UC INSTRUMENTS GM8037 HIGH RESOLUTION FIBER GRATING SENSOR INTERROGATION SYSTEM

Technical Specifications v1.02

March, 2011

UC INSTRUMENTS CORP.

GM8037 HIGH RESOLUTION FIBER GRATING SENSOR INTERROGATION SYSTEM

UC INSTRUMENTS' GM8037 portable high resolution fiber grating sensor instrument is a high power with high accuracy and wide dynamic range for fiber Bragg grating (FBG) sensors, and compact PC-based interrogation system, and is also a high accurate optical spectral analysis system. It includes an external device, PC-based application software and optional high performance laptop. With a build-in tunable laser source and two channel photo detectors (no additional light source is required), the system can perform high accurate measurements in temperature, strain, and pressure in conjunction with FBG sensors/sensor arrays. Meanwhile it is a high accurate optical spectrum analyzer. The system provides users explicit understanding of how the spectral shape of FBG sensors rapidly respond to varying temperature, stain, pressure in the detection environment - rather than only reporting shifts of the detecting central wavelengths. This instrument is used in both the initial development of high-volume custom sensing systems and also long term field measurement applications. The two detector channels allow simultaneous interrogation of multiple sensors (up to 20 sensors per channel) in one channel and both channel analysis. Each optical channel can be used to interrogate fiber gratings in either transmission or reflection. A wide variety of fiber optic sensors/sensor arrays can be used with the system. All data can be transferred to an external PC via a RS232 or USB communication port.

It is a low-cost, high performance FBG sensor array test system for various engineering and civil applications. It features high power, high accuracy, PC-based, wide dynamic range for FBG sensors/sensor arrays, and has accurate optical spectrum analysis ability.

Features

- High accuracy and high optical power
- Long distance and multi-channel testing capability
- Spectral measurement over 40 nm with 1 pm scan-to-scan repeatability
- Measurements in transmission and/or reflection with two built-in detectors
- Built-in single board for computer, display, and instrument control panel
- Display for tension, pressure, temperature and other parameters in text and history curves on the basis of application apply to
- Integrated single compact system including light source, power sensor and data analysis
- Easy data transfer to PC via a RS232 or USB interface

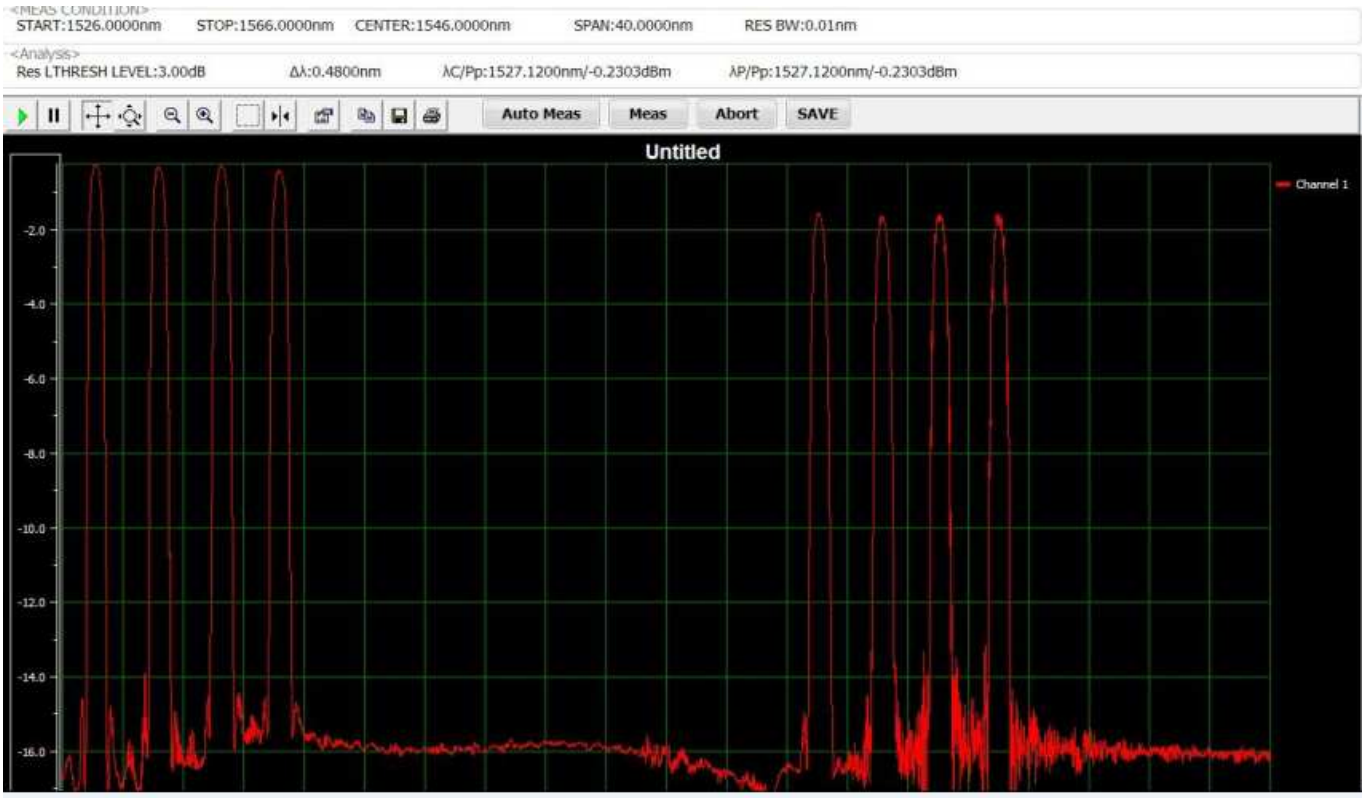
Applications

- Enabling to transfer light in a single fiber up to 120 km without need of amplification
- Enabling the system to generate any of the highly precise and adjustable wavelength in the spectrum (1525-1566 nm) rapidly and reliably, indicating a tunable laser source can serve as numerous light sources
- Helping design and select FBG sensors for measurements of strain, temperature, pressure, etc.
- Providing high accuracy and resolution, full profile data, and comprehensive feedback on FBG sensors with wide dynamic range of power
- Permitting high resolution, high accurate fiber Bragg grating center wavelength measurements with built-in data acquirement and analysis software functions
- Assisting explicit understanding of how sensors' characteristics change under various physical conditions using full-spectrum measurements
- Aiding analysis of a wide variety of passive optical sensors – FBG sensors and other passive fiber optic components testing

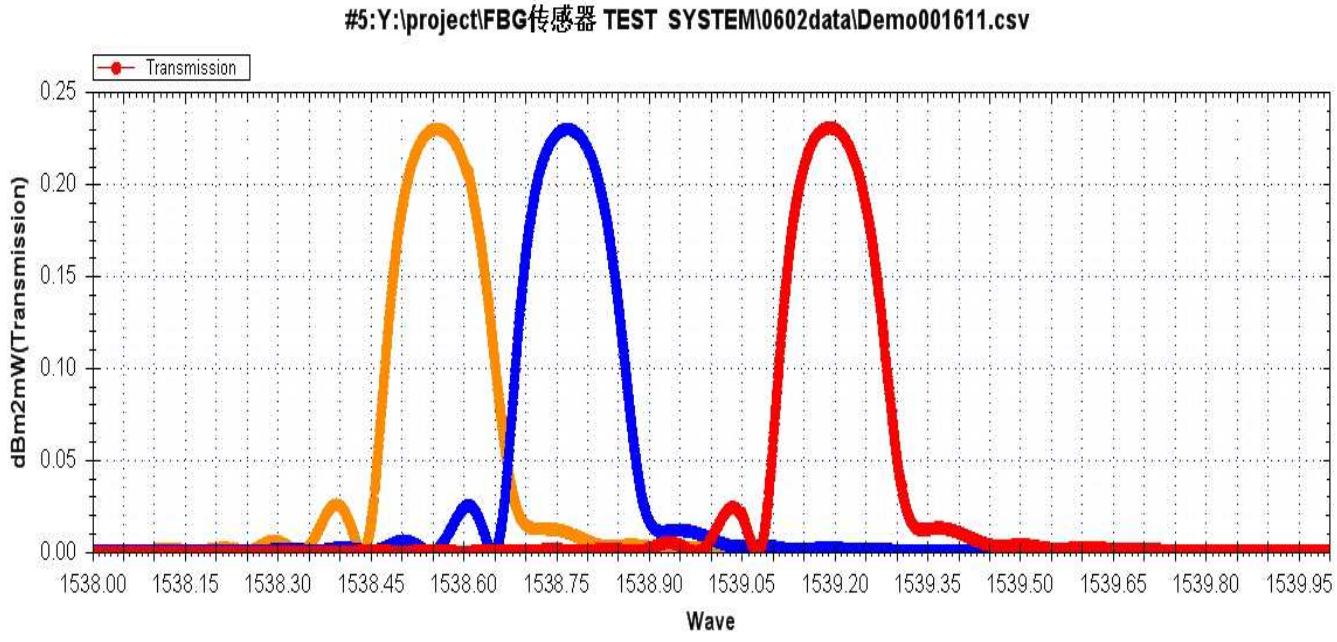
Specifications

Model #	***GM8037***
Build-in Laser Wavelength Range	**1525.00 to 1566.00 nm**
Build-in Laser Output Power	>= 20 mW
Wavelength Resolution	1.0 pm
Optical Channel Number	2 CH (up to 64 channel optional) ***
Maximum FBG Sensor Per Channel	20 Sensors in full spectrum 1525~1566 nm
Build-in Laser Wavelength Repeatability	+/- 3 pm, typ. +/- 1 pm
Photo Sensor Dynamic Range	> 60 dB
Sweep Speed	Up to 10 Hz
Connector	FC/APC
Typical Grating Configuration	*Reflectivity: 90%, BW: 0.25nm*
Communication Interface	RS232 and USB
Power	*AC 100 - 240 V ± 10%, 48 - 66 Hz, 100 VA max.*
Environmental Temperature *Storage Temperature* *Operating Temperature* *Humidity*	*−40°C to +80°C* *0°C to +65°C* *0°C to +45°C* *<95% R.H.*
Working Environment	*−10°C to +70°C* *0°C to +45°C* *<95% R.H. 0°C to +45°C*
Dimensions	*200 mm H, 105 mm W, 250 mm D*
Weight	*10.0 lbs*

*****Note: Per customers' request, we can help customers integrate up to 128 channel systems.**



A Real Fiber Grating Sensor Sweep Spectrum



A Real Fiber Grating Sensor 0°，23 °，100 °C Sweep Spectrum

UC INSTRUMENTS' Test and Measurement Supports, Services and Assistances

UC INSTRUMENTS provides high performance, high value, low cost, affordable test and measurement instrument solutions for our customers. Our extensive support sources can help you choose right UC INSTRUMENTS' products for your specific applications and apply them successfully. Every instrument /system we sell has a global warranty. All of our instruments are with at least 12 months factory warranty.

Our Promises

All of UC INSTRUMENTS' test and measurement instruments and systems meet their advertised performance and functionality. When you select a UC INSTRUMENTS' product, we can help your product operation with our decade experiences, and provide the basic measurement assistance for the use of special capabilities.

Contact Information

United States:

UC INSTRUMENTS CORP.
3652 Edison Way
Fremont, CA 94538
USA
Tel: 1-510-366-7353
Fax: 1-510-353-1809
www.ucinstruments.com

March, 2011

31000038 V1.02