



Precitech has more Fast Tool Servo (FTS) systems in use worldwide than any other supplier. Over the last 20 years Precitech has delivered over 500 FTS systems.

FTS systems provide a rapid method to fabricate free form

surfaces including: light management micro-structures, toric optics and mechanical features in contact lenses, lens arrays and laser collimators. FTS cutting is typically 10-15 times faster than other servo tool cutting methods (e.g. slow tool servo).

Overview

Three Models	FTS 1000	FTS 500	FTS 70
Travel	1000 μm \approx 100 Hz 250 μm \approx 200 Hz	500 μm \approx 141 Hz 250 μm \approx 200 Hz 62.5 μm \approx 400 Hz	70 μm \approx 100 Hz
Peak Acceleration	200 m/sec ²	200 m/sec ²	3000 m/sec ²
Typical Form	<0.6 μm PV	<0.3 μm PV	<0.3 μm PV
Typical Finish	<9 nm Ra	<5 nm Ra	<3 nm Ra
Servo Band Width	1000 Hz	1000 Hz	900 Hz
FastCom Control System			
Operating System:	Windows 7		
DSP:	Sharc ADSP		
Typical position command update rate:	20 to 35 kHz		
D to A converter:	18 bit, ultra-low-noise		
Update time jitter:	< 50 ns		
GUI:	Windows based UPx style		
Two optional packages			
Fiducial library – Programing objects defining the cutting path for frequently used fiducial (alignment) marks			
20th order aspheric lens arrays with blend zones and on-the-fly tool compensation			

Precitech FTS units can be added to all Precitech ultra-precision Nanoform and Freeform systems. FTS systems are controlled by Precitech’s exclusive Fastcom III FTS fast command generator. The Fastcom III control is in two way communication with the main UPx control. Operators interact entirely with the UPx control while FTS programs are running. Fastcom is fully supported by Precitech DIFFSYS CAM software. Surfaces can be defined by mathematical expressions, by point clouds (up to 1,000,000 points) or by bitmaps.

Benefits of defining a surface by mathematical expression include:

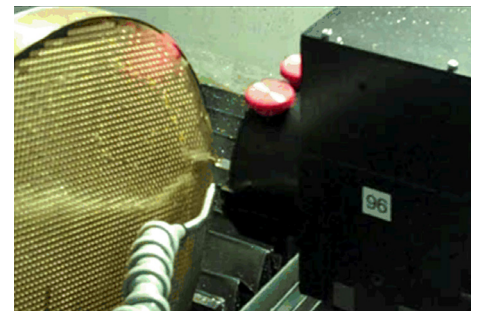
- No “point cloud” related limitations on the size of the surface or on the fine definition of individual features.
- Tool path commands are generated without interpolation between the lower resolution points in a point cloud rendering a more accurate surface.



Light management array, 40 mm OD brass disk
620,000 lenses Lens pitch 45 μm , Lens form
250 μm R sphere.



Lens array for hyper spectral imaging application.



Wafer level optics lens array mold: 4000 20th
order aspheric lenses and fiducial marks.