

PRECISION MEASUREMENT & CONTROL SOLUTIONS FOR WIRE AND CABLE



Measurement & Control

- ▶ LAN/Data
- ▶ Telecom
- ▶ Coaxial
- ▶ Fiber Optic
- ▶ Power
- ▶ Building
- ▶ Specialty

BETA LaserMike Products

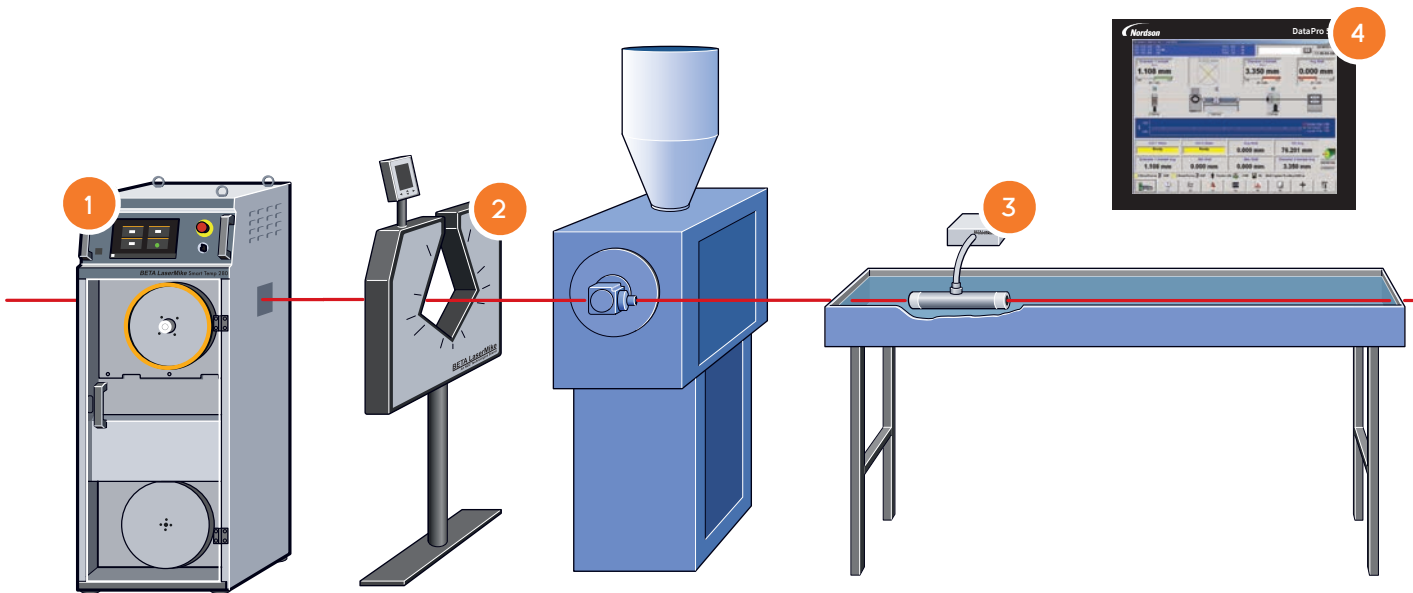
www.nordson.com

Meeting the Challenges of Today's Wire and Cable Industry

As a manufacturer of wire and cable, you're faced with numerous competitive and market challenges. On-going consolidation of the marketplace applies pressure to lower production costs, even though polymer, copper and other material prices continue to climb. This means delivering more output in less time... and with less scrap.

Meanwhile, customers increasingly expect more from the wire and cable products they buy: broader bandwidths, higher speeds, longer service distances, etc. Hitting the right balance of cost and quality becomes harder by the day, as wire and cable manufacturers find themselves constantly searching for new tools that will give them a competitive edge.

Nordson Measurement & Control offers the BETA LaserMike line of ultra-accurate, ultra-efficient measurement and control solutions so you can take charge of every aspect of your wire and cable production operations: from diameter and ovality, conductor eccentricity, fault detection, length and speed, and more.



A Legacy of Leadership

Based on over 50 years of leadership, the BETA LaserMike brand offers end-to-end solutions for your wire and cable production needs. The industry-leading capabilities enable you to automate setups, improve production control and better manage process data.

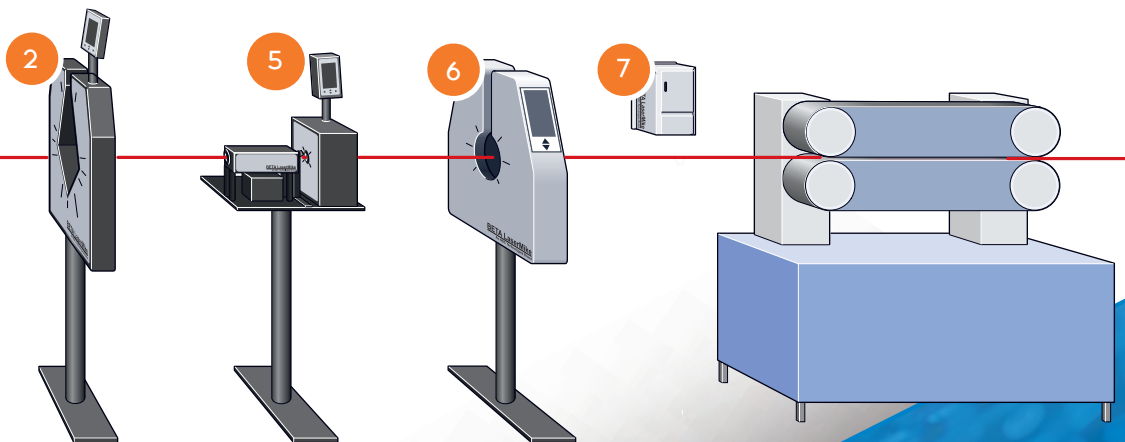
Benefit from:

- Reduced start-up times
- Enhanced uptime reliability
- Increased product quality
- Minimized waste and rework
- Lower manufacturing costs

And with Nordson's global network of service and support organizations, and myNDC cloud-based customer service portal, professional assistance is never far away.

Precision Measurement & Control Systems

- 1 **Smart Temp**
Wire Preheating
- 2 **AccuScan**
Diameter & Ovality
- 3 **CapScan**
Capacitance
- 4 **DataPro**
Process Control
- 5 **CenterScan**
Eccentricity
- 6 **LN Detector**
Lump & Neckdown
Detection
- 7 **LaserSpeed Pro**
Non-Contact
Length & Speed



Industry
4.0

As the world continues to “go digital,” the demand for top-quality communications cable – and the challenges of their production – are bound to increase. The proven performance of BETA LaserMike products will help you meet these challenges so you can lead, rather than follow, in this highly competitive industry.

Realize the Benefits of Implementing a Nordson Measurement System

Reduce Start-Up Time with Die Centering

The start-up of a cable extrusion line is often the cause of scrapped material and the most significant loss of production time. Without an on-line gauging and control system that shows the true cross-sectional profile of the cable's eccentricity, the operator's only tool to quickly center the die is his or her own skill and experience, and perhaps a bit of luck. The BETA LaserMike process controller works in conjunction with the CenterScan 2010 eccentricity gauge to take the inefficiency out of the extrusion startup.



Die Centering

Start-Up Problem

The result of a die-centering adjustment is unknown until the cable reaches the end of the line.

Multiple iterations of die centering adjustments are often required increasing start-up time. The number of iterations of die centering adjustments is very dependent on operator experience.

Process Control & CenterScan Solution

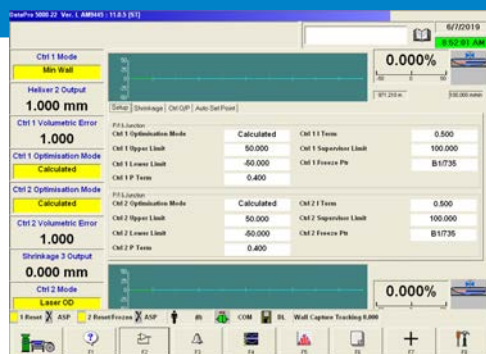
Provides real-time, on-line cross-sectional view of cable eccentricity, which greatly reduces the delay between the time of a die centering adjustment and when the operator sees the result of that adjustment.

Reduces the dependence of start-up time on the experience of the operator by allowing more iterations of die centering adjustments to take place in the same amount of time.

Decrease Material Usage and Give Away with Closed-Loop Control

Most cable extrusion operators run the line at sizes that are well above the minimum specifications in order to ensure they do not create scrap product. This ensures that the extrusion line is operating with maximum uptime, but it also creates a scenario where all finished product includes a high amount of material "give away."

The BETA LaserMike process controller helps you eliminate such losses. Its advanced closed-loop control capabilities provide up to four control loops whose data can be used for automatically making the setting adjustments needed to maintain production accuracy. Automatically control process-critical line equipment such as pullers, extruders, air compressors, and take-up devices. You're able to manufacture more high-quality cable – and account for every meter – to optimize output and profitability.



Closed-Loop Control

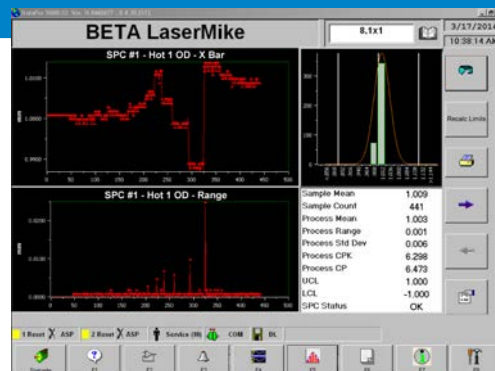


Improve and Document Product Quality with SPC

While Nordson's die-centering and closed-loop control capabilities enable you to *optimize* production quality, the system's SPC data analysis features help you *maintain and improve* it. During each production run, the BETA LaserMike process controller synthesizes a continuous stream of process measurement data and displays this information on eight SPC channels so you can –

- Spot relevant trends for better control of production operations
- Identify and head off issues that could degrade performance before they become a problem
- Maintain the repeatability needed to consistently manufacture superior-quality products

And with its powerful reporting features, the BETA LaserMike process controller lets you generate the SPC documents needed to assure customers and ISO auditors that you can deliver on your quality claims.



SPC Data Analysis and Reporting

Improve Data Management with Real-Time Communication

In manufacturing, communications and quality go hand in hand. The BETA LaserMike process controller includes a wide range of tracking and reporting functions that give you a real-time window into production operations. Use these powerful communications tools to improve your data management and analysis capabilities for more effective process control – and greater product quality.

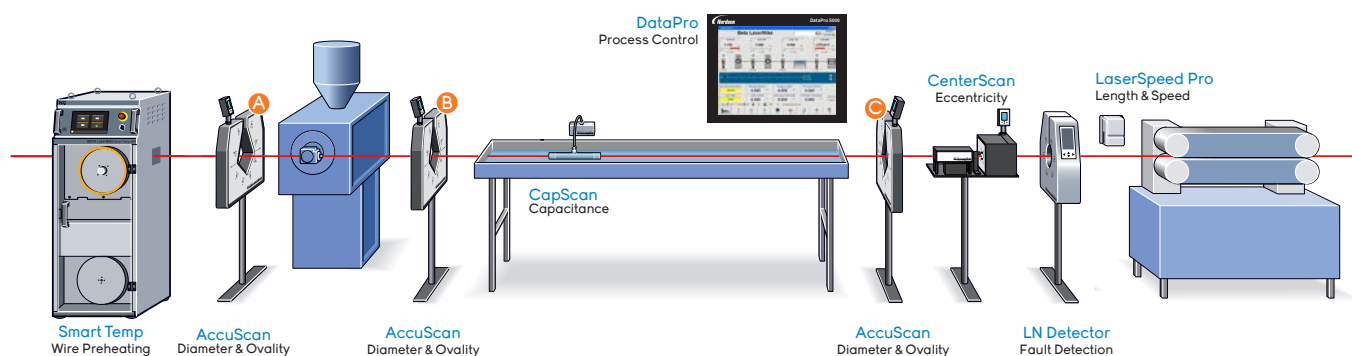
- Generate real-time trend charts to track data sets by time, length, or data point intervals
- Produce quality reports manually or automatically at any point during the production run
- Capture and log process data by time period, product length or line speed
- Set alarms that provide error alerts plus log the errors for later review
- Integrate the BETA LaserMike process controller at the network location best suited to support data management efficiency



Real-Time Trend Charts

System Solutions for Your Wire & Cable Production Application

Solutions for Coaxial / Primary Cable (Foamed/Solid Insulation)



Solution*	Gauge Inputs	
	AccuScan	Config. #
Diameter	C	-01
Hot/Cold Diameter; Shrink Compensation	B/C	-02
Core/Cold Diameter; Wall Calculation	A/C	-10
Core/Hot/Cold Diameter; Shrink Compensation; Wall Calculation	A/B/C	-12

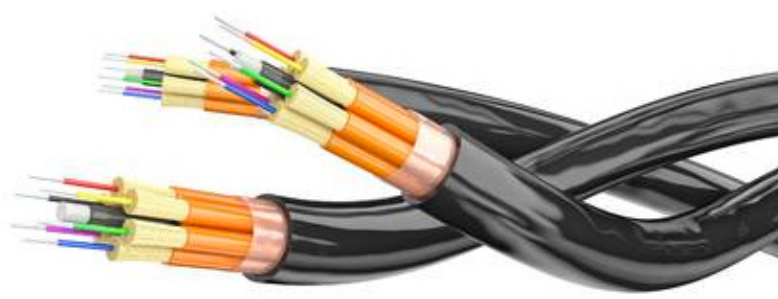
*Smart Temp preheater, CapScan capacitance, CenterScan eccentricity, LN Series lump & neck detector and LaserSpeed Pro length & speed gauges can be added to any configuration.

Solutions for Tight Buffer and Loose Tube Fiber (Dimensional)

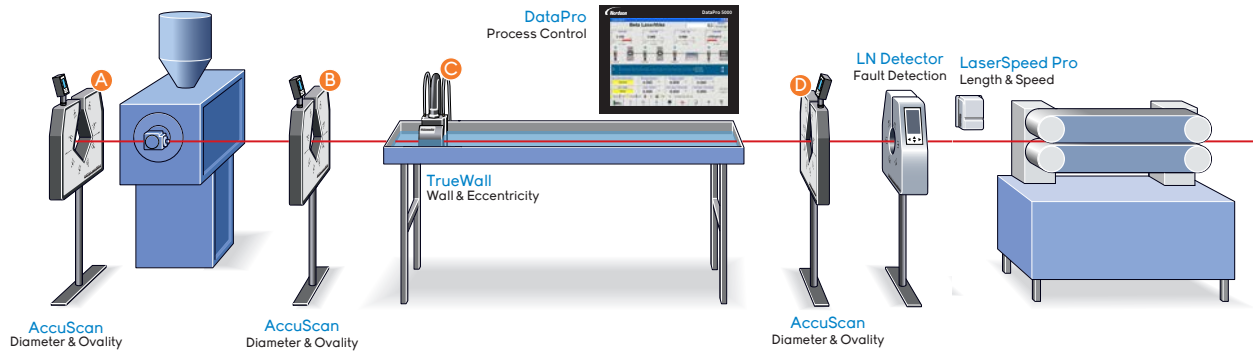


Solution*	Gauge Inputs	
	AccuScan	TrueWall
Diameter	B	
Wall & Eccentricity		A
Diameter; Wall & Eccentricity	B	A

* LN Series lump & neck detector and LaserSpeed Pro length & speed gauge can be added to any configuration.



Solutions for Jacketed Cable

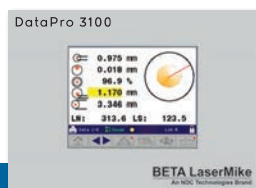


Solution*	Gauge Inputs			Config. #
	AccuScan	TrueWall	TrueWall OD	
Diameter	D			-01
Hot/Cold Diameter; Shrink Compensation	B/D			-02
Core/Cold Diameter; Wall Calculation	A/D			-10
Core/Hot/Cold Diameter; Shrink Compensation; Wall Calculation	A/B/D			-12
Wall & Eccentricity		C		-20
Diameter; Wall & Eccentricity		C	C	-21
Diameter; Wall & Eccentricity	D	C		-22
Hot/Cold Diameter, Wall & Eccentricity; Shrink Compensation	D	C	C	-23

* LN Series lump & neck detector and LaserSpeed Pro length & speed gauge can be added to any configuration.

Process Control and Data Management

Our control and data management systems, when coupled with BETA LaserMike gauges and a versatile set of I/O capabilities, enable you to produce superior quality products by providing all the information and control capability you need to keep your production process running smoothly. BETA LaserMike control systems aid and improve the manufacturing process at every step, from the start-up period to the production period to the final quality checks.



Controller Models	DataPro 5000	DataPro 3100	DataPro 1000
Display	48.3 cm (19 in) Touch screen	14.5 cm (5.7 in) TFT touch screen	10.4 cm (4.1 in) Vacuum fluorescent
Gauge support	AccuScan 5000/6000 TrueWall CapScan CenterScan 2010 LN3000 LaserSpeed Pro Preheater/Smart Temp	AccuScan 5000/6000 LaserSpeed Pro TrueWall *Supports legacy gauges	AccuScan 5000 LaserSpeed Pro *Supports legacy gauges
Max gauges	Not Limited	2	1
Applications	Inner/Outer Diameter Wall & Concentricity Capacitance Eccentricity Fault Detection Length & Speed Preheating	Inner/Outer Diameter Wall & Concentricity Length & Speed	Outer Diameter Length & Speed
Cross-section display	Yes (multi-layer possible)	Yes (1 layer only)	No
Control loops	2	1	1
Auto setpoint control	Yes	No	No
SPC	8 graphical channels	2 numeric channels	1 numeric channel
Trend charts	5 channels	Yes (ultrasonic)	No
Printed reports	Yes (custom)	Yes (fixed)	Yes (fixed)
Data logging	20 channels	No	No
Serial ports	RS-232 & USB	RS-232 (2)	RS-232
Ethernet port	Yes (10/100 Base T) & Data Output	Configuration & Data Output	Data Output
Alarming	Yes	Yes	Yes
Product recipes	Yes (unlimited)	Yes (100)	No
Security	10 levels (custom)	3 levels (operator, service)	2 levels
I/O	Digital, analog, relay contacts, serial, USB/Network printer, Ethernet, VGA	Digital, analog, relay contacts, serial, USB printer, Ethernet	Digital, analog, relay contacts, serial, USB printer, Ethernet
Interfaces with PLC	Yes (RS-232)	Measurement Data	No

Real-Time Monitoring of Process & Product Quality Data



<< **Line Overview Page** provides a complete line overview along with relevant process data. Can be easily customized to meet your unique data set requirements. Dashboard-style view lets you prioritize efforts to continuously enhance the quality of your product and overall process.

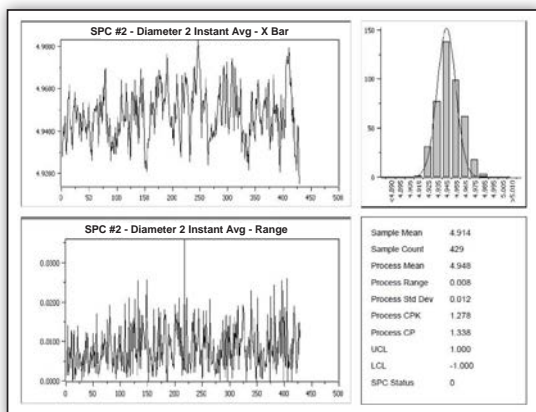
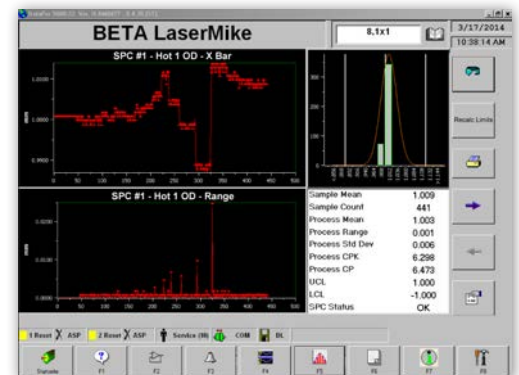
Eccentricity View enables you to accurately monitor the eccentricity of wire and cable conductors during extrusion and insulation processes to reduce start-up time, avoid material give-away/waste, and improve product quality.



<< **Real-Time Trend Charts** allow you to easily select the data set you want to track and record with just the touch of a fingertip.



SPC Data Analysis feature collects and displays process data on 8 individual channels. Customized SPC calculations help you to improve product trends and the effectiveness of your quality system documentation for customer and auditor compliance efforts.



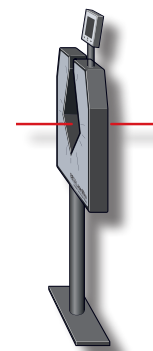
<< **Reporting** feature lets you create and print custom error and SPC reports with graphical distribution to document product and process quality. Reports can be triggered manually or automatically, for example, via a production event and stored electronically or printed to hard copy. You can also generate spool reports with critical cable measurement data.

```
*DataPro 5000 Datalog File
Started 14-Mar-14
15:15:01
*DataLog_Line35_14-Mar-14
*Time      OD1      OVALITY1
15:15:31   1.026    0.124
15:16:01   1.027    0.125
15:16:31   1.036    0.134
15:17:01   1.040    0.135
15:17:31   1.035    0.134
15:18:01   1.039    0.137
15:18:31   1.041    0.136
15:19:01   1.029    0.127
15:19:31   1.021    0.119
15:20:01   1.030    0.128
15:20:31   1.029    0.127
```

<< **Data Logging** feature allows you to record and analyze process data without having to stand near and observe the extrusion line. Data can be logged manually or automatically to a local drive at the BETA LaserMike process controller or to a network drive away from the plant floor. The time interval can be adjusted from 1 second to 10 minutes.

Diameter and Ovality Measurement

The BETA LaserMike AccuScan Series is the premier diameter and ovality gauge of choice for manufacturers looking to produce higher quality products in less time and with less waste. AccuScan gauges perform ultra-fast, precise and reliable diameter and ovality measurements in an intelligent head to instantly detect product changes and effectively communicate these measurements to a host system or controller. Available in dual- and four-axis configurations, AccuScan make sure your wire and cable products meet the tightest design and quality specifications.



AccuScan Advantages

- AS6000 Series gauges provide the most comprehensive measurement coverage and highest ovality accuracy over three-axis gauges
- AS6000/5000 gauges perform high-speed measurements at 2400 scans/sec/axis, offering the highest single-scan accuracy in the industry
- Glass logic option enables you to measure transparent/translucent products
- STAC logic option provides the fast, accurate measurements of stranded, twisted, armoured or corrugated products
- Increase up-time and reduce maintenance costs with built-in lens air purge and IP65 (NEMA 4) construction



	AS 6000 Series	AS 5000 Series
Scanning Axes	4-Axis	Dual-Axis
OD Range	0.1 to 50 mm (0.004 to 2.00 in.)	0.1 to 80 mm (0.004 to 3.15 in.)
Gate Size	AS6012: 16 mm (0.63 in.) AS6050: 60 mm (2.36 in.)	16 to 108 mm (0.63 to 4.25 in.)
Accuracy	to ± 0.0005 mm (± 0.000020 in.) ¹	to ± 0.0005 mm (± 0.000020 in.) ^{1,2}
Communications	RS-232, EtherNet/IP, Ethernet TCP/IP, DeviceNet, Profinet, Profibus, CANOpen and other protocols	

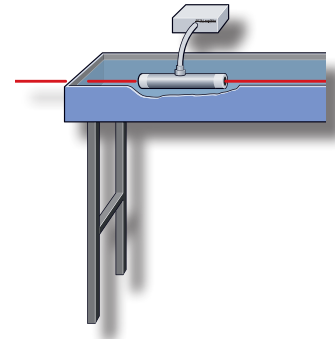
¹ $\pm 0.02\%$ of product size.

² 0.01% of product size for 80 mm gauges.

Capacitance Measurement

As Datacom cable manufacturers face more challenging specifications for Structural Return Loss, Near- and Far-end Cross Talk and Attenuation, it's more important than ever to catch problems as they develop – not after the fact. Because downgrading or rejecting finished cable robs you of productivity and profitability. That's why correlating in-process and post-process measurement results accurately and consistently is so important.

The CapScan 2000 gauging system solves this problem by enabling you to correlate in-process and post-process measurements through on-line, high-speed measurement of cable capacitance. A combination of low signal-to-noise ratio and proprietary, drift-free electronics enable the system to deliver highly accurate and consistent measurements.



CapScan Advantages

- Delivers remarkable measurement accuracy in wet or dry installations at line speeds up to 3000 m/min (9840 ft./min)
- Enhances measurement precision with its self-balancing bridge and automatic gain/self-calibration features
- Performs FFT/SRL analysis to eliminate costly SRL failures with Datacom, Coaxial and any high-frequency cables



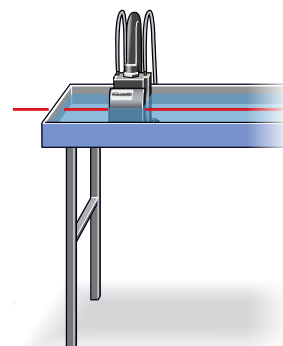
	KG2008	KG2016	KG2025
OD Range	0.1 to 8 mm (0.004 to 0.32 in.)	0.1 to 16 mm (0.004 to 0.63 in.)	0.1 to 25 mm (0.004 to 0.98 in.)
Accuracy	Zero – ± 0.1 pF/m; gain – $\pm 0.2\%$	Zero – ± 0.1 pF/m; gain – $\pm 0.2\%$	Zero – ± 0.1 pF/m; gain – $\pm 0.2\%$
Short Electrode Length	66.6 mm (2.62 in.)	100 mm (3.94 in.)	100 mm (3.94 in.)
Long Electrode Length	100 mm (3.94 in.)	150 mm (5.90 in.)	150 mm (5.90 in.)
Measurement Range	0 to 400 pF/m (0 to 120 pF/ft.)		
Resolution	0.1 pF/m (0.01 pF/ft. option for averaging over 0.5 sec); 0.3 pF/m (0.03 pF/ft. option with averaging over 0.5 sec)		
Communications	Flexible connectivity via Profibus, DeviceNet, RS-232 and Analog		

Note: Not CE compliant. Not available for sale in Europe.

Wall and Concentricity Measurement

The BETA LaserMike TrueWall system is the industry's leading ultrasonic wall thickness and concentricity measurement system. Its high performance and outstanding productivity features make it the preferred solution for the measurement of extruded insulation and jackets on wire and cable. This allows wire and cable makers to increase production efficiencies and reduce material costs by better controlling product wall thickness and concentricity. Precisely measure and control the insulation over metal cores, jackets on Cat cables, multi-layer jackets, loose tube cable and more.

Depending on the application, UltraScan Pro gauges are available to cover various product diameter and wall thickness sizes in both fixed and adjustable transducer distance styles. Each supports multiple transducers and is capable of measuring several layers.

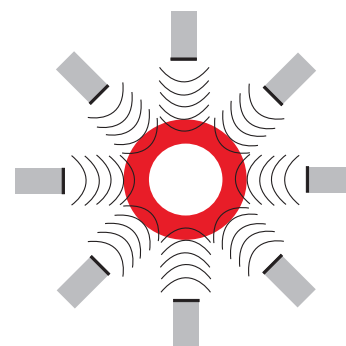


TrueWall Advantages

- Powerful and unique TrueWall digital signal processor with patented "Snap Technology" provides fully automatic setup and calibration, making operation quick and simple
- Versatile Ethernet connectivity, multiple host connections, extended baud rates, built-in web server and more
- Find short-term wall variations with high-speed tolerance checking option
- Other options include diameter and ovality measurement, trough height stand and small trough for mounting outside existing cooling troughs



	Model 1012
OD Range	0.25 to 12 mm (0.01 to 0.5 in.)
Wall Thickness	10 MHz: 0.254 mm (0.010 in.) 20 MHz: 0.127 mm (0.005 in.)
Gauge Throat	20 mm (0.78 in.)
Transducers	4 or 8
Communications	ModBus TCP, EtherNet/IP, Profinet IO, Profibus, DeviceNet, RS-232



NEW! Embedded Webserver

TrueWall's new webserver provides setup and configuration of the system, displays centering, wall thickness, eccentricity, and diameter. This provides all the functionality a line operator needs for quick setup and monitoring of the manufacturing process. An additional benefit is it comes without the need for extra, costly hardware. Integration of external OD measurements, line speed, and other digital inputs/outputs create powerful capabilities.

The result is the ability to set and control the quality of product, minimize cost, and integrate the system easily with production instrumentation and equipment. Echo waveforms also can be monitored, and settings optimized for successful measurements on the most difficult to measure products. Recipe, settings configuration, and internal diagnostics capability ensure commissioning and startup of equipment is quick and easy. The WebServer eliminates the need for a PC-based control application or separate controller, enhancing TrueWall's ease of use and lowering its total cost of ownership.

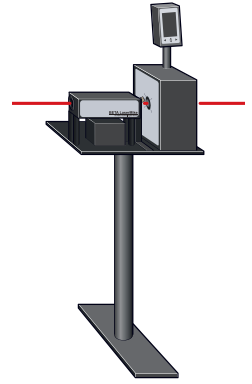
NEW!
Configuration/Operation
via **Embedded
Webserver**



For optimum resolution, the recommended monitor sizes are: 20 inch (1600 x 900 display) in landscape mode or 19 inch (1280 x 1024 display).

Eccentricity Measurement

When the core of insulated wire and cable moves off-center, your product quality suffers. And with the increasingly tighter tolerances demanded by users, unchecked wire or cable eccentricity can leave you with reels of unusable product. The CenterScan 2010 measurement system accurately and reliably monitors the diameter of insulated wire and cable, and eccentricity of conductors, during extrusion and insulation processes. This intelligent gauge never touches your product and enables you to run higher line speeds and produce more finished wire and cable in less time while maintaining the highest level of measurement accuracy.



CenterScan Advantages

- Comes factory calibrated and ready to work, and Nordson provides full commissioning support*
- Provides versatile integration and interference-free service at nearly any process location thanks to its small footprint, flexible communications options, and noise-resistant electronics
- Easy to learn and use so operators become productive fast
- Increases up-time and reduce maintenance costs with a built-in optics air purge and IP65 (NEMA 4) construction

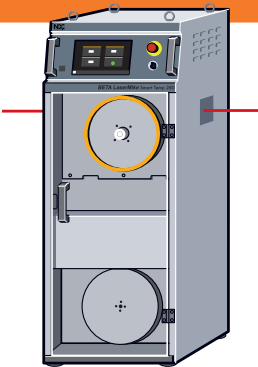
*Contact your Nordson representative for commissioning details.

CenterScan 2010	
Measurement Range	0.1 to 10 mm (0.004 to 0.40 in.)
Gate Size	14 mm (0.55 in.)
Resolution	0.00001 mm (0.0000004 in.)
Accuracy	±0.0005mm (±0.000020 in.)
Measurement Speed	1200 scans/sec/axis
Communications	Standard – RS-232; Optional – Profibus, DeviceNet, EtherNet/IP, CANopen
Power	24 VDC, 2.3 A
Environment	5 to 50° C (41 to 122° F) ambient operating; -20 to 50° C (-4 to 122° F) ambient storage
Weight	12.3 kg (27 lbs.)
Dimensions (L x H x W)	476 x 420 x 291 mm (18.76 x 16.5 x 11.5 in.)

Wire Preheating

Quality communications cable depends on properly applied insulation – and this depends on cable wire that is correctly heated during extrusion. But heating wire to the ideal temperature can be easier said than done. Insufficiently heating wire with a low-frequency (50/60 Hz) heat cycle can create hot and cold spots or thermal shock (cracks) in the insulation. And overheating wire can make it impossible for the insulation to adhere properly. Either situation reduces the performance of the cable, possibly disqualifying it for service.

The new **Smart Temp** preheating system lets you avoid these production defects. As wire passes through to extrusion, Smart Temp uses a high-frequency heating process to apply the exact number of cycles needed for correct wire temperature, uniform wire heating – and outstanding insulation adhesion!



Smart Temp Advantages

- Intuitive Control
- Multi-Directional Line Heating
- Time Saving Range Selection
- Optional Out-Going Wire Temperature Measurement

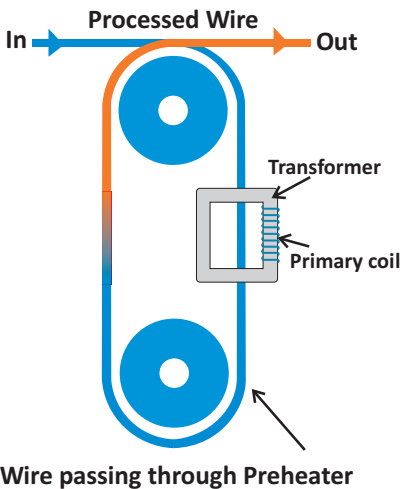
16KVA 190°C SMART TEMP 280	
Wire Size	0.45 to 2.8 mm (0.02 to 0.11 in.); 25 to 9 AWG; stranded wire to 6 mm ²
Maximum Line Speed	2500 m/min. (8200 ft./min.)
Pulley Size	2 x 280 mm (2 x 11 in.)
Power Output	16 kVA
Max Loop Voltage	40 V
Maximum Wire Temperature	350°C (662°F)

The temperature of the metal core is key to cable insulation properties. If hot plastic is extruded onto a cold wire, thermal shock can occur, creating cracks in the insulation which reduce the electrical and mechanical performance of the wire.

If the wire is too hot, however, the insulation will not flow around it correctly, and will not adhere to its surface.

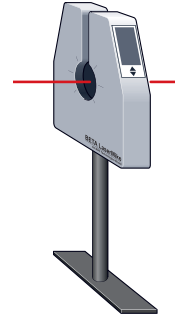
These issues can adversely affect the line tension as the wire is pulled through the extruder, and will influence the electrical performance of the product, especially the capacitance.

Smart Temp produces a large current to preheat the wire, creating a uniform increase in temperature, delivering optimum performance and high-quality cable.



Fault Detection Systems

The LN3000 Series accurately detects short-term faults (lumps and neckdowns) in the diameter of cables before they become costly production issues. These three-axis scanning systems combine comprehensive surface monitoring, high-speed circuitry and solid-state infrared lighting to detect product flaws as small as 0.02 mm (± 0.0008 in.) – at line speeds up to 3000 m/min (9840 ft./min)! You get ultra-accurate, real-time fault reporting so you can come as close as possible to fault-free cable production.

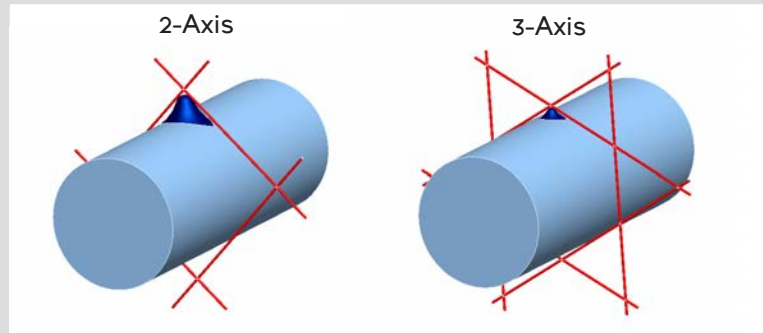


LN3000 Series Advantages

- Tracks and reports all critical surface fault data – height, length, number, and location – to improve quality control
- Enhances its own performance with built-in diagnostics for assessing scanning signal strength, optics cleanliness and other key aspects of system operations
- Comes with many different communications options to simplify connecting with PLCs and PCs
- Accepts a range of inputs, including length encoder, line start/stop, clear faults, and reel change, for better production control

2-Axis vs 3-Axis Measurement

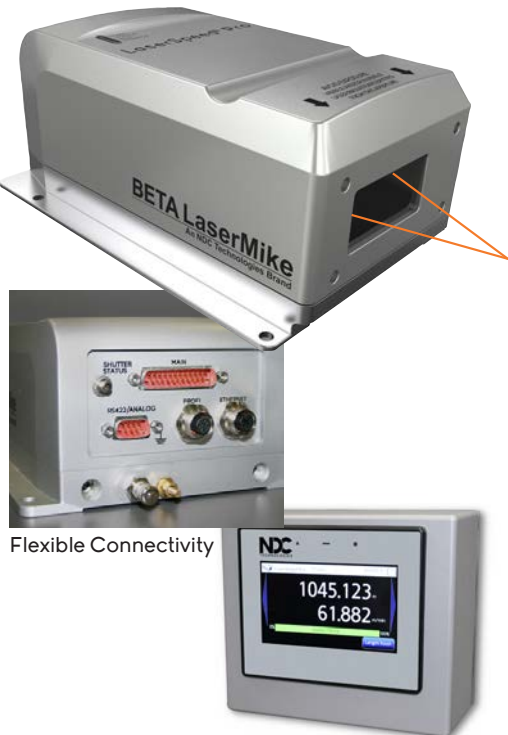
The new three-axis LN Series detector provides a higher degree of coverage around the product's circumference compared to two-axis gauges. These gauges precisely detect the smallest of flaws at higher production line speeds.



	LN3015	LN3050
Product Diameter	0.02 to 15 mm (0.0008 to 0.6 in.)	0.04 to 40 mm (0.0016 to 1.57 in.)
Gate Size	18 mm (0.71 in.)	48 mm (1.89 in.)
Minimum Detectable Flaw Height	0.02 mm (0.0008 in.)	0.05 mm (0.0020 in.)
Accuracy	Greater of either ± 0.011 mm (± 0.0004 in.) or $\pm 3\%$ max flaw height	Greater of either ± 0.018 mm (± 0.0007 in.) or $\pm 3\%$ max flaw height
Maximum Line Speed	3000 m/min (9842 ft/min)	
Scan Rate	250,000 scans/sec/axis	
Communications	RS-232, telnet, DeviceNet, Ethernet, EtherNet/IP, Profinet, Profibus (optional)	

Non-Contact Length and Speed Measurement

The BETA LaserMike LaserSpeed Pro gauge is the industry's leading non-contact length and speed gauge, offering numerous advantages over mechanical contact encoders and competing optical measurement technologies. Among the first non-contact measuring systems on the market over 30 years ago, LaserSpeed Pro combines advanced optics with an ultra-stable laser diode system to deliver **better than $\pm 0.03\%$ accuracy with $\pm 0.02\%$ repeatability for measurements on the most difficult surfaces**. Over 12,000 gauges installed worldwide.



Flexible Connectivity

The optional DP700 Plus display shows LaserSpeed length, velocity, quality factor, and gauge status, and lets you configure gauge and process settings.

LaserSpeed Pro Advantages

- Non-contact measurement ensures no marking or damage of the product
- **LaserSpeed Pro M Series** precisely measures length and speed of unguided, bouncing products
- Measures forward, reverse and down to true zero speed on all product types regardless of shape, color and texture
- Versatile Ethernet connectivity supports Industry 4.0 standards
- LaserTrak Software suite provides complete digital control over setup and operation
- Fast baud rates, multiple host connections and real-time clock for synching gauges with networked devices for unsurpassed communications performance
- Advanced, ultra-stable laser diode, backed by 3-year warranty, doubles lifetime of conventional diodes and provides longest service life in the industry!
- **2-Year product warranty** on all other LaserSpeed Pro product components



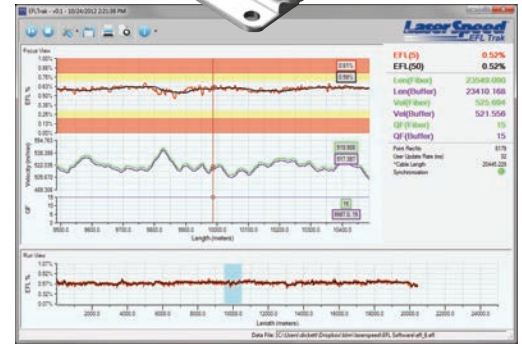
Safety Enclosure

	4500 Series	8500 Series	9500 Series
Standoff Distance	100 mm (4.0 in.) to 600 mm (24 in.)	300 mm (12.0 in.) to 1000 mm (39.4 in.)	300 mm (12.0 in.) to 3000 mm (39.4 in.)
Speed Range	0.2 to 8000 m/min (0.7 to 26,200 ft./min)	0.4 to 12000 m/min (1.3 to 39,400 ft./min)	0..±4000 to 0..±20,000 m/min (0..±13100 to 0..±65,600 ft./min)
Measurement Depth of Field	15 mm (0.6 in.) to 50 mm (2.0 in.)	35 mm (1.4 in.) to 100 mm (4.0 in.)	35 mm (1.4 in.) to 200 mm (8.0 in.)
Accuracy	< $\pm 0.03\%$ of reading		
Repeatability	$\pm 0.02\%$		
Fieldbus Connectivity	ModBus TCP, Ethernet/IP, Profinet IO, Profibus DP		
Outputs	Full RS-422 compatible quadrature or voltage scaleable pulse outputs to the existing control system and RS-422 and RS-232 serial outputs. Pulses per unit (e.g., m/min.) are configurable. Analog output.		
Options	Air Wipe, Quick Change Window, Air Purge, Environmental Housings, Adjustable Mounting Bracket, Safety Stand, DP700 Touch-Screen Display		

Excess Fiber Length Measurement

Successfully manufacturing loose tube and fiber cable requires incredible accuracy. If the right fiber-to-jacket (EFL) ratio is not maintained and cable leaves the factory with excess fiber lengths, optical and mechanical problems are almost certain to follow. But verifying the EFL ratio by conventional means is typically messy and time-consuming. Cable makers who have to repeat this process too often in order to maintain quality can find themselves falling short of product delivery deadlines.

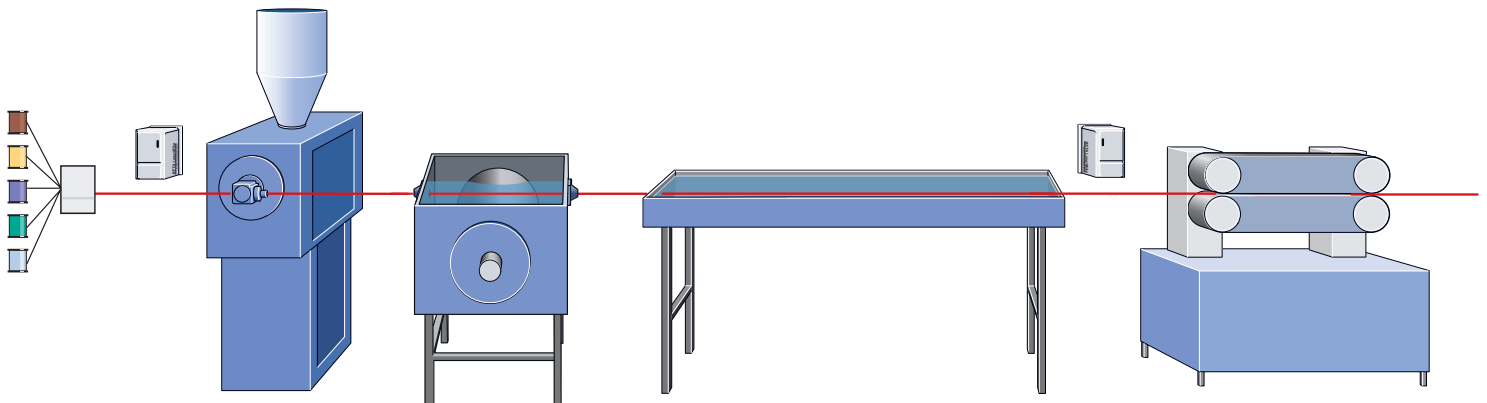
The BETA LaserMike EFL Pro Measurement System provides an effective on-line solution for always maintaining the proper EFL ratio. Consisting of two LaserSpeed Pro gauges and the BETA LaserMike EFLTrak™ software, EFL Pro measures the EFL ratio with 0.01% (0.1 per mil) precision during jacketing – and measures it again as cable passes to the capstan. Any readings exceeding tolerance cause EFL Pro to issue an immediate alert so operators can respond to correct the situation. You get exceptional EFL ratio control for exceptional fiber cable quality.



EFL Control/Monitor Screen Shot

EFL Pro Advantages

- Monitors EFL ratios in real-time, eliminating inefficient manual EFL ratio calculations
- Use SPC to reduce process variations and improve product quality
- Supports operating efficiency with its user friendly GUI; intuitive system configuration tools; and versatile EFL monitoring, data logging and reporting capabilities
- Stores an unlimited number of production recipes for fast, easy production setup
- Permits real-time remote monitoring of EFL operations via a PLC or HMI using the ModBus TCP protocol
- Provides expanded Ethernet communications capabilities for ease of integration into production networks



Off-Line Diameter and Ovality Measurements

BenchMike Pro is the next evolution of the industry's leading off-line diameter and ovality measurement system with thousands of gauges installed worldwide. The foremost manufacturers rely on BenchMike Pro's fast measurements, $\pm 0.9 \mu\text{m}$ accuracy and $\pm 0.25 \mu\text{m}$ repeatability to help them deliver the superior-quality products their customers demand.

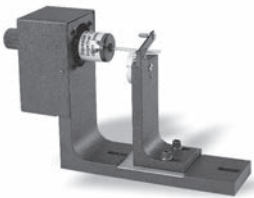
In the lab or on the plant floor, BenchMike Pro is ready for service under Industry 4.0. It offers expanded connectivity, communication, and control features that increase performance capabilities.

A variety of modular fixtures are available for any gauging need to properly hold workpieces.

BenchMike Advantages

- Uses auto-compensation to maintain accuracy throughout the measurement range and to adjust for thermal expansion
- Employs tolerance checking for quickly alerting operators to out-of-tolerance conditions
- Improves efficiency with a library of stored recipes that operators can use for quickly switching products
- Accepts a range of part-holding fixtures for consistent presentation of the cable samples to be measured
- Comes with many different communications options for more flexible connection to centralized production networks, PCs, data devices and CUPS-supported USB printers
- Includes a large touchscreen display to improve measurement data viewing

Auto-Rotating Chuck Fixture



For precision OD measurements, simply place your product in the rotary chuck fixture and BenchMike Pro will instantly measure it.

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.



2/GAD5008-0042		F02	Go / Stop
SIZE	13.93673		
AVERAGE	13.93664		Send Data
DIFF/TIR	0.00075		
COUNT	51		Clear Data
Setup	10/12/2017 14:45	OK	mm

Data Display

System		Fixture Position	Go / Stop
Library	Non/Lim/Tol	Average...	
Settings	Part Count...	Count...	
Feature	Position...	Diff / TIR...	
F01-Meas	Size...	Maximum...	
F01-Data	Size Offset...	Minimum...	
Save	SQC	Std Dev...	
	Thermal Comp		

Pop-Up Menus

8/P/N 298058		Go / Stop
Select Library		
5 / P/N 67483		
6 / P/N 2349 rev. b		
7 / P/N 499599		
8 / P/N 298058		
OK	8	Cancel
Setup	3/13/2016 10:31p	OK

Library (Part) Selection

Your Information Here		Sample Report
Type 2, Inches (in)		10/16/2017 10:29
Sample #1	0.31588	
Sample #2	0.31588	
Sample #3	0.31588	
Sample #4	0.31587	
Sample #5	0.31588	
Sample #6	0.31588	
Sample #7	0.31587	
Sample #8	0.31587	
Sample #9	0.31587	
Sample #10	0.31587	
Your Information Here		Batch Report
Type 2, Inches (in)		10/16/2017 10:2
Average	0.31587	
DIFF/TIR	0.00001	
Maximum	0.31588	
Minimum	0.31587	
Standard Deviation	0.000005	
Undersize Samples	0	
Oversize Samples	0	
Total Number of Samples	10	

Printed Reports

	Model 2025	Model 2050
Measurement Range	0.100 to 25.4 mm (0.004 to 1.0 in.)	0.254 to 50 mm (0.10 to 2.0 in.)
Accuracy	$\pm 0.9 \mu\text{m}$ ($\pm 0.000036 \text{ in.}$)	$\pm 1.5 \mu\text{m}$ ($\pm 0.000060 \text{ in.}$)
Communications	Serial (DB9 and USB), USB printer port, Ethernet, Digital I/O, Fixture port, Scan output BNC	

Another Option for On-Line Part Measurement

The AccuNet Continuous software is an economical diameter and ovality measurement solution. It provides an easy to use Supervisory Networking for up to 4 gauges. It is designed to interface to BETA LaserMike single-, dual-, or quad-plane laser gauges.

- Centralized location for data acquisition and monitoring makes it easy for operators to control an entire work cell
- Quick, easy setup
- Capture instantaneous “go/no go” measurements
- Set up nominal and either bilateral or symmetric tolerances
- Trend charts
- Perform data logging
- Use unlimited recipes
- Develop printed reports

Applications:

- Wire
- Bar
- Rods
- Shafts

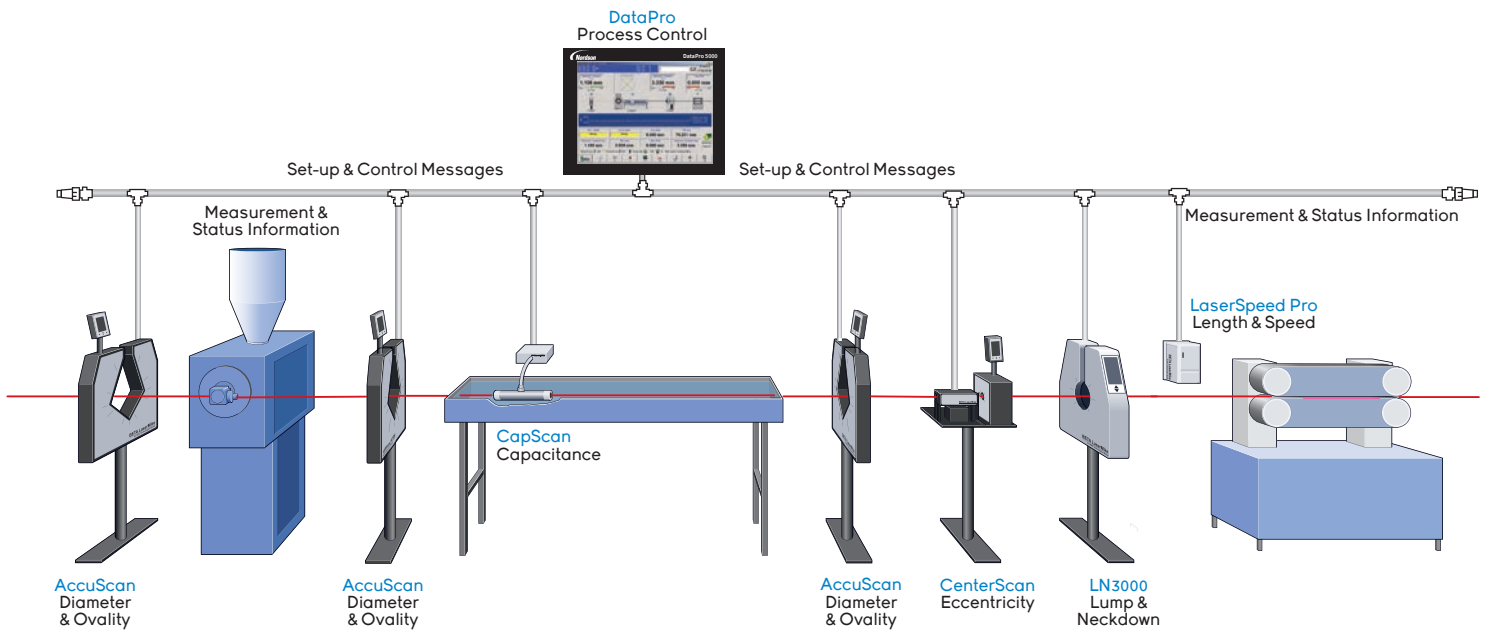


Connect Every Nordson Gauge. Anywhere. Anytime.

Optimizing the performance of your process can only occur when both those on the production floor and in management can see the right data at the right time and act on it. This is a truth that remains consistent even as the details of various processes and applications change. From simple systems or complex production processes, the ability to connect measurement systems, monitor process performance and control production operations is critical to operational success.

This is why Nordson Measurement & Control offers a comprehensive array of communication protocols with our BETA LaserMike gauges to address the varying requirements found within the production process. With a full range of communication capabilities, our gauges give organizations the ability to select exactly the functionality they need to effectively connect, monitor and control production processes.

Whether installing new entire BETA LaserMike measurement system solution or extending the measurement capabilities of your existing equipment, Nordson's range of communications provide the path toward seamless system integration.



Connect Directly to Your Equipment

Various Modern Communications Supported*

- ▶ PLC
- ▶ OEM Equipment

*See the specific BETA LaserMike gauge for details.

Notes:

[illegible]

Notes:

[illegible]

[illegible]

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 Nordson product.

Visit myNDC service cloud at ndc.custhelp.com.



For questions or support go to: <https://ndc.custhelp.com/>

In line with its policy of continuous improvement, Nordson reserves the right to revise or replace its products or services without prior notice. The information contained in this document may not represent the latest specification and is for indicative purposes only.

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