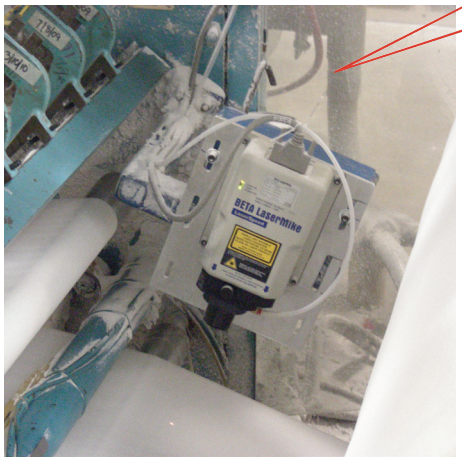
BETA LaserMike

An NDC Technologies Brand

LASERSPEED® LENGTH & SPEED GAUGE



Accurate, non-contact length and speed measurement 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

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, LaserSpeed gauges use the Beta LaserMike signal processing engine, the most advanced, digital signal processing algorithm, coupled with 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 better than ±0.03% accuracy, 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.

The LaserSpeed® Advantage

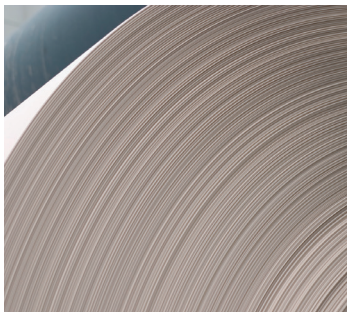
Benefits

- Better than ±0.03% accuracy and ±0.02% repeatability
- Permanently calibrated
- Direct replacement for encoders
- Non-contact length and speed measurement
  - -No slippage
  - -Non-marking
  - -Unaffected by material surface or color
- No moving parts to wear out
- 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 length and speed gauges are well suited for a range of applications, including:

- Paper and corrugated products
- Web products
- Non-woven products
- Plastic films and tapes
- Building materials
- Packaging
- Carpet
- Labeling
- Wire and cable
- Pipe and tube



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, humid and dirty 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. Includes Ethernet/IP and Modbus for Allen Bradly controls.

Adjustable Mounting Bracket
Enables you to adjust or tilt the gauge in three directions to achieve the desired measurement angle for your unique application.

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

Measured by Commitment

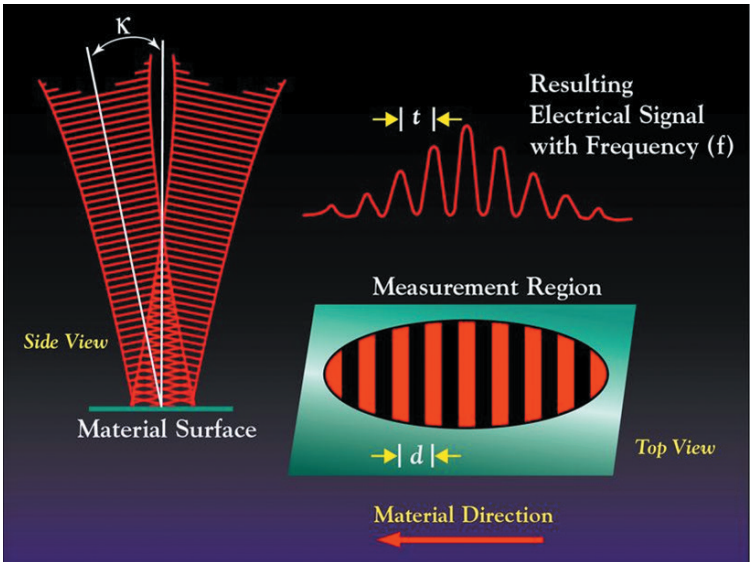
Technology

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:

Normal 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:

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

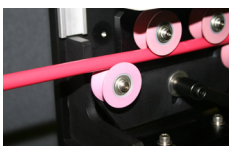
Velocity is integrated to find length:

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

LaserSpeed Safety Enclosure

NEW!

Designed to meet recognized industrial safety regulations, this enclosure protects operators from direct or incidental exposure to laser beams. Includes laser safety shutter control switch, linear height adjustment and position indicator, optional roller guides for products up to 50 mm, and optional height stands. Accommodates LS4000, LS8000, LS9000, and LS9000 MID gauges with either 300 or 600 mm stand-off distances.



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

	(LS4000 only) -301	-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/LS8000	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.)	100 mm (4.0 in.)

	LS4000-3 (Uni-directional)	**LS8000-3** (Discrete Parts)	**LS9000-3** (Zero Speed & Bi-directional)
Measurement Rate	20000/s	50,000/s	100,000/s
Starting/ Ending Length Correction	No	Yes	Yes
Serial I/O	RS-232	RS-232/RS-422	RS-232 / RS-422
Data Available	Speed, Length Quality Factor, Status	Speed, Length Quality Factor, Status	Speed, Length Quality Factor, Status
Baud Rate	115K, 230K, 19.2K, 38.4K, 57.6K 9.6K, 4.8K	115K, 230K, 19.2K, 38.4K, 57.6K 9.6K, 4.8K	115K, 230K, 19.2K, 38.4K, 57.6K 9.6K, 4.8K
Status via Serial I/O or Optional Ethernet	Laser at Temperature Laser Interlock Shutter Position Valid Measurements System Ready	Laser at Temperature Laser Interlock Shutter Position Valid Measurements Material Present System Ready	Laser at Temperature Laser Interlock Shutter Position Valid Measurements Material Present System Ready
Quadrature Pulse	Opto isolated	Opto isolated	Opto isolated
Output 1	Scaleable pulse amplitude (5-24 V) Fixed at 1000 pulses/unit 250 KHz max pulse rate	Scaleable pulse amplitude (5-24 V) Selectable pulses/unit 250 KHz max pulse rate	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	RS-422 Drivers Selectable pulses/unit 5 MHz max pulse rate
Index pulse output	Yes/programmable	Yes/programmable	Yes/programmable
Gauge Power	24 VDC (±4 VDC) @ 1.5 Amp 50 mV ripple max	24 VDC (±4 VDC) @ 1.5 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.)	203 x 159 x 95.2 mm (8.0 x 6.3 x 3.75 in.)
Gauge Weight	2.55 kg (5.6 lbs)	3.13 kg (6.9 lbs)	3.4 kg (7.5 lbs)
Temperature Range	5 to 45ºC (41 to 113ºF)	5 to 45ºC (41 to 113ºF)	5 to 45ºC (41 to 113ºF)
Output Rate	2 to 32 ms in 2 ms increments	1 to 2000 ms in 1 ms increments	1 to 2000 ms in 1 ms increments
Spot Size	3 x 5 mm 1.75 x 5 mm L Version	3 x 5 mm (310: 3 x 7 mm) 1.75 x 5 mm L Version	3 x 5 mm (310: 3 x 7 mm)

All LaserSpeed Gauges

Acceleration Rate	>500 m/s²
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 0-1 V 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

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

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

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Measured by Commitment