Subminiature LVDT Linear Position Sensor Serves as Critical Component in Ophthalmic Ultrasound System

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The Eye Cubed has been released by Ellex Innovative Imaging, which manufactures ophthalmic laser and ultrasound systems used by ophthalmologists to diagnose and treat eye diseases. A major element of the Eye Cubed is the MD 188 Series Sub-miniature LVDT Position Sensor by Macro Sensors. In conjunction with CT or MRI, the Eye Cubed is used for imaging orbital tumors and optic nerve abnormalities. It can also locate foreign bodies that become lodged in the eye.

Macro Sensors [1]' MD 188 Series Sub-miniature LVDT Position Sensor serves as a significant component of a probe within an ophthalmic ultrasound system used to image the eye and tissues around and behind the eye to determine the presence of pathology.

The Eye Cubed, manufactured by Ellex Innovative Imaging [2], a global leader in the design and manufacture of ophthalmic laser and ultrasound systems used by ophthalmologists to diagnose and treat eye disease, uses sound waves to penetrate into an "opaque media" eye for examination when doctors are prohibited from viewing pathology directly due to an opacity of the cornea and lens or the vitreous gel that fills the eye. The Eye Cubed is used in conjunction with CT or MRI for imaging orbital tumors and optic nerve abnormalities. It is also used to locate 'foreign bodies' that become lodged in the eye or orbit from accidents.

The Eye Cubed

Renowned for its sensitivity and high-quality image resolution, the diagnostic

ophthalmic ultrasound technology features real-time imaging, advanced movie mode using the fastest sampling rate, and internal memory for storage of measurements. The ophthalmic ultrasound sector probe of the Eye Cubed utilizes one Macro Sensors MD 188 Series LVDT Linear Position Transducer to send a signal to the console that allows the ultrasound image to be accurately displayed on screen. The ultrasound transducer is moved back and forth by a motor to send an array of sound beams into the eye. Although it is miniature in size to fit into the probe, the LVDT position sensor is very dependable, operating over millions of cycles without wear or signal quality degradation. Ultra-low-mass cores allow use for high response dynamic measurements.

While axial resolution is determined by transducer frequency, lateral resolution is determined by LVDT quality and the system's ability to translate that position information into the proper display of echoes on the screen. Accurate translation is most critical in the measurement of ocular tumors since the lateral and axial measurements are used by radiation oncologists to calculate the amount of radiation delivered to the tumor. Incorrect lateral measurements could result in improper radiation dosage and direction, causing life-threatening problems if the entire tumor is not treated.

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