors work?

Fast Steering Mirrors are physical systems that track and control laser beams used in telecommunications. An incoming beam is redirected by the mirror to another target. The mirror is mounted on a flexure with the capability to move it in both the X and Y directions. Two pairs of sensors, one on the X axis and one on the Y axis, give the mirror control system the exact position of the mirror. This allows the system to make fast continuous adjustments to keep the beam pointed exactly at the intended target. Additional content available through the QR code.



FSMs in Space Applications

Satellites orbiting Earth have mirrors that relay incoming signals from ground stations or other satellites to another receiving station. Since the satellites and thus the mirrors are continuously moving, the signal beam needs to be continuously “steered” toward the intended target. To do this the mirror is constantly and rapidly adjusted to keep the reflected beam redirected properly. Additional content available through the QR code.

EDA 400 Product Family

	EDA400 Analog	EDA400 Digital	EDA400 Mil Spec
Sensor range	Up to 1.8 mm (+/- 900 um)	Up to 1.8 mm (+/- 900 um)	Up to 1.8 mm (+/- 900 um)
Channels	2 differential	2 differential	2 differential
Output	+/-10 VDC	SPI	+/-5 VDC or SPI
Vacuum Compatible	Yes	Yes	No
LEO Capable	Yes	Yes	No
Space Qualified	Yes	Yes	No
Mil Spec	No	No	Yes

Ordering Information

Please contact Lion Precision for ordering information.

We can be reached via email at infolionprecision@carlisleit.com, or via telephone at (651)-484-6544.

Lion Precision products are subject to U.S. export control regulations. They may be subject to certain licensing requirements and restricted for export.



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