

LASER APPLICATIONS

LAP 



Laser Longometer

Non-contact Length and Speed Measurement

compact • robust • fast • accurate • slip free



Non-contact Measuring

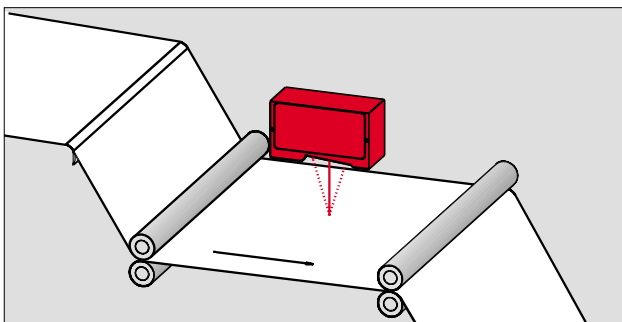
Non-contact measuring of product dimensions opens many new options and possibilities in production control. On the one hand it allows you to measure products that you were not previously able to measure, e.g., sticky, elastic, sterile or substances that would be damaged by surface contact. On the other hand, the modular concept of multiple LAP measurement systems provides for integration into the production line giving complete control in production and 100 % inspection.

Measuring Principle

Speed measurement is based on the Doppler effect. The measuring head projects two Laser beams at different angles, these converge on the designated measurement area of the material being measured.

As the Laser beams operate at the same light frequency they cause interference at the point at which they intersect. The light reflected from the material alters its frequency due to the Doppler effect, and a correlation can be drawn between the change in frequency and the speed of the object. The beams projected from different angles at the material will have different shifts in frequency. The photo-electric sensor takes the modulating frequency which is proportional to the speed of the passing material.

From the integration of velocity measurements over a period of time it is possible to establish the length of the object that is being measured.



Paper: Length and speed measurements for production control and optimization

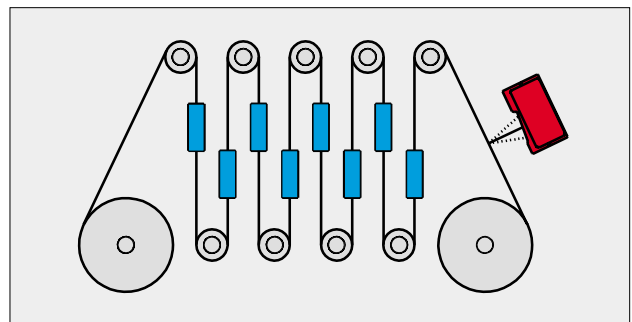
Applications

The Laser measurement system "Longometer" has been specially designed and developed for the daily harsh environments found in industry. It consists of thoroughly tested and very durable components. The Longometer would lend itself to applications in the metal, wood, paper, plastic, rubber, foam/polystyrene, synthetic fibres and textile products.

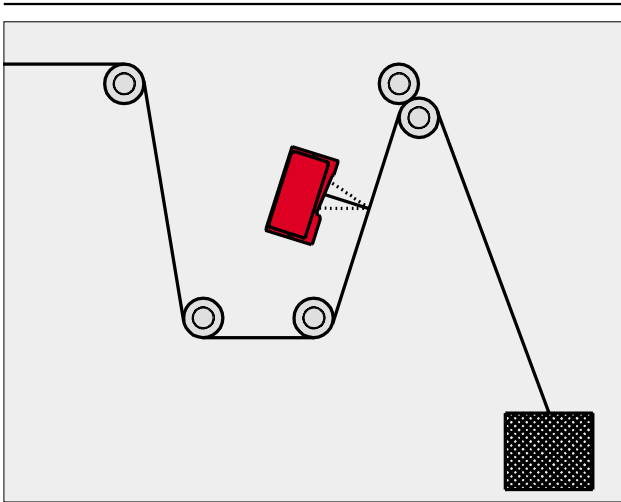
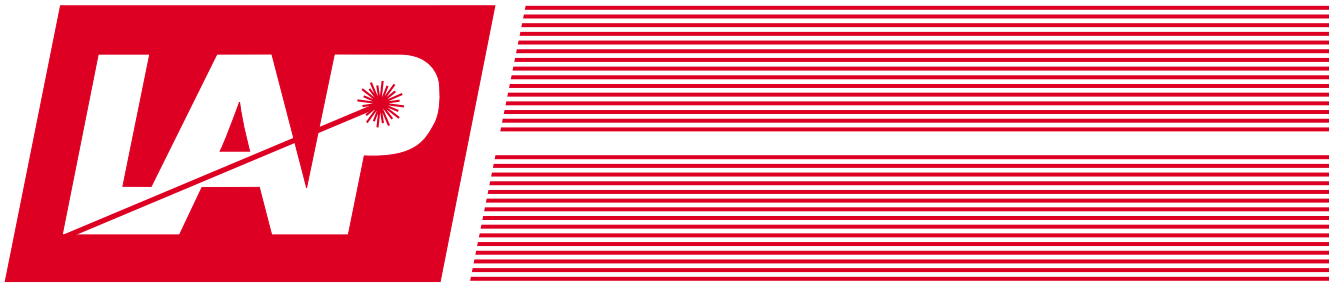
Non-contact and slip free length and speed measurements are independent of the material properties. For the detection optics to operate, approx. 4 % reflected Laser light is required.

The measurement system is directly employed in the production line. The measuring head is very compact and robust. It can be effortlessly integrated into existing systems. It lends itself to the measurement of many types of product including sheet metal, wire, cable, boards, strips, sheets, girders, cardboard, foil, glass wool, mineral wool and textiles. The control electronic circuits are housed in 19" rack or as an optional compact portable unit. With this option it becomes an inspection tool for servicing and maintenance. Equipment can be tested and production processes can be monitored for correct operation.

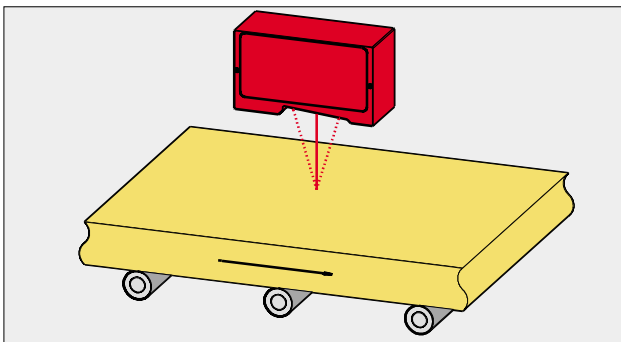
When installed, the gauge is set at a working position from the material being measured, the electronics are connected to a suitable electrical supply and switched on. Measured length and/or speed are shown in the display and transmitted via interface.



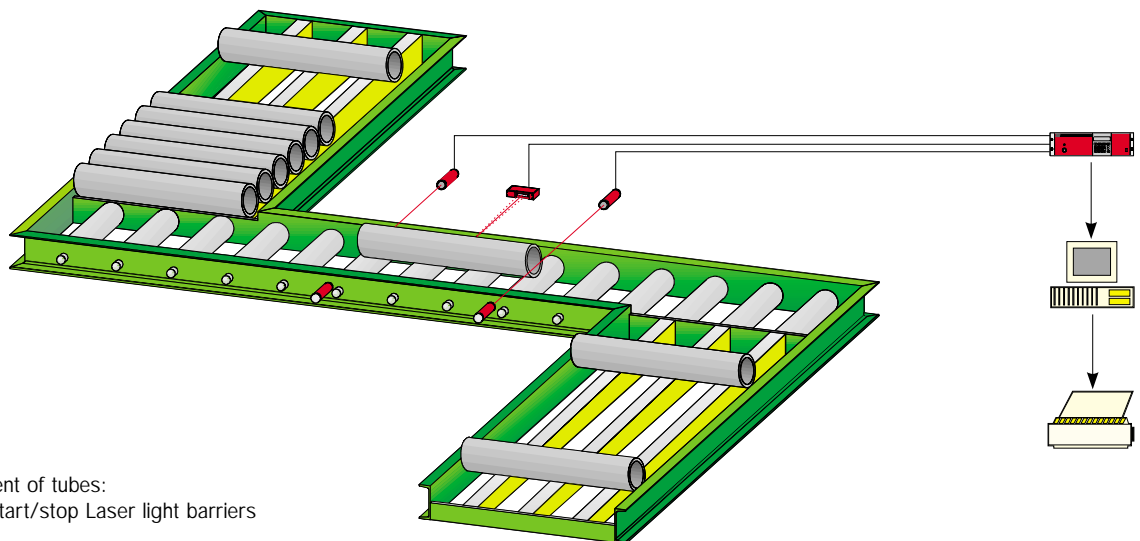
Wire: Continual length measurement of the finished product, production-to-order



Thread, textile: Continuous length and speed measurement, process control and optimization



Sheet, plate, board: Length measurement, final control and recording



Length measurement of tubes:
Longometer with start/stop Laser light barriers

Special Features

The non-contact measurement of speed and length solves many problems by the reliable recording of production parameters. This also contributes to productivity and increased quality.

The application of a Longometer will help you reduce costs.

- The exact non-contact and slip free measuring minimizes the waste margins of material designed to be cut into lengths.
- Complaints will be avoided. You will only be producing as much as is required and as little as possible without waste. A production program can be included as an option.
- The surface of the material stays untouched, making smears and scratches and other measurement traces a thing of the past.
- Through a robust and long lasting technology you will have a reliable measuring tool at hand that will help you to avoid break-downs and stoppages.
- Service free operation and ease of use will guarantee that the Longometer is at hand for any application and quick, trouble free installation.

Touches nothing,
measures everything:
distance, thickness,
length, width, diameter,
velocity ...

Measures all dimensions!

Technical Data

Measurement range	10 ft/min – 3940 ft/min 3 m/min – 1200 m/min
Stand-off	7.9 inch ± 0.8 inch 200 mm ± 20 mm
Laser output power	5 mW
Laser wavelength	670 nm, red
Laser class	3B
Accuracy	± 0.2 % from actual measurement
Digital display	Speed in ft/min and Length in ft Speed in m/min and Length in m
Outputs	Impulse output alternatives 1, 10, 100, 1000 Imp./3.3 ft 0-10 V or 4-20 mA propor- tional to speed RS232
Inputs	8x for start/stop light barriers
Measurement head/sensor:	
Dimensions	4.3H x 6.6W x 2.05T inch 109H x 168W x 52T mm
Protection	IP 64
Ambient temperature	32 – 104 °F (0 – 40 °C)
Weight	1.2 lbs (0.5 kg)
Electronics:	
Dimensions	19 x 5.2 x 9.4 inch 483 x 132.5 x 240 mm (19" rack)
Voltage	110-230 V AC, 47-63 Hz (50 V A)
Weight	11 lbs (5 kg)
Cable length	16.5 ft (5m) sensor to electronics
Special HOLD-Function for short measurement failures for example a surface with holes in it	

Options

- Brackets and supports according to customer specification
- Special housing with heating, air or water cooling
- Air purge for use in dirty environments
- Large letter display, limit switches
- User software for measuring system
- Measurement data calculation and presentation with documentation for PC use
- Complete solutions
- Other stand-off distances
- Max. 8 digit opto-coupled outputs
- Length preselection, up/down counter with output switching
- Certified calibration on request



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Phone:(330) 658-7070, eFax:(312) 896-5696

e-mail: budg@bright.net, web: www.weldedtubepros.com



Measures all dimensions!