



Off-Line Diameter & Ovality Measurement System

# BETA LaserMike BenchMike 283 Series

for Wire and Cable Samples

## The BenchMike Advantage:

### Accuracy

- Patented optical design and edge-sensing electronics provide high-precision measurements
- Auto-compensation features maintain accuracy throughout entire measurement range and adjust for thermal expansion outside laboratory environments

### Reliability

- Non-contact measurement technique provides the same level of accuracy regardless of operator
- Tolerance checking quickly alerts the operator of out-of-tolerance conditions
- Beta LaserMike mounting fixtures ensure the test piece is always properly presented to the gauge

### Ease-of use

- A touch-screen interface provides simple operation and setup
- A library list stores product “recipes” and allows the operator to switch products quickly and easily
- A range of input/output (I/O) ports allow flexible integration with other devices

## The industry’s most accurate, reliable, and easiest-to-use gauging system

The Beta LaserMike BenchMike 283 series provides fast and accurate measurements of manufactured parts or cut samples of extruded parts. Used either in a quality control (QC) laboratory or on the plant floor, BenchMike gives operators a simple and repeatable system for measuring parts and immediately knowing whether they meet specifications within tolerances of less than 1  $\mu\text{m}$  (0.00004 in.).

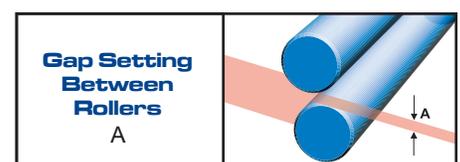
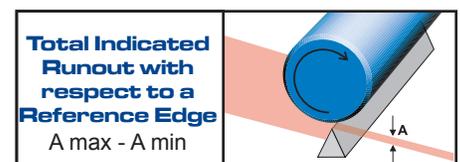
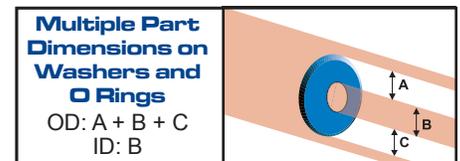
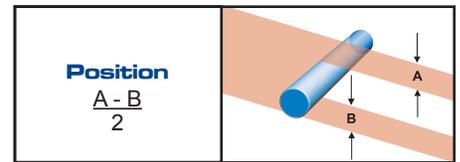
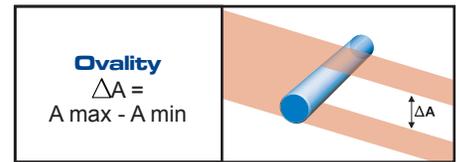
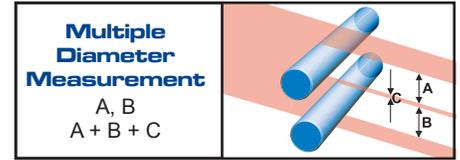
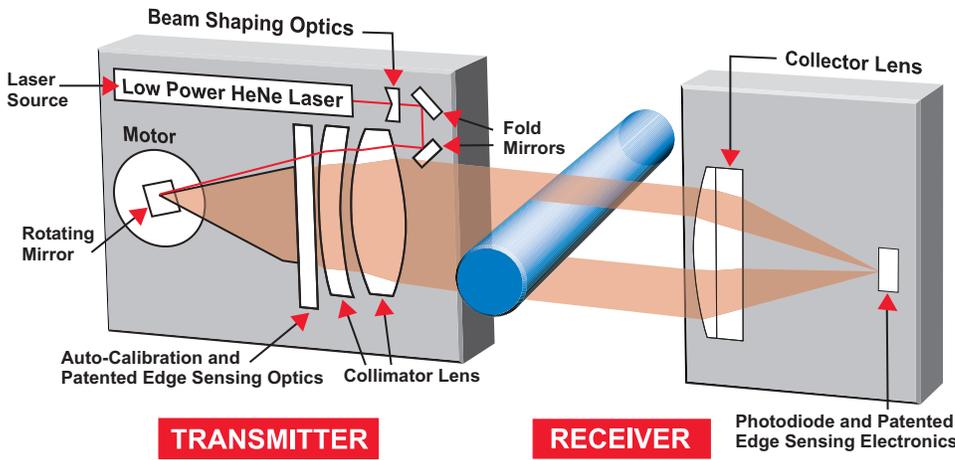
Laser technology allows BenchMike to measure multiple product dimensions without touching, deforming, scratching, or damaging the part. Unlike other micrometers and mechanical indicators that can give errors due to poor zero setting, end play, or calibration, or are sensitive to user input, BenchMike provides repeatable measurements regardless of the operator. With the Beta LaserMike BenchMike, there is nothing to adjust between part measurements and nothing to wear out.

**Innovative Technology**

The Beta LaserMike line of products operate on the cutting edge of measurement technology. In 1973, we patented our innovative laser measurement technique (the first of its kind in the world), and today we continue to improve our designs by making them easier to use while maintaining precision accuracy.

Each BenchMike contains a transmitter, receiver, processor electronics, and a touch-screen display in an integrated package. A thin band of high-speed scanning laser light is projected from the transmitter by a low-power laser source, a scanning mirror, and a series of optics.

The receiver houses a collector optic, photodiode, and preamplifier. Through our patented edge-sensing process, the laser light signal entering the receiver is used to calculate the distances between the edges of the product. Dimensional data is instantly displayed and can be transmitted to a computer for further processing.



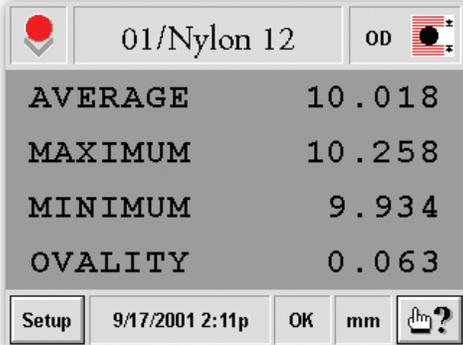
**No Field Calibration Required**

BenchMike uses a combination of built-in auto-calibration and dual-differentiation technology providing unmatched accuracy without field calibration. Never has it been easier to incorporate precision measurement on the production line, and since every system includes a programmable RS-232C interface, collecting and sending data to your storage and control system is almost effortless.

Contact your local Sales Engineer representative and start seeing the benefits of improved quality, increased production yield, and decreased material cost on the bottom line today.

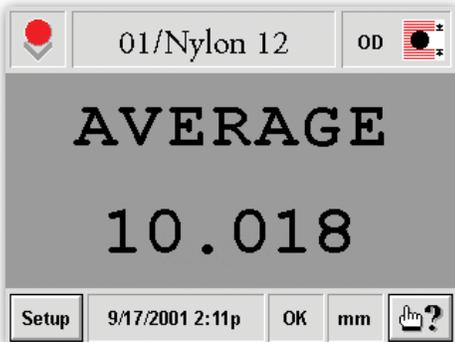
# Simple Touch-Screen Interface Lets You Easily Access BenchMike Features and Functions

BenchMike's touch-screen graphical user interface (GUI) gives operators a quick and simple means of viewing dimensional measurements, accessing gauge and system information, and changing parts. Screen layouts are customized for the needs of the user or application and the "look and feel" is simple for any user familiar with Windows.



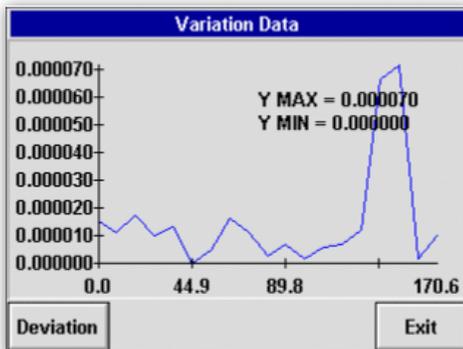
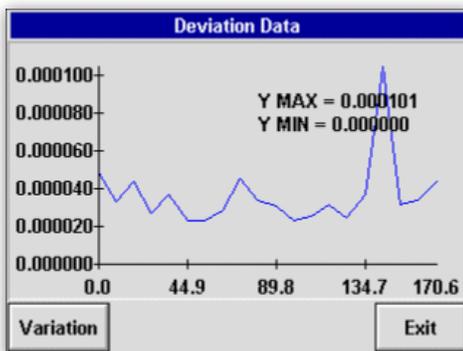
### Data Display

BenchMike has advanced display capabilities allowing you to display measurement data, access menus to configure BenchMike, and display general information such as presence or absence of error conditions.



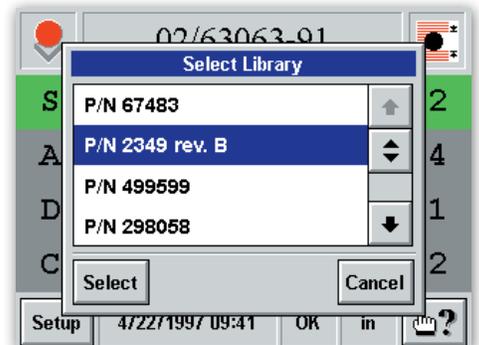
### Magnified Display

Magnify measurement items on the screen for visibility from a distance.



### Rotational Deviation/Variation Graphs

Create Deviation and Variation graphs when using an intelligent fixture. The graphs show the deviation from nominal at each position and size variation between positions.



### Library (Part) Selection

Use BenchMike libraries to store and recall how the measurements are to be taken, and manage other system setup information via separate libraries. By defining libraries for each product or for different fixtures, you can shorten set-up times for various parts or applications.

Your Information Here      Batch Report  
Library 03/Untitled/F01      01/31/2009 8:34a Page 1 of 2

Mode: Type 7, Units:Inches (in)

Average	0.049816
Diff/TIR	0.000006
Maximum	0.049818
Minimum	0.049812
Standard Deviation	0.0000032
Undersize Samples	0
Oversize Samples	0
Total Number of Samples	3

Your Information Here  
Library 03/Untitled/F02

Mode: Type 8, Units:Inches (in)

Average	0.049957
Diff/TIR	0.000005
Maximum	0.049949
Minimum	0.049954
Standard Deviation	0.0000029
Undersize Samples	0
Oversize Samples	0
Total Number of Samples	3

Report Setup

Reports Title Output

Select reports required for "Print" operation (2 of 4 selected):

<input checked="" type="checkbox"/>	Sample Report	↑
<input type="checkbox"/>	Fixture Sample Report	
<input type="checkbox"/>	Fixture Part Report	↓

OK Cancel

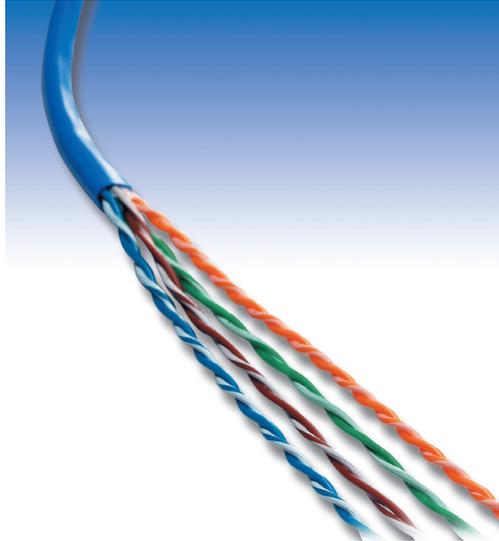
### Range of Reporting Capabilities

Easily generate Sample, Batch, and Fixture reports. Use the Sample Report when taking a single measurement of multiple parts. Use the Batch report to summarize statistical results for all measured parts. Use the Fixture reports to generate similar sample and batch details when using automated part-positioning fixtures.

## Solutions for Wire & Cable Applications

The Beta LaserMike BenchMike 283 series is the ideal solution for fast, simple, and accurate measurements of cut samples of extruded wire and cable. BenchMike is used worldwide on extrusion plant floors and quality control (QC) laboratories to give operators and technicians immediate feedback of product dimensions.

Wire and cable manufacturers must ensure that the dimensions of their products are maintained within tight specifications to ensure the quality of the product and the profitability of the company. To satisfy this need, the BenchMike utilizes the latest in laser gauging technology to provide high-precision OD measurements of wire and cable within specifications of less than 1µm (0.00004 in.).

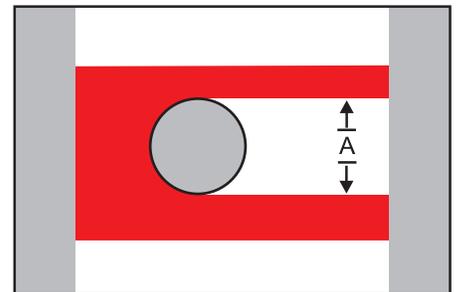


### Diameter & Ovality Measurement

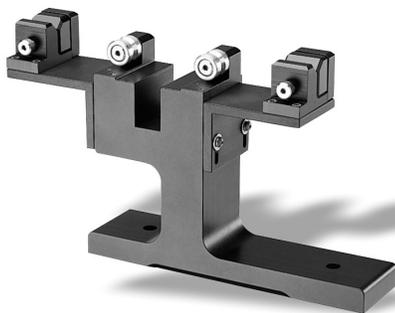


#### << Auto-Rotating Chuck Fixture

For precision OD measurements, simply place your product in the rotary chuck fixture and BenchMike will instantly measure it. Using BenchMike, an operator can measure dozens of parts per minute and with a much higher level of accuracy than any other method available for sample inspection. And with the use of laser technology, the measurements will be repeatable from one operator to another.



Single Diameter Measurement  
OD = A



#### << Ultra Fine Wire V-Block

Ultra Fine Wire V-Block is designed for ultra fine wire or other material that must be held under tension for accurate measurement. Holds wires in the range of 0.025 to 0.254 mm (0.001 to 0.010 in.). It is used with Spot Reducer Option.

# Specifications

## Measurement Specifications

	Model 283-10	Model 283-20
Measurement Range*	0.100 to 25.4 mm (0.004 to 1.0 in.)	0.254 to 50 mm (0.010 to 2.0 in.)
Repeatability	±0.25 µm (0.000010 in.)	±0.5 µm (0.000020 in.)
Linearity	±0.9 µm (±0.000036 in.)	±1.5 µm (±0.000060 in.)
Measurement Area Depth Of Field	±.75 x 25 mm (±0.030 x 1.0 in.)	±1.5 x 50 mm (±0.060 x 2.0 in.)
Laser Beam Velocity	50 m/sec. (2,000 in./sec.)	100 m/sec. (4,000 in./sec.)
Temperature Coefficient	<0.2 µm/°C (<0.000004 in./°F)	
Calibration	Factory calibrated	
Scan Rate	100/sec	

\*See other sizes in the Options section.

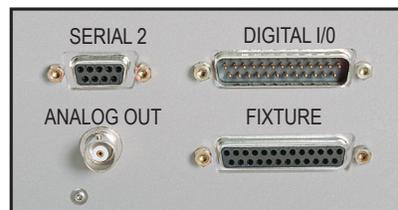
## General Specifications

Operating Temperature	7° to 36° C (45° to 97° F) at < 90% relative humidity
Storage Temperature	-20° to 60° C (-4° to 140° F)
Dimensions (H x W x D)	254 x 635 x 228 mm (10 x 25 x 9 in.)
Weight	17 kg (38 lb.)
LaserSource	HeNe gas laser; <1 mW output
Display	320 x 240 liquid crystal display; 256 colors
Power Requirements	100 to 240 volts AC (+5% to -10%), 50/60 Hz (+/-2 Hz) 100 watts total power

## Input/Output

The BenchMike provides a variety of input/output connectors to allow flexible integration with other devices. The available BenchMike I/O includes:

- Serial ports to link with computers or data gathering devices
- Parallel port to connect to printers for printed reports
- Digital I/O port for connection of alarm outputs to indicate out-of-tolerance conditions and other errors, as well as digital inputs to activate functions remotely
- Analog output BNC port for sending information to chart recorders or PLCs
- Fixture port for connection to intelligent fixtures capable of moving and rotating the test pieces
- Scan output BNC port for diagnostic access to the laser scan signal



## Modular Fixtures

### Ready-To-Mount Flexibility

We offer an extensive line of ready-to-mount modular fixtures from simple manual fixtures to fully automatic and intelligent fixtures. These fixtures hold workpieces properly and effectively for any gauging need. Simply attach these easy-to-install fixtures to your BenchMike for precise, reliable measurements without calibration.

We provide a full line of heavy-duty fixtures to measure small and large parts, along with automatic motorized fixtures for part translation and rotation. For your custom needs, our Special Engineering group excels at developing fixtures for special applications.

	Fixture	Description	Part #
	<b>V-Block: General Purpose, Fixed</b>	Used for measuring parts positioned on their outside diameter. Holds diameters from 0.38 to 45.72 mm (0.015 to 1.800 in.)	83855 (283-10) 83854 (283-20)
	<b>V-Block: General Purpose, Full-Range, Adjustable</b>	Enables part centering and measurement over the full measuring range of the BenchMike Series. Holds diameters from 0.38 to 50.4 mm (0.015 to 2.0 in.).	83976
	<b>V-Block: Adjustable</b>	Supports parts that must be held on their outside diameters. Must be mounted on a slide. Holds wire diameters up to 45 mm (1.8 in.).	83609
	<b>V-Block: Fine Wire Adjustable</b>	Designed for fine wire or other material that must be centered for best measurement accuracy. Holds wire diameters from 0.025 to 10.16 mm (0.001 to 0.400 in.).	84260
	<b>V-Block: Ultra Fine Wire</b>	Designed for ultra fine wire or other material that must be held under tension for accurate measurement. Holds wire diameters from 0.025 to 0.254 mm (0.001 to 0.010 in.). Used with Spot Reducer Option.	84252
	<b>Slide: Universal Manual</b>	Used to linearly position parts by hand. Available in 457, 635 or 829 mm (18, 25 or 32 in.) lengths. Slide travel is 305, 483, or 660 mm (12, 19, or 26 in.).	83610 (457 mm) 83611 (635 mm) 83618 (829 mm)
	<b>Slide: Digital Readout</b>	Used to linearly position parts to predetermined positions for measurement, and/or measure the distance between two points on a part. Available in 457, 635 or 829 mm (18, 25 or 32 in.) lengths. Slide travel is 305, 483, or 660 mm (12, 19, or 26 in.).	83616 (457 mm) 83617 (635 mm) 83863 (829 mm)
	<b>Chuck: Auto-Rotating</b>	Motorized rotation of shafts or wires to detect variation in diameter around the circumference. Keyless precision chuck holds diameters 0.76 to 12.7 mm (0.030 to 0.50 in.).	84015
	<b>Chuck: Zero-Rotating</b>	Enables the automatic measurement of diameter variation from 75 µm to 3 mm (0.003 to 0.120 in.).	84007
	<b>Chuck: 3.18 mm Rotating</b>	Enables the automatic measurement of diameter variation from 0.3 to 3.18 mm (0.012 to 0.125 in.).	84005
	<b>Chuck: 38 mm Rotating</b>	Enables the automatic measurement of diameter variation from 1.5 to 38 mm (0.0625 to 1.5 in.).	84022
	<b>Wire Auto-Rotating</b>	Designed for the automatic measurement of very small diameter samples from 0.075 to 1.27 mm (0.003 to 0.050 in.).	84274 (English) 84495 (Metric)
	<b>Fine Wire Heanium V-Guide</b>	Enables the measurement of small samples that will not lay straight in a V-block. Holds wire diameters from 0.076 to 3.175 mm (0.003 to 0.125 in.).	83883

## Options

Special accessories are available to address certain non-standard applications or data needs:

- **Small Spot Size Option**  
Special measurement range from 25  $\mu\text{m}$  (0.001 in.) to 10 mm (0.4 in.) (factory installed option)
- **Digital I/O Interface**  
High-current open collector outputs for gauge and measurement status. A footswitch accessory lets the user activate the gauge's measure function or initiate single measurements.
- **Transparent Object Measurement**  
Enables the BenchMike to measure the diameter of transparent material, such as clear plastic products such as glass tubes and rods.

## Other Measurement and Control Solutions

In addition to our BenchMike off-line gauging system, we offer a complete portfolio of measurement and control solutions for on-line production applications. Our solutions enable manufacturers to realize a number of performance and production benefits, such as improved product quality, enhanced process reliability, increased productivity, and reduced manufacturing costs.



**AccuScan**  
*High-Speed Diameter and Ovality Measurement Systems*



**DataPro**  
*Process Control and Data Management Systems*



**UltraScan**  
*Wall and Concentricity Measurement Systems*



**CapScan**  
*Capacitance Measurement Systems*



**Fault Detection**  
*- Lump and Neckdown Measurement Systems*  
*- Spark Testers*



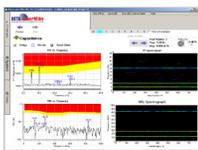
**CenterScan**  
*Non-Contact Eccentricity Measurement System*



**LaserSpeed**  
*Non-Contact Length and Speed Measurement Systems*



**Preheater**  
*Wire Preheating Systems*



**SRL Pro**  
*On-Line Structural Return Loss Prediction*



**LayScan**  
*Lay Length Measurement System*



**EFL**  
*Excess Fiber Length Measurement System*

---

## Serving Your Measurement & Control Needs with World-Class Solutions

---



### **BETA LaserMike Precision Measurement & Control Solutions**

The Beta LaserMike line of measurement and control solutions is designed to increase productivity, improve product quality, and reduce manufacturing costs. These solutions provide in-process dimensional monitoring, control, and sample/part inspection of products such as wire and cable, fiber optics, metals, rubber and plastic, flat rolled goods, tube and pipe, and other manufactured goods. Every system is backed by Beta LaserMike's world-class service and support organization. With offices around the globe, we're committed to serving your unique measurement application needs.



**USA Office**  
8001 Technology Blvd.  
Dayton, OH 45424 USA  
Ph: +1 937 233 9935  
Fax: +1 937 233 7284

**Europe Office**  
Unit 3, First Avenue  
Globe Park, Marlow  
Buckinghamshire, SL7 1YA  
United Kingdom  
Ph: +44 1628 401510  
Fax: +44 1628 401511

**Germany Office**  
Fallgatter 3,  
44369 Dortmund  
Deutschland  
Ph: +49 (0)231 758 930  
Fax: +49 (0)231 758 9333

**Asia Office**  
Unit 302, XinAn Plaza, Building 13,  
No. 99 TianZhou Rd.  
Shanghai 200233, China  
Ph: +86 21 6113 3688  
Fax: +86 21 6113 3616

**Visit our website at: [www.betalasermike.com](http://www.betalasermike.com)**