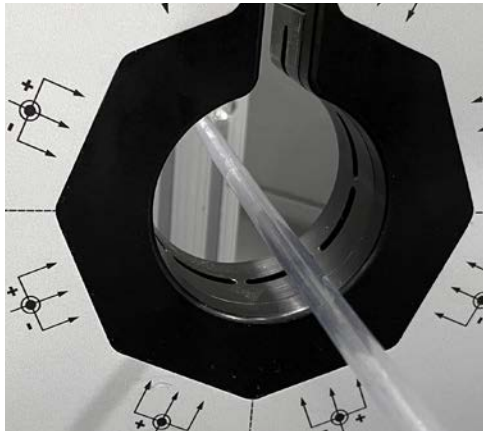# ACCUSCAN SERIES

Four-, dual- & single-axis diameter & ovality gauges for quality, cost-driven manufacturers

- Instantly detect changes in product with fast, comprehensive non-contact measurements

- Optimize process control through increased measurement accuracy and repeatability

- Produce higher quality products in less time and with less waste

- Get highly flexible communications for easy integration with your processes

- Realize the lowest total cost of ownership

BETA LaserMike Products

Intelligence that transforms the world.

Four-Axis Diameter & Ovality Measurement is Finally Here!

Get ready to experience unmatched performance
and numerous quality and production advantages.

AccuScan 6000 Series

The need to precisely measure the diameter and ovality of cylindrical round products to ensure they meet tight design and quality specifications is of paramount importance to manufacturers of medical tubing, high-performance communication cables, and other important extruded products. Producing any medical tubing product with an "out-of-tolerance" diameter or roundness, often down to ten-thousandths of an inch, affects the performance of life-critical devices such as catheters, drug delivery and surgical tubing, and other medical devices.

With communication cables, such as Coaxial and twisted-pair LAN products, any error in the diameter or roundness of the conductor or insulation directly impacts the cable's performance characteristics – rendering the product useless for the designed application.

- Most comprehensive measurement coverage provides more accurate average diameter

- Provides up to 100% ovality accuracy

- Offers highest flaw detection accuracy with 25% improvement over three-axis

- Delivers highest product quality yield for significant manufacturing savings

Side display mounting available on the AccuScan 6000 Series

Meet Four-Axis

Over the years, industry has relied on conventional dual-axis and three-axis diameter and ovality gauges for on-line and off-line measurement applications. But, the increasing production line speeds and the uncontrollable rotation and vibration of products still pose measurement accuracy challenges. The **new AccuScan 6000 Series four-axis diameter and ovality gauge** solves this problem and provides unmatched performance where it counts while enabling you to realize numerous quality and production advantages.

Intelligence that transforms the world.

The AccuScan 6000 Series gives you
more accuracy than two- and three-axis

1 *Provides up to 100% Ovality Accuracy*

Depending on the orientation of the product within the measurement region, two- and three-axis gauges will only provide a certain degree of ovality accuracy. You will only get accurate readings when an elliptical product is perfectly aligned with the measurement axes to detect the maximum and minimum diameters.

>> The Data for Four-Axis Ovality Measurement Accuracy Speaks for Itself

When the product is aligned with the measurement axes, three-axis gauges can provide an average ovality accuracy better than two-axis gauges – but will never deliver 100% accuracy. On the other hand, the AccuScan 6000 Series delivers a higher average ovality accuracy than can be reached with three-axis, and delivers 100% accuracy when the product is aligned with the measurement axes.
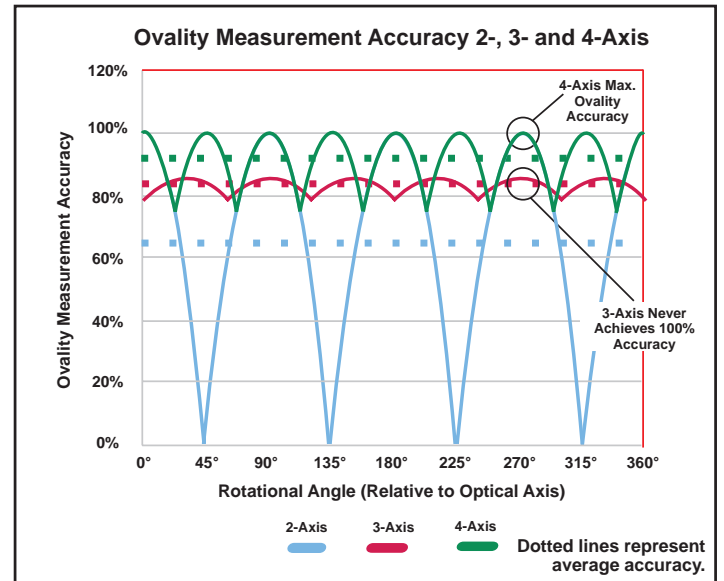
AccuScan 6000 Series provides 100% ovality accuracy unlike 3-axis

2 *Better Measurement Coverage for More Accurate Average Diameter*
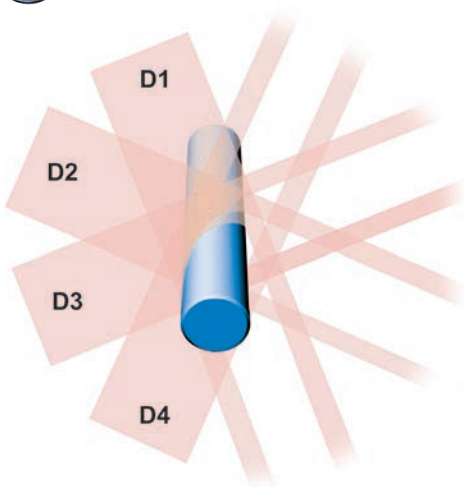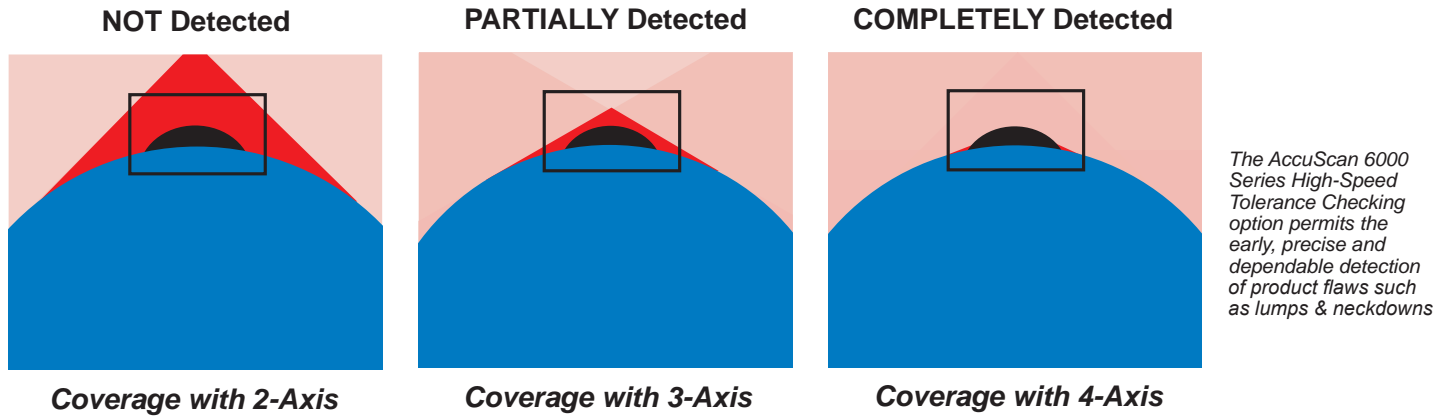

The AccuScan 6000 Series four-axis scanning capability provides the most comprehensive measurement coverage around the product's circumference compared to two-axis and three-axis gauges. The AccuScan 6000 Series performs ultra-fast diameter and ovality measurements at 2400 scans per second per axis, totaling 9600 measurements per second – enabling you to instantly detect changes in the product diameter.

Using a unique calibration algorithm, the AccuScan 6000 Series provides the **highest single-scan accuracy in the industry with single-scan repeatability down to 1 micron**. This means with each and every scan you get a true and more accurate diameter measurement.

Intelligence that transforms the world.

③ Offers the Highest Flaw Detection Accuracy with 25% Improvement Over 3-Axis

More measurement axes mean better flaw detection. In the illustration below, a lump with a given height in the "blind area" (highlighted in red) will not be detected. As you can see, the blind area in the two-axis gauge is significantly larger than the three-axis and four-axis gauges. Similarly, the blind area in the three-axis gauge is larger than the four-axis gauge. With each additional axis, you increase the probability of detecting lumps and neckdowns by 25%.

NOT Detected	PARTIALLY Detected	COMPLETELY Detected

The AccuScan 6000 Series High-Speed Tolerance Checking option permits the early, precise and dependable detection of product flaws such as lumps & neckdowns

Coverage with 2-Axis **Coverage with 3-Axis** **Coverage with 4-Axis**

④ Delivers the Highest Product Quality Yield for Significant Manufacturing Savings

With the new AccuScan 6000 Series gauge you get the best of all worlds: unmatched four-axis scanning coupled with high-accuracy, ultra-fast measurements. This winning combination lets you instantly detect changes in the product diameter so you can produce more quality product faster for maximum quality results. This level of measurement accuracy and quality coverage helps you reduce scrap and significantly lower manufacturing costs, so your operation is profitable for the long term.

Four-Axis for High-Accuracy Off-line Part/Sample Inspection

You can quickly and easily set up an off-line part measurement system with the AccuScan 6000 Series four-axis gauge and a BETA LaserMike PC-based display system to check samples and track, manage and analyze critical product data. This high-accuracy solution is ideal for use in a lab or at a production floor QC station. Optional customized bases and part fixtures are available to ensure rapid and accurate mounting of the part. **For more information see page 9.**

AccuScan 6012 shown with medical tube sample in V-block for off-line sample/part inspection. It can be used with the BETA LaserMike AccuNet QC software to display the diameter and ovality at each location, as well as the overall diameter and ovality of the part.

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Applications, Specifications, Options & Accessories

AccuScan 6000 Series Specifications	
Performance	
Number of axes	4
OD range	
AS6012:	0.1 - 12 mm (0.004 – 0.47 in)
AS6050:	0.5 - 50 mm (0.020 - 2.00 in)
Gate size	
AS6012:	16 mm (0.63 in)
AS6050:	60 mm (2.36 in)
Accuracy	
AS6012:	±0.0005 mm (±0.000020 in)[1]
AS6050:	±0.001 mm (±0.000040 in)[1]
Repeatability (Single Scan)	
AS6012:	±1μ±0.025%
AS6050:	±2μ±0.025%
Resolution	0.00001 mm (0.0000004 in)
Scan rate	2400 scans/sec/axis (total 9600 scans/sec)
Communications	
Standard	RS-232, DeviceNet, Profinet, Ethernet, EtherNet/IP, TCP/IP, quad Analog-Digital output, and relay contacts
Optional	Profibus
Environmental and Physical Data	
Power	24 VDC, 21.6 W, 0.9 A
Temperature	5-45° C (41-113° F)
Protection rating	IP65 (NEMA 4)
Weight	
AS6012:	4.5 kg (10 lbs)
AS6050:	19.5 kg (43 lbs)
Dimensions	
AS6012:	360 x 240 x 40 mm (14.1 x 9.4 x 1.5 in)
AS6050:	580 x 500 x 58 mm (22.8 x 19.7 x 2.3 in)

[1] ±0.02% of product size.
Published technical data and instructions are subject to change without notice.

Software Options

- Glass logic for measuring transparent/translucent products
- Single-scan flaw detection for Lump and Neckdown detection
- STAC logic for measuring stranded, twisted, armoured or corrugated products
- Fast Analog for detecting and trending diameter at high speeds

Accessories

The AccuScan 6000 Series can be equipped with various accessories to meet your specific application needs.

- Ultra-Bright Display
- Height Stand
- Guide Rollers
- Light Stack
- Calibration Set

Applications

The AccuScan 6000 Series four-axis gauge can be used in a wide range of applications where the highest accuracy, repeatability and performance are critical for a wide range of product diameter measurements.

- Plastic Medical Tube – including catheters, drug delivery tubing, surgical tubing and other small medical tubing
- Wire and Cable – including LAN (category), coaxial, medical, automotive and specialty cable
- Plastic Automotive Tube
- Plastic Heat Shrink Tube
- Cord and Line
- And other extruded or drawn cylindrical, flat or unique profile products

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Ultra-Fast, Dual-Axis Laser Diameter Gauges
for Superior In-Line Process Control

AccuScan 5000 Series

Highest Single-Scan Accuracy in the Industry

The AccuScan 5000 Series gauges set the standard in diameter and ovality measurement. The new family of ultra-fast AccuScan 5000 gauges performs **high-speed measurements at 2400 scans per second per axis (totaling 4800 measurements per second) and provides the highest single-scan accuracy in the industry**. The improvements in the single-scan calibration algorithm mean that each scan is highly accurate, providing the most reliable readings in applications such as high-speed tolerance checking of flaws, the monitoring of complex product shapes/profiles, and other challenging measurement requirements. With a range of models covering diameters up to 80 mm (3.15 in.), the AccuScan 5000 Series brings precision, quality, and productivity to your process.
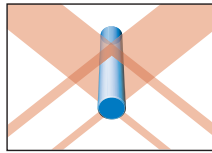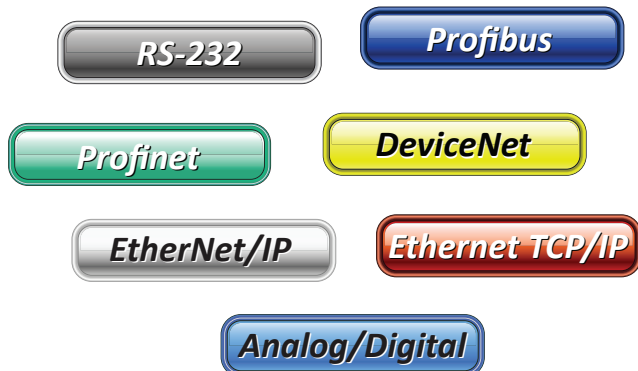
High-Speed 2400 scans/sec/axis

Communications & Options

Each AccuScan 5000 series gauge has built-in signal processing and intelligence and supports the following communication protocols:

- RS-232
- Profibus
- Profinet
- DeviceNet
- EtherNet/IP
- Ethernet TCP/IP
- Analog/Digital

Features & Benefits:

- High-Speed Tolerance Checking option permits the early, accurate, and dependable detection of product lumps and necks to eliminate costly product waste

- STAC (stranded, twisted, armoured, and corrugated) logic software option provides accurate maximum/minimum or enveloped readings on shaped and enveloped products at a higher rate, allowing for faster process control of complex product constructions

- Integrated air purge system keeps windows clean from dust and debris for maximum uptime and reduced maintenance

- Supports a wide range of communications protocols*, including RS-232, EtherNet/IP, Ethernet TCP/IP, DeviceNet, Profinet, Profibus, Analog and Digital

- Optional ultra-bright display and operator interface to easily configure and view measurement data

- Rugged construction, sealed to IP 65 (NEMA 4) standards provides protection in the harshest environments for long service life

- Applicable as a stand-alone gauge or part of a full-line solution

Intelligence that transforms the world.

Applications

The AccuScan diameter and ovality gauges have a long history of being a proven performer in a wide range of industrial applications*, including:

- Cord
- Plastic and Rubber Hose
- Plastic Pipe
- Plastic Tube – including medical, automotive, heat shrink, irrigation, and other products

- Rods
- Wire and Cable – bare, jacketed, and coated
- And other extruded or drawn cylindrical, flat, or unique profile products

Opaque, semi- and full-transparent products supported by AccuScan 5000 series of gauges.

AccuScan 5000 Series Specifications

	AccuScan 5012	AccuScan 5040	AccuScan 5080
Performance			
OD range	0.1 – 12 mm (0.004 – 0.47 in.)	0.2 – 40 mm (0.008 – 1.50 in.)	1.27 – 80 mm (0.050 – 3.15 in.)
Gate size	16 mm (0.63 in.)	52 mm (2.05 in.)	108 mm (4.25 in.)
Accuracy	±0.0005 mm[1] (±.000020 in.)	±0.001 mm[1] (±0.000040 in.)	±0.002 mm[2] (±0.000080 in.)
Repeatability (Single Scan)	±1µ±0.025%	±2µ±0.025%	±5µ±0.025%
Resolution	0.00001 mm (0.0000004 in.)		
Scan rate	2400 scans/sec/axis		
Communications			
Standard[3]	Analog, DeviceNet, Profinet*, Profibus, EtherNet/IP, Ethernet TCP/IP, and dual Analog-Digital output plus dry relay contacts		
Environmental and Physical Data			
Power	24 VDC, 6 W, 0.9 A	24 VDC, 9 W, 1 A	24 VDC, 10 W, 1 A
Weight	3 Kg (6.61 lb)	10 Kg (22 lb)	31 Kg (67 lb)
Dimensions (L x H x W)	255 x 174 x 40 mm (10.0 x 6.85 x 1.57 in.)	380 x 360 x 80 mm (15 x 14.2 x 3.1 in.)	660 x 634 x 107 mm (26 x 25 x 4.2 in.)
Temperature	5-45° C (41-113° F)		
Protection Rating	IP65 (NEMA 4)		

[1]±0.02% of product size.   [2]±0.01% of product size.   [3]Contact Nordson for configuration choices.
AccuScan 5000 Series gauges use laser scanning technology.
*Not availabe on AccuScan 5012.

Laser Scanning Measurement Principle

In 1972, the founders of the original Beta LaserMike product line introduced the world's first laser scanning micrometer (the "LaserMike"). BETA LaserMike AccuScan gauges employ this laser scanning measurement principle. They use a low-power, helium-neon laser that is scanned at high speed through a measurement window and across the product.

When the laser first scans across to the receiver, the light hits the photocell and the voltage rises. The voltage drops when the light is blocked by the product and rises again when the light reaches the photocell. The change in time (Δt) that the light is blocked by the product is proportional to the product's outer diameter.

$$OD \propto \Delta t$$
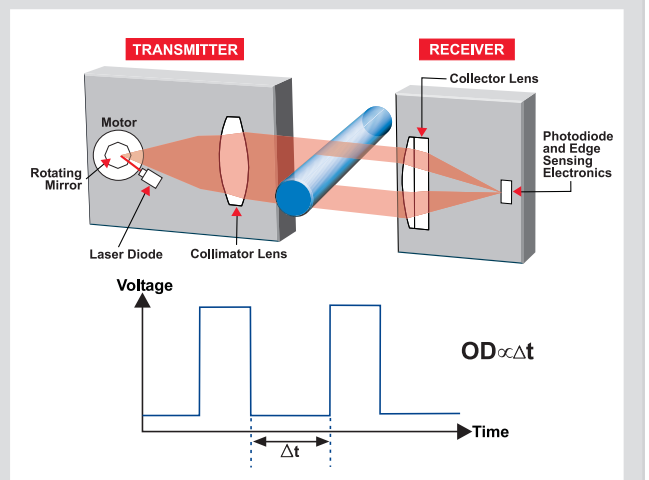
Intelligence that transforms the world.

Versatile, Single-Axis Laser Diameter Gauge
for Cost-Effective Operation in Every Application

AccuScan Pro

The AccuScan Pro Series is the latest in single-axis diameter gauges from the BETA LaserMike product line that offers outstanding precision, performance and value. This gauging system is built on the same proven optical engine and electronics platforms that have made the AccuScan family of gauges renowned, industry-wide for high-performance diameter measurement.
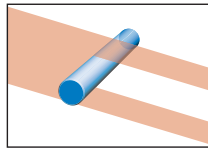
AccuScan Pro offers a compact footprint and is designed for true applications versatility. It can be easily integrated into the process for real-time control of product diameter or can be used as a stand-alone solution for off-line diameter applications. You benefit from higher product quality and significant material savings.

AccuScan Pro can measure product diameters up to 100 mm (3.94 in.) and, via an option, you can perform single-scan flaw detection of lumps and neckdowns. Depending on the application, you can even stack two or more AccuScan Pro gauges to measure even larger diameters.
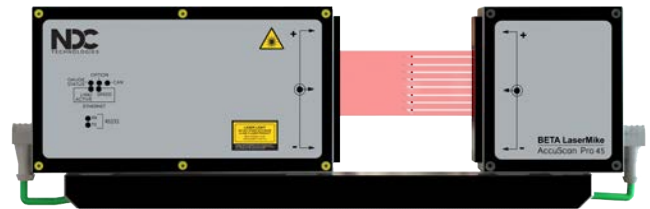
AccuScan Pro also offers the lowest cost of ownership. Its durable, low-maintenance design enables the gauge to reliably operate in a wide variety of demanding industrial applications.

Features & Benefits:

- High-accuracy measurements regardless of where the product is positioned within the measuring gate

- Specially engineered optics with unique calibration technique provide the highest achievable accuracy

- Rail design allows flexibility in spacing between transmitter and receiver heads

- Optional air purge system keeps windows clean from dust and debris for maximum uptime and reduced maintenance

- Flexible communications supporting a variety of communication protocols for easy integration into processes

- Optional ultra-bright display and operator interface to easily configure and view measurement data

- Monitor gauge operation and performance such as gauge status, on-board communication options, RS-232 and Ethernet data transmissions with color-coded LED status indicators

- Rugged, robust IP65 rated housings keep out moisture and dirt

- 2-Year product warranty on all AccuScan Pro product components

Powerful Multi-Strand Option

AccuScan Pro gauge can be equipped with MultiScan software for 100% on-line inspection of multi-strand wire. This option enables you to accurately and reliably measure up to 12 wire diameters simultaneously and instantly detect any missing and broken strands.

	AccuScan Pro 45 mm	AccuScan Pro 100 mm
Performance		
OD Range	0.13 – 45 mm (0.005 – 1.77 in)	0.2 – 100 mm (0.008 – 3.94 in.)
Gate Size	52 mm (2.05 in)	106 mm (4.17 in)
Accuracy	±0.001 mm[1] (±0.000040 in)	±0.002 mm[2] (±0.000080 in.)
Resolution	0.00001 mm (0.0000004 in)	
Scan Rate	1200 scans/sec	
Communications		
Standard	RS-232, DeviceNet, EtherNet/IP, Ethernet TCP/IP, Profinet	
Optional	[3]Profibus, Analog/Digital, PI Control	
Enviromental and Physical Data		
Power	24 VDC, 6 W, 0.9 A	
Temperature	5 – 45° C (41 – 113° F)	
Protection Rating	IP65	
Weight	4.7 KG (10.3 lb)	8.3 KG (18.3 lb)
Dimensions (Standard Config) (L x W x H)	460 x 63 x 156 mm (18.1 x 2.5 x 6.1 in)	812 x 63 x 186 mm (32.0 x 2.5 x 7.3 in)
Additional Options	Extended Rails, Multi-Strand, Stacked Scanner Mode for diameters larger than 100 mm, Air Wipe, Display Stalk	

Flexible, Friendly Software Package Offers an Economical Laser Gauging Solution

AccuNet Software
Supervisory Networking Software for Multi-Gauge applications

If you need an easy way to monitor and manage multiple laser gauges on your production line from a single location, AccuNet™ is for you.

This sophisticated yet easy-to-use application and networking solution lets you monitor an entire workcell from a single PC by giving you immediate access to SPC & trend analysis data from multiple measurement gauges.

With AccuNet, you can set tolerances & evaluate trend graphs for up to 4 AccuScan 5000, AccuScan 6000 or AccuScan 4012 diameter gauges all from one location. Plus, the data you are evaluating is real-time information— so you're always on top of your process. Which means you can catch aberrations and take corrective action quickly, efficiently and with minimal downtime. The result is a unique process tool that ensures optimum product quality, reduces scrap and downtime, and evaluates trending data to maintain the health of your production process.

Gauges are connected to your PC directly by a Universal Serial Bus (USB) or Ethernet.

Features & Benefits

- Centralized location for data acquisition and monitoring makes it easy for operators to control an entire workcell

- Menu-driven Windows™ interface makes operation simple and minimizes setup time

- Recipe storage and recall provides effortless gauge re-configuration for any number of product types

- Data logging capabilites into Microsoft® Excel provide an audit trail and allow in-depth analysis of process characteristics

- Color trend displays give an "at-a-glance" indication of process variation thereby eliminating production of out-of-spec product
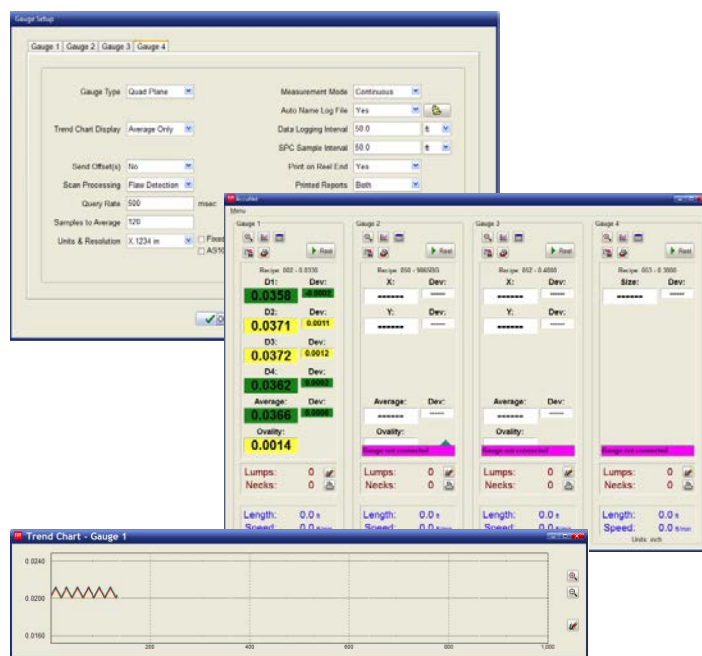
Specifications

Computer System & Hardware Requirements

- IBM PC or compatible, 2.4GHz processor
- Operating System -Microsoft® Windows 7, Windows 8, Windows 10, Windows 11 or Vista
- Monitor - 22" widescreen monitor
  Check with your Nordson specialist for industrial PC options
- RAM - 2 GB
- Hard Drive - 80 GB
- Input Options
  – USB: Using single or multi-port USB to DB9 serial convertor
  – Ethernet: Using 5 port Ethernet switch
- Optional
  – Microsoft® Excel or Office
  – 24 Bit USB I/O Module for digital inputs and alarm outputs
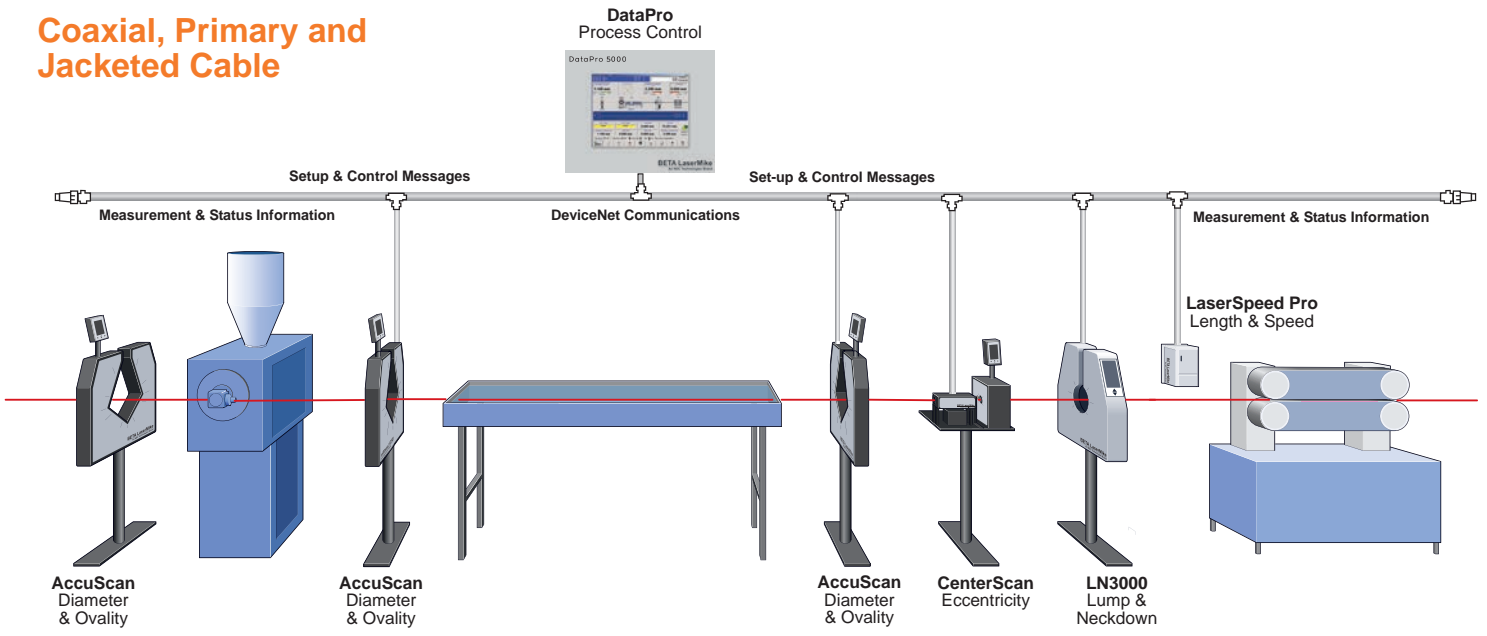 – Length Input Module
  – Relay Output

Gauges and Processor

- BETA LaserMike AccuScan 5000 series gauges
- BETA LaserMike AccuScan 6000 series gauges
- BETA LaserMike AccuScan Pro series gauges

Intelligence that transforms the world.

System Solutions

AccuScan gauges can be integrated with BETA LaserMike DataPro or InControl process controllers into your production line for a complete diameter and ovality measurement system solution. In addition to diameter measurement, a complete portfolio of measurement technologies are available to give you more control over your entire production process.
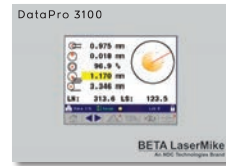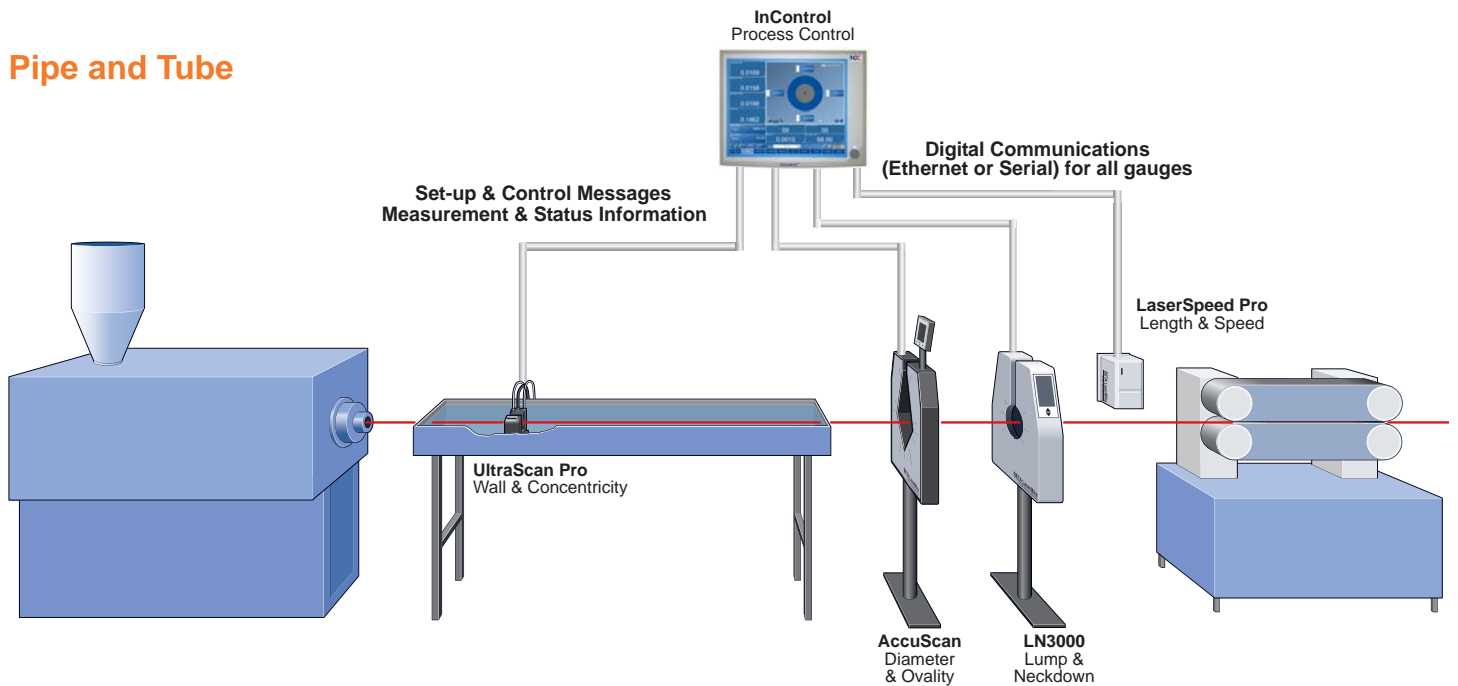
Coaxial, Primary and Jacketed Cable

DataPro
Process Control

DataPro 5000

Setup & Control Messages

Set-up & Control Messages

Measurement & Status Information

DeviceNet Communications

Measurement & Status Information

LaserSpeed Pro
Length & Speed

AccuScan
Diameter
& Ovality

AccuScan
Diameter
& Ovality

AccuScan
Diameter
& Ovality

CenterScan
Eccentricity

LN3000
Lump &
Neckdown

InControl

DataPro 5000

DataPro 3100

DataPro 1000

Pipe and Tube

InControl
Process Control

Digital Communications
(Ethernet or Serial) for all gauges

Set-up & Control Messages
Measurement & Status Information

LaserSpeed Pro
Length & Speed

UltraScan Pro
Wall & Concentricity

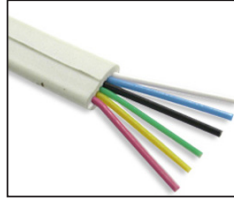**AccuScan**
Diameter
& Ovality

LN3000
Lump &
Neckdown

Intelligence that transforms the world.

Measure Flat, Sector, and Special-Shaped Cables

ActiveScan

The BETA LaserMike ActiveScan system precisely measures the height and width of flat, sector, and special-shaped cables. This motion-based gauge measures product diameters up to 40 mm (1.50 in) with ±0.001 mm (±0.000040 in.) accuracy. System includes AccuScan dual-axis laser diameter gauges, pneumatic motion system, and proprietary STAC Logic software. Contact your local Nordson representative for more details.

ActiveScan provides accurate, non-contact measurement of unique cable profiles.

Accessories and Options

AccuScan gauges can be equipped with various accessories and options to meet your specific application needs.

Accessories

- Height stand (normal upright or at 45 degrees)
- Light stack
- Roller guides
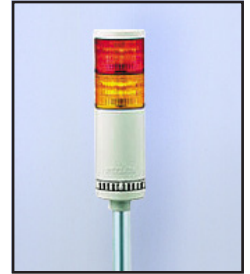- Calibration set
- Air cleaner filtering unit

Guide Rollers

Calibration Set

Height Stand

Light Stack

Software Options

- Glass logic for measuring transparent/translucent products (not available with the AccuScan 3175)
- Single-scan flaw detection for Lump and Neckdowns
- In-head Fast Fourier Transform (FFT) analysis of the diameter measurement
- Fast analog output for further analysis or connection to a Digital Panel Meter
- STAC logic for measuring stranded, twisted, armoured, or corrugated products
- AccuNet software for complete off-line part/sample inspection

Intelligence that transforms the world.

Optimizing Your Investment with World-Class Service and Support

Nordson's technical expertise comes from deep experience supporting thousands of products at the world's leading manufacturers. Our portfolio of support offerings leverages this expertise to assist you through the service lifecycle. We offer a complete range of cost-effective support solutions including commissioning, training, technical support and service agreements. Customers rely on our 24-7 availability via myNDC – the industry's most progressive service cloud portal. Whether it's configuring new equipment, training your technical staff or solving a technical problem, you can count on our experienced team to help maintain the health and performance of your NDC product.

Visit myNDC service cloud at ndc.custhelp.com.

LASER LIGHT
DO NOT STARE INTO BEAM
CLASS 2 LASER PRODUCT
MAX POWER <1mW
WAVELENGTH 670 nm

Complies with IEC/EN 60825-1:2001. Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No 50, dated July 26, 2001

CAUTION
CLASS 3B LASER LIGHT
WHEN OPEN AVOID EXPOSURE TO BEAM

Nordson Measurement & Control is represented in over 60 countries worldwide. **www.ndc.com/betalasermike**

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