High Power 3mW Single-mode Frequency Stabilized He-Ne Laser

Micro Optics YS307

Micro Optics YS307 is the frequency stabilized He-Ne laser providing 3mW single mode output, while almost all commercial frequency stabilized He-Ne lasers provide no more than 1 mW single mode. High power output will enhance various interferometric measurements: increasing measurement area and number of dimensions, accelerating measurement speed, etc.

Micro Optics YS307 employs the 35cm-long laser tube, which holds three oscillating modes with total power of 5mW. The center mode, which is stabilized at the peak of the gain curve, is utilized as the 3mW single mode .

We have uniquely developed "three-mode stabilization method" for Micro Optics YS307. The secondary beat frequency, which is generated between two primary intermode beats of the three oscillating modes, is controlled so that the center mode is locked at the peak of the gain-curve. Comparing with the conventional "two-mode stabilization", extremely higher frequency stability (fractional stability of 10^{-11}) is realized with this method in addition to the high power output.

Micro Optics YS307 is the light source suitable for high precision interferometric measurements with sub nanometer scale because of the ultra-high frequency stability. At the same time, high power output of YS307 is advantageous for multi-axis and multi points measurements, inspections of large-scale optics, fiber-coupled interferometers and measurements demanding the short time observations.

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