

## EOPC-SC-30

The **SC-30** type resonant HIGH FREQUENCY scanners are used to deflect a light beam with a sinusoidal motion. They are especially suitable for dedicated applications, OEM, built into an instrument and for portable systems, for industrial, scientific, medical, aerospace and military applications worldwide.

The **SC-30** type resonant HIGH FREQUENCY scanners are extremely reliable. They are small size, long life electromagnetically driven moving mirror devices. They combine precision, accuracy and excellent repeatability with high speed to generate optical patterns. The scanners operate at ONE FIXED FREQUENCY from the range of 200Hz to 16KHz. While the frequency is always fixed the scan amplitude can be modulated. The resonant scanners have virtually unlimited operating life and a proven record of many years of continuous operations. Resonating at their natural frequency (sinusoidal motion) and the ONE FIXED frequency combined with high device "Q" (in the order of 100 to 1000) guarantee frequency stability, low reaction forces and consumption of low electrical drive power. High flexural stiffness provides good resistance to shock and vibration as well as low wobble. The scanners are good candidates for a multitude of applications that require excellent resolution with minimal distortion. They can easily be incorporated in small size and portable instruments and are a good fit for high volume OEM industrial production. We provide OEM customers with free information needed to build the controller (driver) per their space requirements or incorporate it within their existing driver.

The highly successful SC-30 resonant scanners proved to be an important element in the growth of OEM innovative companies and an ideal choice for the imaging technology R&D and for system integrators.

High speed resonant scanners are used for raster scanning in both projection and data-acquisition applications. This high frequency scanner is most suitable to meet the line-scan high-resolution display requirements for TV and HDTV. The scan frequency can be doubled by simultaneous bi-directional scanning to produce the same number of scan lines per frame (page) rate with the same pixel placement accuracy. Resonant scanners offer low cross-axis wobble and good repeatability, well below 1 arc second PTP optical. A feedback amplifier, supplied separately, controls the mirror angle and provides a reference signal.

Applications include: laser scanning, imaging, animation, high resolution printing, wafer inspection, data recognition systems, retinal image acquisition, medical digital X-Ray, sorting, machine vision, robotics, non-destructive testing, storage media writing, ophthalmology testing, DNA sequencing, confocal microscopy, biomedical imaging, OCT, quality inspection systems, intelligent transportation systems and biological, medical and materials research.

Operating at the resonant frequency is sustained by the feedback amplifier type drivers the [ED driver](#) (open loop) or the [AGC driver](#) (close loop), using the scanner as a frequency source.

The [ED driver](#) provides:

- square wave reference output signal
- amplitude control: adjustable over a range of 5:1 min.

The [AGC driver](#) provides higher amplitude stability (0.01%) as well as:

- sine wave reference signal that can be used as position output
- TTL level square wave reference signal
- trimpot control to adjust the phase of the reference signals with respect to the position of the mirror. The adjustable range is 180 degrees.
- amplitude adjustment in the range of 20% to 100% of the full amplitude, It improves amplitude stability by approximately 10 times compared to the unregulated drivers and provides precise control for a wide temperature range.

The [PLD-1S driver](#) locks a resonant scanner to an external clock signal. You need to specify the exact (to 4 decimal places) clock frequency. This driver is not recommended for use in temperature sensitive applications.

The [PLD-2S driver](#) phase locks two resonant scanners of the same frequency in a Lissajous pattern to create a circle or an ellipse.

The [PLD-2SXY driver](#) phase locks two resonant scanners in a master/slave mode to create a raster scan.

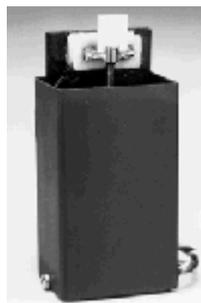
The [PLD-XYG driver](#) locks a resonant scanner ("X") with a galvanometer (analog scanner) to generate a raster scan. The basic raster scanning system we offer consists of the following: a resonant scanner, a galvanometer, a mount for both scanners and a driver box. You can use any of the resonant scanners we manufacture for the "X" direction, however the SC-30 high frequency resonant scanner is chosen most often. Special vane configurations, modulating waveforms and shapes are available as a special order (consult factory). Drive electronics with different package, regulation and power supply options are available.

Special pricing for OEM applications.

For OEM manufacturing we may consider providing free information to build the driver so that you can incorporate it within your drive electronics or build it to a desired size.

**TYPICAL SCAN FREQUENCY AS A FUNCTION OF ANGLE AND MIRROR**

For a resonant scanner with ONE FIXED FREQUENCY chosen from the range of 200Hz to 16KHz



FREQ. (Hz)	SCAN ANGLE (P-P DEG OPT)	MIRROR SIZE (mm)
200-750	30°	25×25 to 10×10
751-4000	20°	10×10 to 8×9
4001-6000	16°	8×9 to 7×8
6001-8000	12°	7×8 to 5×6
8001-10000	12°	5×6 to 4×5
10001-15900	6°	4×5 to 3×4
16000	5°	3×4

The following should serve as guidelines only