



High-Precision 3-Axis Flaw Detection

Lump & Neckdown Detector Series

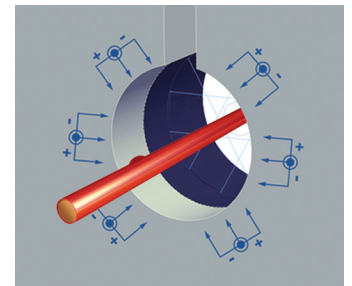
for Continuous Quality-Driven Manufacturing

Three-Axis Advantages:

- More precise detection of flaws
- More built-in communications for easy integration
- Capture, track, and report critical data
- Monitor gauge performance with built-in diagnostics
- Visualize fault and gauge statuses
- Synchronize with reel changes
- Performs in toughest environments
- User-friendly operator interface

World-Class Flaw Detection for World-Class Manufacturers

For nearly 50 years, Beta LaserMike has been delivering high-precision measurement and control solutions to the world's leading manufacturers so they can produce the highest quality products with the highest efficiency. To help manufacturers quickly and reliably spot product flaws before they become costly production problems, Beta LaserMike offers its three-axis series of Lump and Neckdown Detectors to identify short-term faults in the diameter of products. Beta LaserMike's LN Detectors are self-contained instruments with fast response circuitry and solid-state infrared light sources that allow instant detection of changes in the product diameter. Measurements are made without making contact. The signal processing and intelligence is built into the gauge head and outputs can be taken straight from the LN Detector to trigger alarms (or mark devices) when flaws are detected.



BETA LaserMike
Measured by Commitment

Three-Axis LN Systems for Your Flaw Detection Needs

The new three-axis LN Series is the latest solution in fault detection from Beta LaserMike. These high-performance gauges provide more precise detection of short-term faults in the product diameter at higher line speeds than two-axis systems. The new LN Series uses three optical axes spaced at 60-degree intervals to deliver a higher degree of coverage around the product's circumference to instantly detect sudden changes in the surface.

There are two models: LN3015 and LN3040. The LN3015 can detect lump and neckdown flaw heights in products down to 0.02 mm. The LN3040 can detect flaw heights down to 0.05 mm. The LN3015 and LN3040 are designed to accommodate product diameters up to 15 mm and 40 mm, respectively.



LN3040 >>
Measures flaw height
down to 0.05 mm on
products up to 40 mm

LN3015 >>
Detects flaw height
down to 0.02 mm on
products up to 15 mm

Three-Axis LN3015/LN3040 Advantages:

- **More built-in communications for easy integration** – accept a range of inputs including length encoder, line start/stop, clear faults, and reel change. The LN3015 can be easily connected to a host PC or PLC using RS232, telnet, EtherNet/IP, Ethernet, DeviceNet, Profibus, and Profinet.
- **Capture, track, and report critical data** – capture important flaw process information and effectively report on height, length, number, and location.
- **Monitor gauge performance with built-in diagnostics** – ensure proper signal strength for each axis, maximize uptime with clean optics, and keep a close eye on other gauge performance.
- **Visualize fault and gauge statuses** – alert operators on lump and neckdown conditions or when the gauge is operational via color-coded status indicators.
- **Synchronize with reel changes** – accept signals from reel changers to clear system data and initialize for the next reel.
- **Performs in toughest environments** – benefit from long, reliable service with ruggedized and environmentally sealed metal housing designed to IP65 standards. Engineered to minimize light and dust contamination.
- **User-friendly operator interface** – no need to mount an external display. The new 3-axis LN Series is equipped with an ultra-bright, integrated display and operator interface for easy access to gauge functions and to view messages.

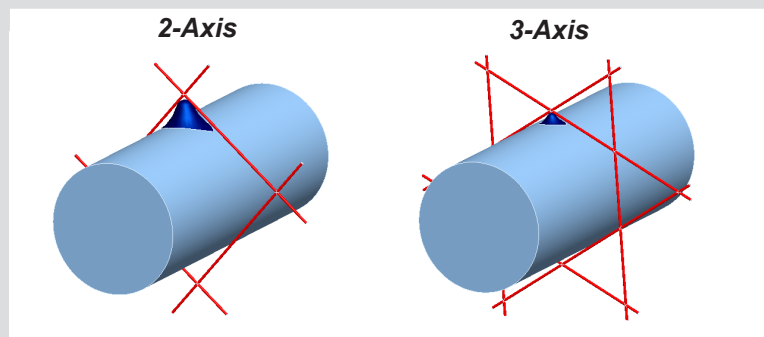
3-axis LN Series
inputs/outputs



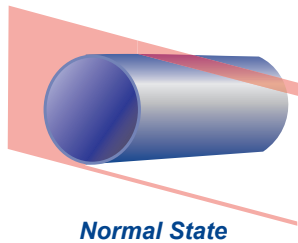
Ultra-Bright,
Integrated display

2-Axis vs 3-Axis Measurement

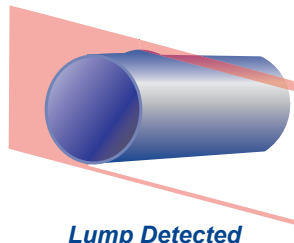
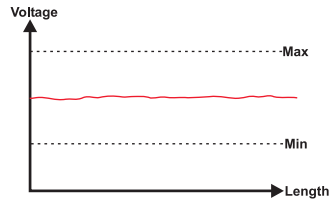
The new 3-axis LN Series detector provides a higher degree of coverage around the product's circumference compared to two-axis gauges. These gauges precisely detect the smallest of flaws at higher production line speeds.



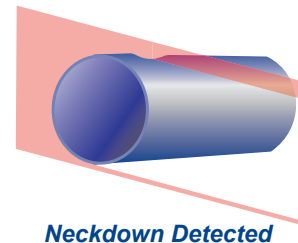
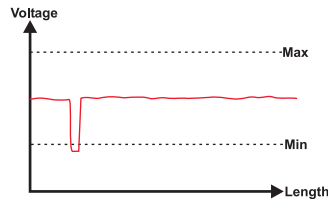
Infrared Fault Detection Principle



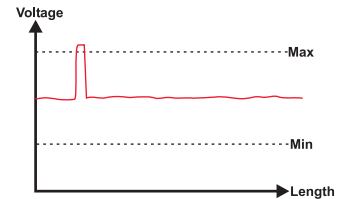
Normal State



Lump Detected



Neckdown Detected



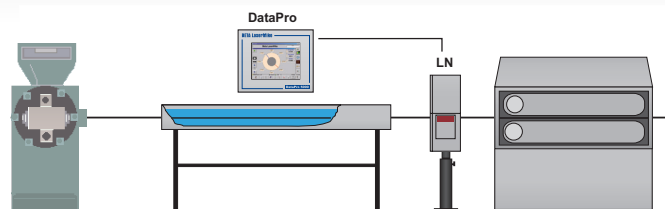
The infrared light source and optics inside the gauge head create a continuous "curtain" of light across the cable. The product blocks a certain amount of the light that registers a voltage level at the receiver. A short variation in the diameter changes the amount of light at the receiver. When the change in sensitivity to light passes a user-defined threshold, a fault is triggered. (Single-axis detection is shown to clearly illustrate the measurement principle.)

Applications & Accessories

Applications

Beta LaserMike's LN Series high-accuracy gauges can be used to detect flaws in a wide range of continuous cylindrical and tubular products including:

- Extruded wire and cable
- Insulated and jacketed wire and cable
- Extruded plastic and rubber hose, pipe, and tube
- And other extruded products of similar profile or configuration



Accessories

Process Control & Data Management Systems

Integrate the LN detectors with Beta LaserMike's DataPro 5000 controller to accurately manage the production process every step of the way for quality results. Visit www.betalasermike.com to learn more.



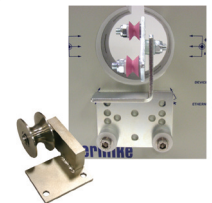
LED Light Stack

Equip your LN detectors with a Beta LaserMike light stack assembly that indicates the detection of lump and neckdown flaws or operational status of your gauge. Includes red, yellow, and green LED indicators, as well as an audio indicator. Operates on 24 VDC, 1.0A.



Product Guides

Keep your products centered and stable for accurate detection. Options include guides for small and large products.



Calibration Kit

Quickly and easily calibrate your gauge for optimum performance.



Height Stands

Enables you to adjust the exact height of your LN Detector.



Technical Data

Model	LN3015 -S (-P)	LN3040 -S (-P)
Number of axes	3	3
Product diameter	0.02-15 mm (0.0008-0.6 in.)	0.04-40 mm (0.0016-1.57 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.)
Maximum flaw height	2 mm (0.08 in.)	10 mm (0.40 in.)
Minimum flaw length	0.5 mm (0.02 in.)	0.5 mm (0.02 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 (9,842 ft/min.)	3000 m/min (9,842 ft/min.)
Communications		
Inputs	Length encoder line speed, line start, line stop, clear faults, reel change, 0-10V analog to set flaw threshold	Length encoder line speed, line start, line stop, clear faults, reel change, 0-10V analog to set flaw threshold
Outputs		
-Analog	3 Axes $\pm 10V$ (0 to full scale fault)	3 Axes $\pm 10V$ (0 to full scale fault)
-Serial Comm	Report: flaw height, flaw length, number of flaws, flaw location	Report: flaw height, flaw length, number of flaws, flaw location
-Relays	Lump, neckdown, gauge operational	Lump, neckdown, gauge operational
Interfaces		
-Standard	RS-232, telnet, DeviceNet, Ethernet, EtherNet/IP, Profinet	RS-232, telnet, DeviceNet, Ethernet, EtherNet/IP, Profinet
-Optional	Profibus	Profibus
Environmental and Physical Data		
Power requirements	24 VDC, 1.0 A	24 VDC, 1.0 A
Temperature range	5 to 50°C (41 to 122°F)	5 to 50°C (41 to 122°F)
Protection rating	IP65	IP65
Dust/Debris control	Airwipe	Airwipe
Weight	5.7 kg (12.5 lb)	13.6 kg (30.0 lb)
Dimensions	245 x 255 x 82 mm (9.6 x 10.0 x 3.2 in.)	393 x 420 x 108 mm (15.5 x 16.5 x 4.2 in.)

Published technical data and instructions are subject to change without notice.

BETA LaserMike

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