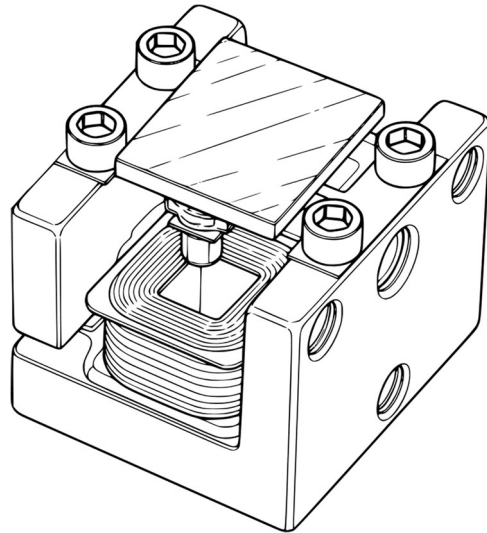# Product Datasheet

SC-3 Resonant Scanner

The SC-3 series consists of sub-miniature, electromagnetically driven resonant optical scanners designed to deflect light beams with continuous sinusoidal motion at a single fixed frequency between 100 Hz and 1,860 Hz. Utilizing a high-Q taut band spring assembly, these devices achieve high frequency stability (to 0.05%) and low wobble with minimal electrical drive power. The rugged, maintenance-free architecture is optimized for high-volume OEM integration, offering high flexural stiffness for shock and vibration resistance in demanding biomedical and industrial imaging applications. Operation at the resonant frequency is sustained by a feedback amplifier and driver, supplied separately.

FEATURES AND ADVANTAGES

- One fixed frequency up to 1,860 Hz
- Scan angle up to 50° peak-to-peak optical
- No lubrication needed, maintenance free
- Mirror size up to 25 mm x 25 mm
- Small size and lightweight
- Vertical or horizontal mounting
- Low power drive electronics
- Rugged, no wearing parts
- High reliability, long life
- High frequency stability
- Withstands shock and vibration
- Ultra-high vacuum operation[1]
- High/low temperature operation[1]
- Jitter free operation
- No radiated electromagnetic interference (EMI)
- Mirror position signal available
- Glass mirrors standard, other optical attachments optional[1]

[1] Available on special order

SC-3 Resonant Scanner

SPECIFICATIONS

Mechanical

Frequency range	100 Hz and 1,860 Hz.
Scan angle	Up to 50° peak-to-peak optical, as a function of frequency and mirror size
Frequency accuracy	±10% at 25 °C, closer accuracy available upon request

Electrical

Drive coil resistance (Ω)	950
Sense coil resistance (Ω)	950
Cable length	8 inches
Connector	Female 4-pin plug on 0.1" centers, Molex P/N 22-01-3047 or equivalent

Mirror

Size	5mm dia, 7mm dia, 8 x 7 mm, or 12 x 7 mm
Thickness	1.0 mm; other thickness values available
Flatness	¼ wavelength for 5mm
Surface quality	60-40 scratch and dig

Typical scan frequency as a function of angle and mirror size.

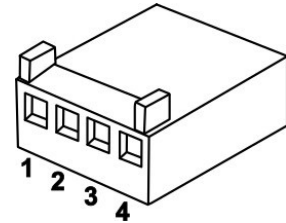| Frequency (Hz)	Scan Angle (PTP Deg Optical)	Mirror Size (mm)
110	50°	12 x 7
230	40°	12 x 7
260	30°	12 x 7
380	20°	12 x 7
520	15°	12 x 7
540	30°	8 x 7
750	20°	8 x 7
1,020	20°	7 dia
1,280	15°	7 dia
1,580	15°	5 dia
1,860	15°	5 dia

THE ABOVE SHOULD SERVE AS GUIDELINES ONLY

SC-3 Resonant Scanner

CONTROL SIGNALS

The SC-3 includes a 4-pin female Molex connector (PN 22-01-3047 or equivalent) for signal transmission.

Pins 1 and 4 receive a drive signal at the scanner's resonant frequency. Pins 2 and 3 output a sense signal relating to the mirror's position.

DRIVERS

EOPC manufactures the following specialized drivers to operate the SC-3.

AGC Driver: Provides superior amplitude stability (0.01%), the AGC driver provides a sine wave reference signal for position output, TTL level square wave reference signal, and adjustment of the phase relationship between the mirror position and output signals.

PLD-1S Driver: Achieves synchronization to an external clock input. Perfect for scenarios where synchronization of the scanner to other system components is paramount.
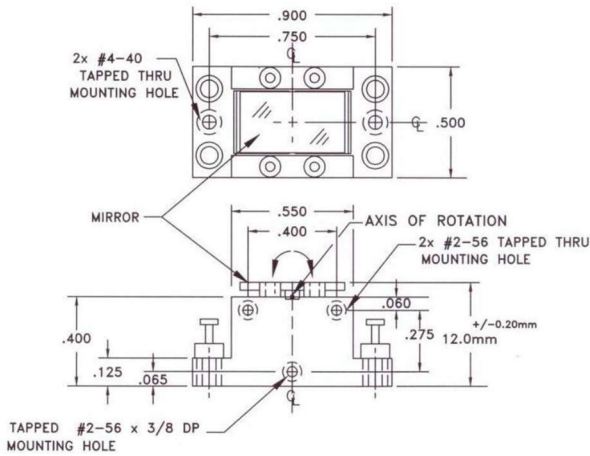
PLD-2S Driver and **PLD-2SXY Driver:** These two drivers enable synchronized operation of two scanners, creating patterns such as circles, ellipses, and raster scans.
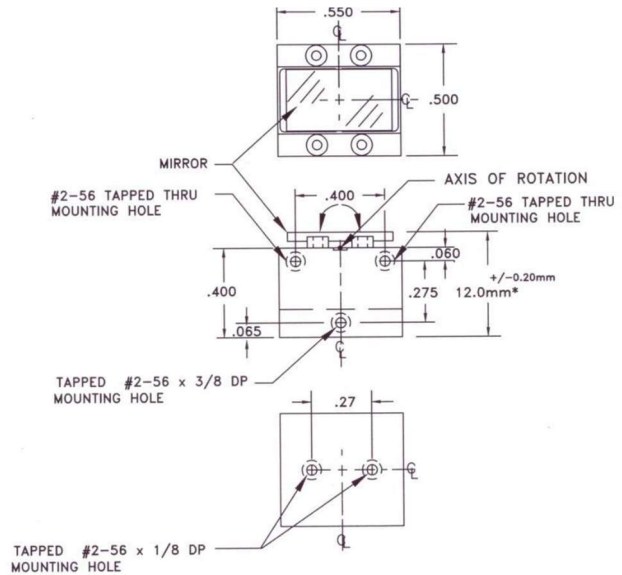
SC-3 Resonant Scanner

DRAWINGS

SC-3

SC-3-SH

ORDERING INFORMATION

TYPE [SC-3]-MIRROR SIZE [mm] (MIRROR TYPE [Al-Aluminum, Ag-Silver, Au-Gold]-ANGLE [P-P Deg. Optical]-FREQUENCY [Hz]

Example: PART NO. SC-3-SH-2-8x7(Ag)-50-230. This part number specifies the model SC-3-SH-2 scanner, a 8x7mm silver mirror, a 50° peak to peak optical scan angle and a 230 Hz operating frequency.

SC-3 Resonant Scanner

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