

OptoComb Starts Taking Orders for Fully-Automated “Optical Frequency Counter”

Light source, optical comb generator, optical frequency meter and all the other necessary functions are available in one unit. The higher accuracy, which is 100 times greater than conventional methods, is achieved with Nobel Prize-winning technology.

1. About the Manufacturer and the Product

Optical Comb Institute, Inc. (Headquarters: Meguro-ku, Tokyo, Japan; President: Tsuyoshi Asaeda Ph.D.) will start taking orders for their fully-automated “Optical Frequency Counter” MF-0581A on 1 November 2005. All necessary functions such as frequency-stabilized light source, optical comb generator, optical frequency meter, etc. are integrated into one unit. Connect the input light source to be measured (in C-band or 1530 – 1565nm) to the device and press the Start button, and it displays the optical frequency in the order of 1MHz (9 digits), which is 100 times more precise than the conventional methods. The technology used in this product was awarded the Nobel Prize in Physics that was announced on 4th October this year. This product has made the “laser-based precision spectroscopy, including the optical frequency comb technique” available to the market in the form of an all-in-one unit. The product has great potential to bring about a breakthrough not only to the development of optical communication devices and equipment but also to optical measurement for non-communication purposes.

A “wavelength meter,” which measures the frequency of light utilizing interference with the reference light source, has traditionally been used for measuring optical wavelength and frequency. However, this method allows a maximum precision of only up to 7 digits (100 MHz), which effectively caps the significant digits of displayed results. On the other hand, the Optical Frequency Counter of the Optical Comb Institute Ltd. measures the absolute value of the optical frequency using a comb-like multiple frequency light source (optical comb) that works as a reference or a “scale” for the measurement. This method allows a 9-digit precision (1MHz), which is 100 times higher than that of conventional technologies.

The performance of high precision optical communication devices and equipment has been considered as “theoretically possible but not demonstratable” due to “a lack of measuring equipment.” The optical frequency counter will push the limit in this area. It will also contribute to the entire field of optical engineering as it can be applied to the measurement of time and distance in non-communication areas.

As announced on 4 October, the 2005 Nobel Prize in Physics was awarded to Dr. John L. Hall of the National Institute of Standards and Technology and Dr. Theodor W. Hänsch of the Max Planck Institute for Quantum Optics “for their contributions to the development of laser- based precision spectroscopy, including the optical frequency comb technique.” Our managing director Motonobu Kourogi, Ph.D., stayed at the Max Planck Institute in the early 1990’s and provided Dr. Hänsch with passive comb equipment and devices as well as technical assistance. He contributed to the improvement of the accuracy of optical frequency measurement being conducted by Dr. Hänsch.

The “optical frequency counter” employs the basic configuration and the measuring principle used in the technology developed by the Nobel Prize laureates. In other words, it is “the Nobel Prize-winning technology made available in mass-produced products.” Our all-in-one type frequency counters using optical frequency comb are the first of this kind in the world.

2. Contact Address for the Detail of the Product

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Sales and Marketing Division, Optical Comb Institute, Inc.
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3. Corporate Profile

Registered Name: Optical Comb Institute, Inc.
Location of Headquarters: Tokyo Institute of Technology, Incubation Center R204, 2-12-1, O-okayama, Meguro-ku, Tokyo, 152-8550 JAPAN
Tel +81-3-5734-2337 Fax +81-3-5734-2327 URL: <http://www.optocomb.com>
Date Established: April 1, 2002 Capital: 154,900,000 yen
Representative: President Tsuyoshi Asaeda, Ph.D.,
Brief History: Optical Comb Institute, Inc. was established in 2002 as a venture business of Tokyo Institute of Technology for the purpose of developing a variety of products and technologies based on high precision control of optical frequency. The Institute has an ample experience as a product/service provider for Japanese public and private research institutions.

4. Standard Product Specifications

Model Number	MF-0581A
Wavelength measurement range	1530 – 1565 nm
Input power	-10 –+ 10dBm
Frequency accuracy	10 ⁻⁸ (Standard)
Reference light source	Built-in type
Power requirement	Max. 300W (Input voltage 100 – 240V)
Dimensions(W/D/H)	436 x 496 x 317 mm ³ (19 inch x 7U; Excluding protrusions)
Weight	25kg

- USB terminal and PC card slot for data transfer
- Optical frequency display: 12 digits (Significant digits: 9)
- Digital fluorescent display tube
- 5.7-inch (240 x 320 dpi) color LCD display
- Extra hard disk space for measurement data and analytical software

5. Other Details

Product name: Optical Frequency Counter MF-0581A

Date to start taking orders: 1 November 2005

Sales target for the 1st year: 10 units

6. External Appearance of the Product



Optical Frequency Counter MF-0581A

-Visit the following websites to download high-resolution images of the products for publication:

http://www.optocomb.com/release/20051026/OptoComb_MF-0581A.zip (CMYK-EPS 4538KB)

http://www.optocomb.com/release/20051026/OptoComb_MF-0581A.jpg (RGB 1.124KB)

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