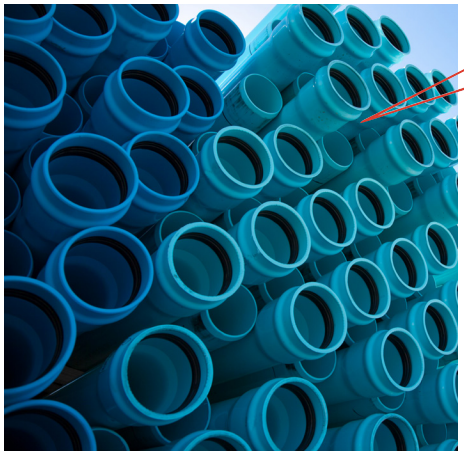
BETA LaserMike

An NDC Technologies Brand

NEW!
0.03% Accuracy
Improves Performance.
Delivers Additional
Savings.

LASERSPEED® LENGTH & SPEED GAUGE



Accurate, non-contact length and speed measurements with laser precision

- Measure products with the highest degree of accuracy and repeatability
- Perform direct, non-contact measurements on all types of products
- Direct replacement for contact encoders
- Realize the lowest total cost of ownership

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NDC TECHNOLOGIES

Non-Contact Speed & Length Gauge

A breakthrough in electro-optics design enables the Beta LaserMike LaserSpeed® Series gauges to produce highly accurate, non-contact speed and length measurements at a surprisingly low cost. To accomplish this, the LaserSpeed gauge use the Laser Doppler Velocimeter technology coupled with autocorrelation, the most advanced digital signal processing algorithm and new single-chip integrated circuit technology.

LaserSpeed gauges have no moving parts, use 100% solid-state digital technology and are permanently calibrated – resulting in significant time and money savings. With **±0.03% accuracy** and ±0.02% repeatability for the full velocity range, LaserSpeed gauges are ideal replacements for contact encoders which are prone to measurement errors caused by slippage, dirt build-up, and day-to-day wear problems.

With Zero Speed and Automatic Direction Measurement!

The LaserSpeed® Advantage

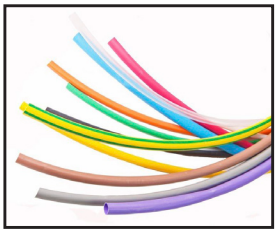
Benefits

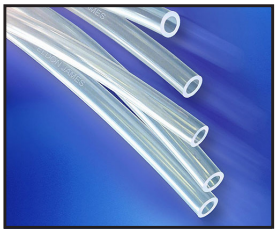
- High accuracy and repeatability
- Direct replacement for tachometers
- Non-contact length and speed measurement
  - -No slippage
  - -Non-marking
  - -Not affected by material surface or color
- No moving parts to wear out
- Permanently calibrated
- Low cost of ownership
- Compact, rugged industrial sensor operates on +24VDC
- "Smart" gauge—optics, electronics and I/O in the gauge

Range of Applications

LaserSpeed gauges are well suited for a range of pipe and tube applications, such as:

- Automotive
- Cable ducting
- Chemical pipelines
- Construction
- Consumer
- Drainage and sewer
- Gas lines
- Heating and cooling systems
- Heat Shrink
- Irrigation
- Medical Micro
- Process lines
- Sanitary
- Technical
- Water supply (hot and cold)
- And other pipe and tube applications





Laser Safety Information

The following safety features required to comply with the Bureau of Radiological Health Class IIIB laser requirements are included:

- Key-operated power switch on optional controller
- Laser indicator light on supply and laser
- Delayed laser startup-laser indicator light on prior to laser radiation
- Laser beam blocking device
- Interlock capability for remote shut-off

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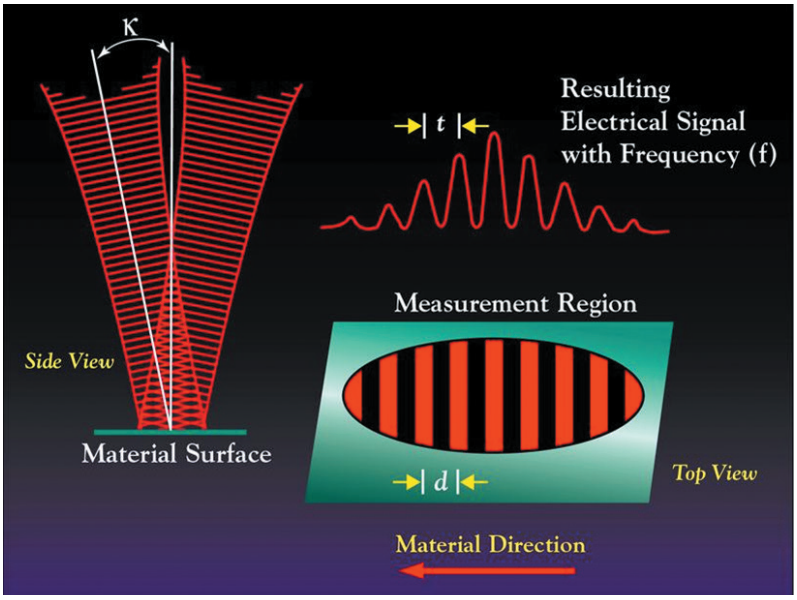
Technology

Contact Encoders vs. LaserSpeed

Contact encoders are typically used in manufacturing applications for length and speed measurement. However, there are a variety of problems with the use of contact length measurement that can be avoided by replacing encoders with LaserSpeed:

Typical Tachometer Problem:	LaserSpeed Solution:
1. Measurement errors and inaccuracy caused by product slippage, dirt build-up, day-to-day wear problems	Non-contact measurement ensures high accuracy and repeatability
2. High cost of ownership due to the need to regularly replace parts and recalibrate	Use of 100% solid-state digital technology with no moving parts ensures permanent calibration and low cost of ownership
3. Contact measurement can mark or damage the product	Non-contact measurement ensures no marking or damage of the product

Laser Doppler Velocimetry Principle



LaserSpeed uses dual-beam laser interferometer technology to measure product velocity (speed), which is integrated over time to measure length.

Fringe distance is a function of laser wavelength and beam angle:

$$d = \frac{\lambda}{2 \sin \kappa}$$

Velocity is distance over time:

$$v = \frac{d}{t}$$

Period is the inverse of frequency:

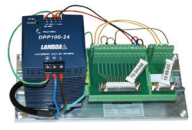
$$t = \frac{1}{f}$$

Velocity is integrated to find length:

$$L = \int_0^T v dt$$

Accessories

Airwipe and Quick-Change Window
Designed for dirty environments, the airwipe and quick change window help to ensure minimal downtime for cleaning.



Breakout Box/Power Supply
Provides easy access to all gauge inputs and outputs. Also provides power to the LaserSpeed.

Environmental Housing
Provides heavy-duty, double-sealed protection against hot and humid environments.

Accessory Case
A convenient case to hold the LaserSpeed and all accessories safe and secure.

DP700 Display NEW!
Displays LaserSpeed length, velocity, quality factor, and gauge status, and lets you configure gauge and process settings.

LaserSpeed 9000 MID
European certified length measurment system that meets MID (Measuring Instruments Directive) 2004/EG requirements.

DataPro 500
Indicator for simple LaserSpeed length and speed information.

	-301 (LS4000 only)	-303	-306	-310
Standoff Distance	100 mm (4 in.)	300 mm (12 in.)	600 mm (24 in.)	1000 mm (39.4 in.)
Speed Range: LS4000	0.2 to 1700 m/min (0.7 to 5500 ft/min)	0.4 to 4000 m/min (1.3 to 13100 ft/min)	0.8 to 8000 m/min (2.6 to 26200 ft/min)	1.0 to 12000 m/min (3.2 to 39400 ft/min)
Speed Range: LS9000	-1700 to 1700 m/min (-5500 to 5500 ft/min)	-4000 to 4000 m/min (-13100 to 13100 ft/min)	-8000 to 8000 m/min (-26200 to 26200 ft/min)	-12000 to 12000 m/min (-39400 to 39400 ft/min)
Measurement Depth of Field	15 mm (0.6 in.)	35 mm (1.4 in.)	50 mm (2 in.)	75 mm (3.0 in.)

	LS4000-3	LS9000-3
Measurement Rate	>20000/s	100,000/s
Starting/ Ending Length Correction	- No	- Yes
Serial I/O	- RS-232	- RS-232 / RS-422
Data Available	- Speed, Length - Quality Factor, Status	- Speed, Length - Quality Factor, Status
Baud Rate	- 230K, 115K, 57.6K, 38.4K, 19.2K, 9.6K, 4.8K	- 230K, 115K, 57.6K, 38.4K, 19.2K, 9.6K, 4.8K
Status via Serial I/O or **Optional Ethernet**	- Laser at Temperature - Laser On - Shutter Open - Gauge Temperature	- Laser at Temperature - Laser Interlock - Shutter Position - Valid Measurements - Material Present - System Ready
Quadrature Pulse		
Output 1	- Opto isolated - Scaleable pulse amplitude (5-24 V) - Fixed at 1000 pulses/unit - 250 KHz max pulse rate	- Opto isolated - Scaleable pulse amplitude (5-24 V) - Selectable pulses/unit - 250 KHz max pulse rate
Output 2	- Scaleable pulse amplitude (5-24 V) - Selectable pulses/unit - 250 KHz max pulse rate	- RS-422 Drivers - Selectable pulses/unit - 5 MHz max pulse rate
Index pulse output	- Yes/programmable	- Yes/programmable
Gauge Power	24 VDC (±4 VDC) @ 1 Amp 50 mV ripple max	24 VDC (±4 VDC) @ 2.0 Amp 50 mV ripple max
Gauge Size	203 x 159 x 81 mm (8.0 x 6.3 x 3.2 in.)	203 x 159 x 95.2 mm (8.0 x 6.3 x 3.75 in.)
Gauge Weight	2.55 kg (5.6 lbs)	3.4 kg (7.5 lbs)
Temperature Range	-5 to 45° C (21 to 113° F)	- 5 to 45° C (21 to 113° F)
Output Rate	2 to 32 ms in 2 ms increments	1 to 2000 ms in 1 ms increments
Spot Size	3 x 5 mm (0.12 x 0.19 in.) For L Version: 1.75 x 5 mm (0.068 x 0.19 in.)	3 x 5 mm (0.12 x 0.19 in.) For -310: 3 x 7 mm (0.12 x 0.27 in.)

All LaserSpeed Gauges

Acceleration Rate	>500 m/s^2
Repeatability	±0.02%
Accuracy	±0.03% of reading
User Isolated Voltage	5 to 24 VDC (300 mA)
Relative Humidity	Non-condensing
Units of measure	Selectable
Speed	m/min, m/s, ft/min, ft/s, in/min, mm/sec, yards/in, yards/sec
Length	m, ft, in, yards
Analog Output	- 0-2 V - Velocity or quality factor

Cooling*	
Air	- Pressure: Less than 70 kPa (< 10 PSI) - Flow Rate: 50 l/min (2 SCFM) Typical
Water	- Pressure: Less than 207 kPa (< 30 PSI) - Flow Rate: 1.0 to 3.8 l/min (0.26 to 1 gpm) 1.5 l/m (0.4 gpm) Typical - Coolant Temp: 5 to 45° C (41 to 113° F)
Ethernet -Optional	- 10/100, UDP, TCP, Telnet - Speed, Length, Quality Factor, Status
Degree of Protection	IP67
Temperature Range	-5 to 45° C (21 to 113° F)

***For ambient temperatures beyond gauge specification.**

NDC Technologies is represented in over 60 countries worldwide. **www.laserspeedgauge.com**

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