



# **ELECTRO-OPTICAL PRODUCTS CORP.**

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## **RESONANT OPTICAL SCANNER**

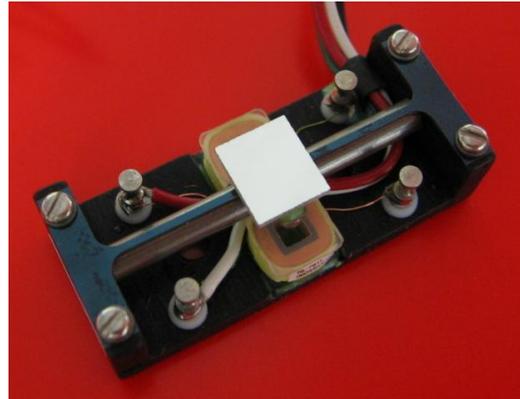
### **SC-10**

#### **LOW COST & MINIATURE SIZE SCANNER**

#### **FEATURES AND ADVANTAGES:**

- \*ONE FIXED FREQUENCY from the range of 100Hz to 3000Hz
- \*Mirror size up to 20x20mm
- \*Scan angle to 60° peak to peak optical
- \*Small size/lightweight
- \*Low power drive electronics
- \*Rugged, no wearing parts
- \*Maintenance free
- \*High reliability
- \*Withstands shock and vibration
- \*High frequency stability (to 0.01%)
- \*High/low temperature operation (cryo to 200°C)<sup>1</sup>
- \*Vacuum operation (to 10<sup>-10</sup> Torr)<sup>1</sup>
- \*Jitter free operation
- \*No radiated electromagnetic interference (EMI)
- \*Reference signal available
- \*IR, VIS & UV<sup>1</sup>
- \*Glass mirrors are standard, metal mirrors, gratings, prisms, lenses or optical attachments optional<sup>1</sup>

<sup>1</sup> Available as a special order



#### **DESCRIPTION:**

The fixed frequency resonant optical scanner is a **miniature** electromagnetically driven moving mirror device, which deflects a light beam with a sinusoidal motion. The mirror assembly is attached at the center of a torsion spring. The scanning frequency range of the SC-10 type scanner is from 100 Hz to 1500 Hz, fixed at any one value within the range. The scan angle is inversely proportional to the frequency, and is a function of the mirror size. Operation at the resonant frequency is sustained by a feedback amplifier, the **AGC** driver or the **ED** driver, supplied separately. The driver controls the mirror angle and provides a reference signal. The **PLD-1S** driver will phase lock the device to an external stable source. The **PLD-2S** driver will lock two scanners in a master/slave mode and the **PLD-2SXY** driver will generate X,Y raster scans. The standard operating temperature is 0°C to +65°C. Other temperature range and vacuum operation are available upon request.

High device "Q" insures frequency stability, low reaction forces and low electrical drive power. High flexural stiffness provides good resistance to shock and vibration, as well as low wobble, and good scan repeatability. Resonating at the natural frequency makes the device an excellent candidate for long life operation for a multitude of applications that require good imaging with minimal distortion. The scanner is especially suitable for dedicated, high volume, OEM industrial applications. The SC-10 type scanner can easily be incorporated in small size and portable instruments.

Applications include: barcode readers, laser scanners, image and pattern forming and recognition, printers, ophthalmology, DNA sequencing, confocal microscopy, biomedical imaging, quality inspection and outer space and environmental research to name a few.

## SPECIFICATIONS:

- MIRROR:** Size: to 20x20mm, as a function of frequency; larger size available  
 Thickness: 1.0mm, standard; other thickness values available  
 Flatness: 1/4, 1/2 and 1 wavelength as a function of size  
 Surface quality: scratch and dig: 60-40
- ELECTRICAL:** Drive coil resistance: 50, 150, 400, 950 and 2000 ohms as a function of frequency  
 Sense coil resistance: 950 ohms  
 Connector: female 4 pin plug on 0.1-inch centers, Molex P/N 22-01-3047 or equiv.  
 Scan frequency range: 100 Hz to 1500 Hz  
 Frequency accuracy: +/-2% at 25°C, closer accuracy available upon request  
 Scan angle: to 60° peak to peak optical as a function of frequency and mirror size

### SC-10 RESONANT OPTICAL SCANNER:

ONE FIXED FREQUENCY from the range of 100Hz to 1500Hz

The following should serve as guidelines only:

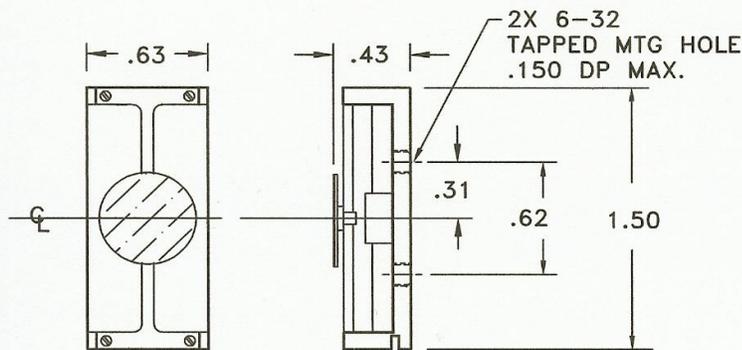
FREQ. (Hz)	SCAN ANGLE (P-P DEG OPT)	MIRROR SIZE (mm)
100-139	60°	20×20
140-249	50°	10×10
250-399	40°	10×10
400-599	30°	10×10
600-799	24°	8×8
800-999	20°	8×8
1000-1249	15°	8×8
1250-1500	10°	7×7

### SC-10-HF HIGH FREQUENCY RESONANT OPTICAL SCANNER:

ONE FIXED FREQUENCY from the range of 1600Hz to 3000Hz

The following should serve as guidelines only:

FREQ. (Hz)	SCAN ANGLE (P-P DEG OPT)	MIRROR SIZE (mm)
1600	40°	6mm DIA
2200	30°	6mm DIA
3000	25°	6mm DIA



DIMENSIONS ARE IN INCHES  
 METRIC MOUNTING OPTIONAL

## SC-10 OUTLINE DRAWING

### ORDERING INFORMATION:

TYPE [SC-10]; MIRROR SIZE [mm]; ANGLE [P-P Deg. Optical]; FREQUENCY [Hz]

Example: PART NO. SC10-10x10-40-100. This part number specifies the model SC-10 scanner, a 10mm square mirror, a 40° peak to peak optical scan and a 100 Hz operating frequency.

Special vane configurations, modulating waveforms and shapes are available on special order. Consult factory. Drive electronics with different packages, regulation, and reference signal and power supply options are available.

**Special pricing for OEM applications.**