

# **ELECTRO-OPTICAL PRODUCTS CORP.**

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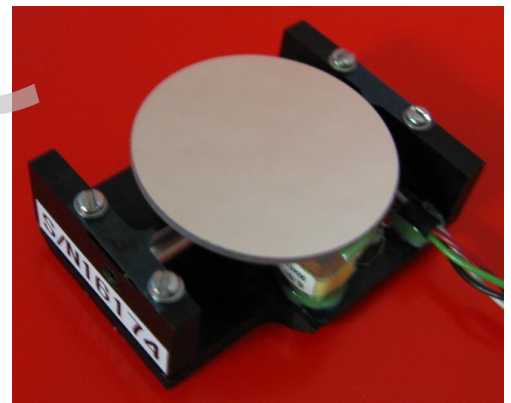
## **RESONANT OPTICAL SCANNER SC-20 LOW COST SCANNER**



### **FEATURES AND ADVANTAGES:**

- \*ONE FIXED FREQUENCY from the range of 10 Hz to 1.5 kHz
- \*Mirror size up to 30mm long
- \*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 an 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-20 type scanner is from 5 Hz to 1.5 kHz, **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-20 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 25x25mm, 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

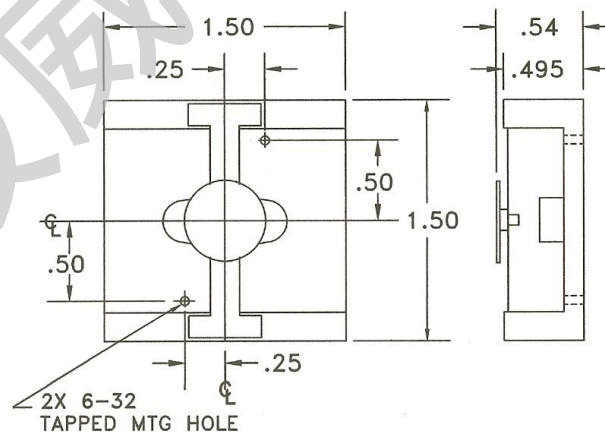
**ELECTRICAL:** Drive coil resistance: 50, 150, 400, 950 and 2000 ohms as a function of frequency  
Sense coil resistance: 950 ohms  
Connector: female 4 pin plug on 0.1-inch centers, Molex P/N 22-01-3047 or equiv.  
Scan frequency range: 5 Hz to 1.5 kHz  
Frequency accuracy: +/-2% at 25°C, closer accuracy available upon request  
Scan angle: to 60° peak to peak optical as a function of frequency and mirror size



### TYPICAL SCAN FREQUENCY AS A FUNCTION OF ANGLE AND MIRROR SIZE:

| FREQUENCY | SCAN ANGLE          | MIRROR SIZE |
|-----------|---------------------|-------------|
| Hz        | P-P DEGREES OPTICAL | mm          |
| 10-32     | 60°                 | 25x25       |
| 33-95     | 50°                 | 25x25       |
| 96-140    | 40°                 | 20x20       |
| 140-400   | 40°                 | 10x10       |
| 400-600   | 30°                 | 10x10       |
| 600-800   | 24°                 | 8x8         |
| 800-1000  | 20°                 | 8x8         |
| 1000-1250 | 15°                 | 8x8         |
| 1250-1500 | 10°                 | 7x7         |

THE ABOVE SHOULD SERVE AS GUIDELINES ONLY



DIMENSIONS ARE IN INCHES  
METRIC MOUNTING OPTIONAL

## SC-20 OUTLINE DRAWING

### ORDERING INFORMATION:

TYPE [SC-20]; MIRROR SIZE [mm]; ANGLE [P-P Deg. Optical]; FREQUENCY [Hz]

Example: PART NO. SC20-10x10-20-100. This part number specifies the model SC-20 scanner, a 10mm square mirror, a 20° 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.**