

## High Quality Photo Fabrication Technology



**Laser Direct Write Pattern Generator**

*The Originally developed Laser Direct Write Pattern Generator can realize the precision pattern which would satisfy every customer's needs.*

*Our precision technology of drawing, developing and etching the fine line-pitch are used in various fields of industries.*

- Applications:
- Optics
  - Medical analyzers
  - Measuring instruments
  - Semiconductor equipments

### Proofreading Chart

*The fine line-pitch is drawn on the optical lens installed in digital cameras and copying machine as the proofreading chart.*

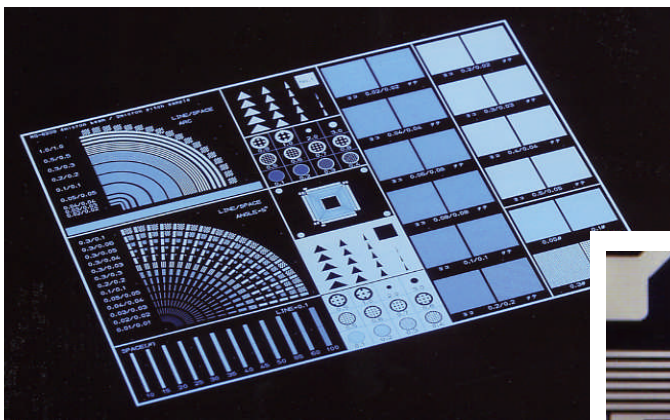


### Hybrid scale

*The fine line-pitch can be drawn on the hybrid standard scale for measurement.*



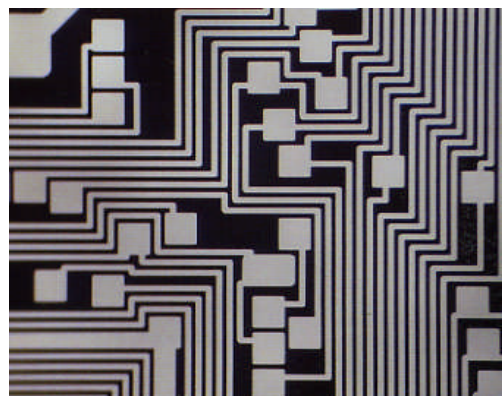
### Photo mask for lithography / Reticulation



Reference Data

Line width: Min.  $0.8 \mu\text{m}$

Tolerance of line width:  $\pm 0.3 \mu\text{m}$



## Glass slit disk for rotary encoders

*Slit disk is a core part of the optical rotary encoders, and its high precision should be crucial for the quality of encoders.*

*The originally developed pattern generator makes it possible to produce everything in one continuous production under the control by ourselves, from the original disk to the finished one.*

*That's why we can offer the high quality glass slit disk to the market.*



### Reference Specification

Division accuracy	Max. $\pm 3$ sec.
Pattern circularity	Max. $2 \mu\text{m}$
Slit width	Min. $5 \mu\text{m}$
Diameter	$\phi$ Max. 150
Typical glass thickness (just for reference)	$0.3 \pm 0.1$ , $0.55 \pm 0.1$ , $0.7 \pm 0.1$ , $0.8 \pm 0.02$ , $0.85 \pm 0.1$ , $1.0 \pm 0.1$ , $1.1 \pm 0.1$ , $1.35 \pm 0.1$ , $1.5 \pm 0.05$ , $1.6 \pm 0.1$ , $1.8 \pm 0.1$ , $2.0 \pm 0.1$ , $2.5 \pm 0.1$ , $2.8 \pm 0.1$ , $4.8 \pm 0.1$ and so forth
Glass materials	Please ask us.

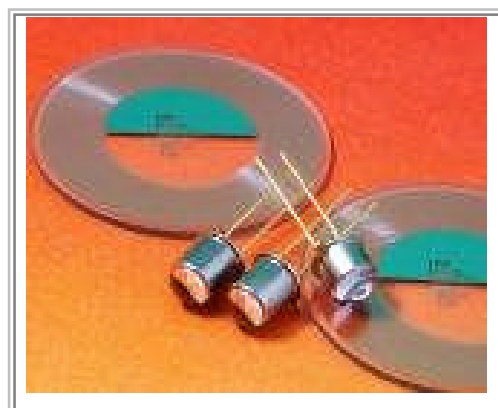
※ Production of absolute type and increment type with various curves and sine curve patterns are available.

## Light source LEDs recommended for the optical rotary encoders

### Reference Specification

*(Package: Stem Can sealed with lens type)*

Parameter	Excellent parallel rays	Point source LED
IF (DC) – Max.	100mA	
VR (DC) – Max.	5V	
Operating Temp.	-30 ~ +100°C	
Radiated Power	Typ. 10mW	Typ. 2.7mW
Forward Voltage	Max. 2.0V	Max. 1.8V
Peak-wavelength	870nm	880nm
Viewing angle	$\pm 5^\circ$	$\pm 2.5^\circ$



*The custom-made LED is also available according to each customer's specific requirement by combining the existing package and the LED chips.*