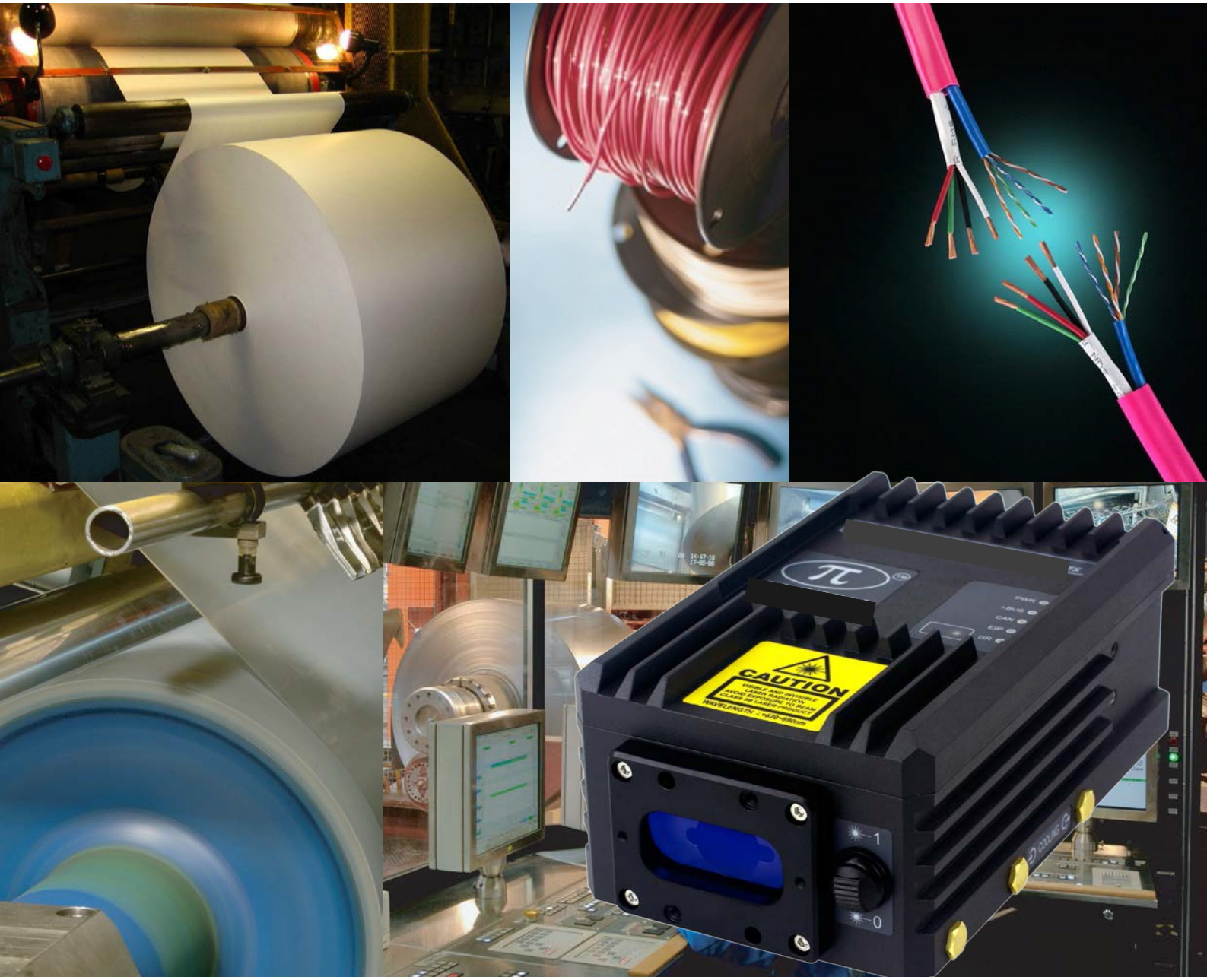
NON-CONTACT SPEED AND LENGTH MEASUREMENT

VLZ & VLX Series



AUTOMATIC **DIRECTION DETECTION**

MEASURE DOWN TO **ZERO SPEED**

HIGH ACCURACY , NON-CONTACT, LASER DOPPLER MEASUREMENT

INTRODUCTION

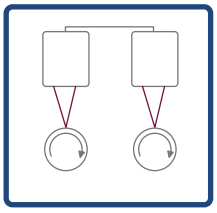
- The VLZ and VLX Series directly replaces traditional, high-maintenance, problematic contact wheel and rollers type devices, with accurate "state-of-the-art" laser Doppler technology.
- Automatic **DIRECTION DETECTION**, and measurement down to **ZERO SPEED**, mean the VLZ gauge counts up, or counts down, so if your line reverses, final length measurement will still be accurate to 0.05%
- VLZ and VLX gauges are extremely easy to install, integrate and use. Production processes, such as wire, cable, web products, wovens, non-wovens, paper, plastic film, tapes, building material, floorings and labelling are all measured using the laser Doppler method.
- Accurate speed and length measurement reduces scrap, increases uptime and improves material yield, through elimination of product "Give Away" or "Short Length" claims.

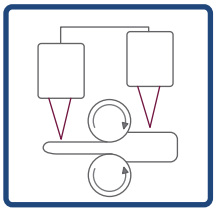
NON-CONTACT MEASUREMENT

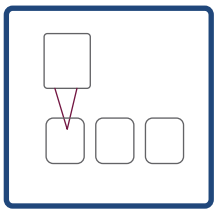
* - VLX model only

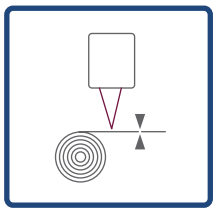
- **Zero Speed:** Measures Speeds Down to Zero *
- **Direction Detection:** Auto count Up or Down
- **Accurate:** Better than 0.05%.
- **Repeatability:** Better than 0.02%
- **Non-Contact:** No Slippage, No Marking, No Wear
- **Industrial Design:** Harsh Factory Environment
- **Easy Integration:** Modern Communications
- **Reduce Downtime:** Permanently Calibrated
- **Excellent Value:** Low Cost of Ownership

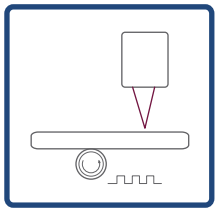
MEASUREMENT MODES

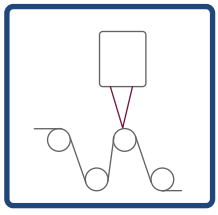

Speed Synchronisation

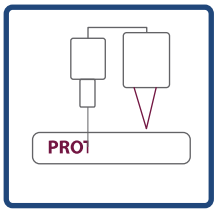

Elongation or Speed Ratio


Part Length Measurement

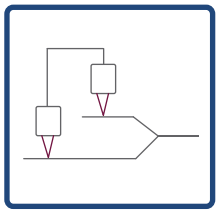

Cut-to-Length Control

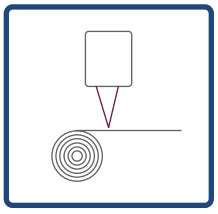

Encoder Calibration


Speed Measurement



Inkjet Print Control


Speed Balancing


Spool Length

Pipe ■ Tube ■ Paper ■ Foil ■ Film ■ Wire ■ Cable ■ Labelling

Tapes ■ Packaging ■ Floor Coverings ■ Wovens ■ Non-Wovens

Building Materials ■ Steel ■ Aluminium ■ Other metals

COMPARE

Contact counters

Laser Doppler

Contact Wheel / Encoder Counter	Non-Contact Doppler Measurement
Length & Speed Errors through slippage and wear, result in "Short Lengths" and "Give Away."	**Zero Slip, Zero Wear. Exact Measurement.**
Maintenance Costs, through calibration downtime and replacement parts.	**No Moving Parts. Permanently Calibrated.**
Marking and Damage to your product from contact wheels can cause Quality Rejections.	**No Contact, No Damage, No Rejects.**

CONNECT

Integration has never been easier.
Select from Standard Communications or choose from a wide range of factory fitted Optional Communications to meet your needs.
Connect to your existing indicator / display devices, PLC or PC.

Standard communications

CANBUS RS232 RS422 RS485 IPTCP/UDP

Optional communications

PROFIBUS INDUSTRIAL ETHERNET IP DEVICENET Modbus

Bluetooth

Analogue Output

Quadrature Pulse Output

SSI Serial Synchronous Interface

DISPLAY and RECORD

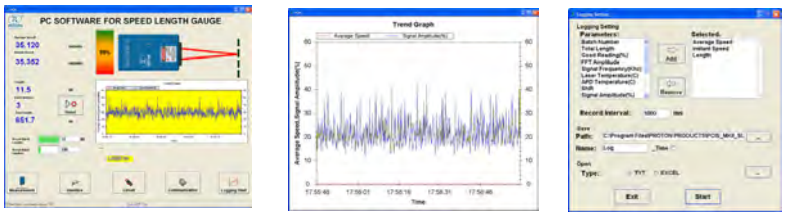
The SiDI Range of Display Interfaces are the perfect match for your VLZ and VLX Series Non-Contact Speed & Length gauge. From a simple LED display, fully featured VFD display, configure, diagnose and a large oversized LED display.

SiDI AiG1

SiDI AiG2

SiDI AiG3

Monitor and control the VLZ gauge on your PC or your mobile phone.
Log measurements at the touch of a button.



PCIS software: interface, display and logging

PCIS on mobile phone via Bluetooth

TECHNOLOGY

Our Products' expertise in Optical Design combined with the latest "Super Fast" Field Programmable Gate Array (FPGA) processors, Fast Fourier (FFT) and Auto-Correlation software techniques have created the VLZ and VLX Series of highly accurate, repeatable and dependable gauges.

LASER DOPPLER

PRINCIPLE OF OPERATION

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

- Fringe spacing is a function of laser wavelength and beam angle.

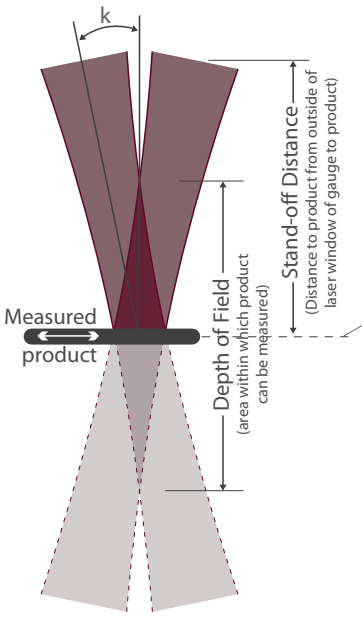
$$f \propto \frac{v}{d}$$

- Doppler frequency is proportional to speed and inversely proportional to fringe spacing.

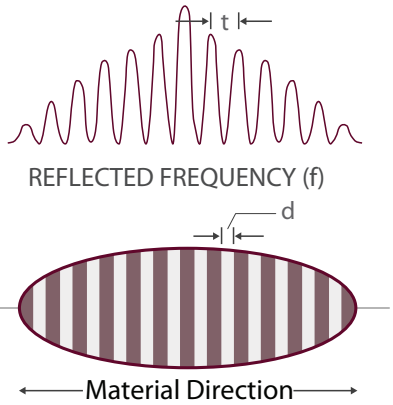
$$L = \int_0^T dvt$$

- Speed is integrated to measure length.

LASER BEAMS: SIDE VIEW

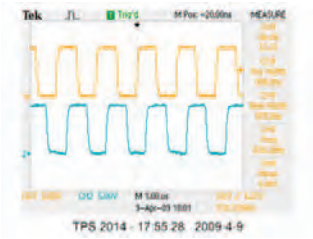


LASER DOPPLER PATTERN



Doppler pattern created at the point where beams converge. Doppler pattern not visible to the human eye.

SUPER-FAST OUTPUTS



Measuring the speed and length of the product is one thing, but getting the information to your host system depends on the delivery of the data.

The VLZ and VLX Series delivers a maximum standard pulse output frequency of 1 MHz.

CALIBRATION & CERTIFICATION

Every gauge is factory calibrated on UKAS certified equipment. The gauges are then subjected to temperature cycling tests before final QC testing. Each gauge is supplied with a unique calibration certificate identified by the gauge serial number. Typical Factory Calibration Accuracy is between 0.02% and 0.05%.

UKAS PRODUCT CERTIFICATION

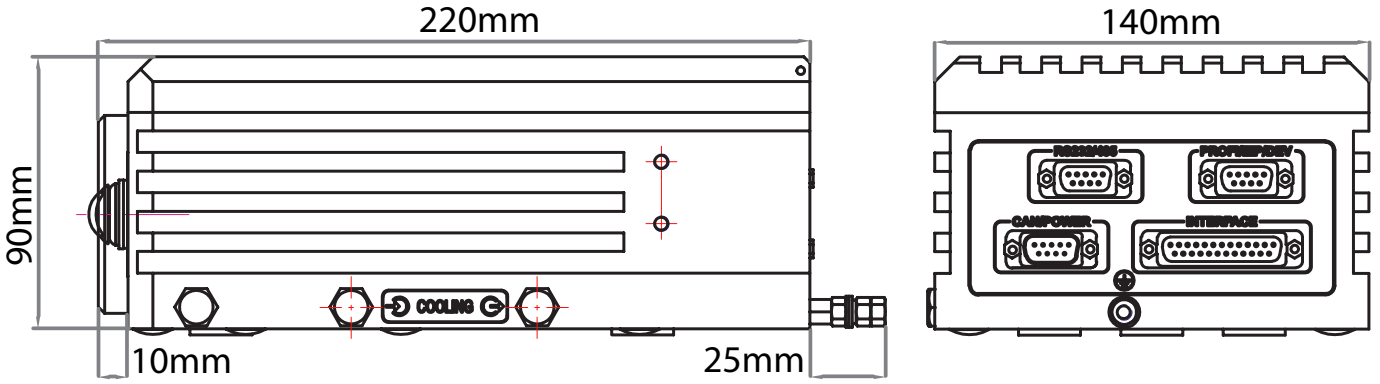
LASER SAFETY

The VLZ and VLX Series contains a Class 3B laser diode and complies with EN60825-1:2001, and has the following safety measures in compliance with the Bureau of Radiological Health Class 3B:

- Interlock capability for remote shut-off: laser enable electrical contact
- Laser beam blocking device: mechanical shutter operated by switch on gauge case
- Delayed laser startup: LED indicator light on before laser reaches full power
- Laser indicator light
- Keyswitch to switch laser on and off

VISIBLE AND INVISIBLE LASER RADIATION.
AVOID EXPOSURE TO BEAM
CLASS 3B LASER PRODUCT
Wavelength λ: 620 ~ 690 nm

SPECIFICATIONS: VLZ

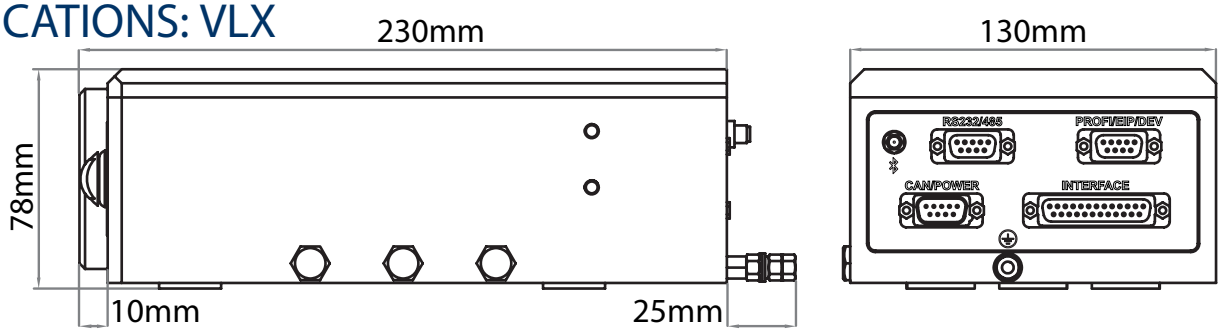


Series	VLZ1525	VLZ3060	VLZ6060	VLZ120120
Minimum Speed	0 (ZERO SPEED)	0 (ZERO SPEED)	0 (ZERO SPEED)	0 (ZERO SPEED)
Maximum speed	+/- 2500m/min (8,200ft/min)	+/- 5000m/min (16,400ft/min)	+/- 5000m/min (16,400ft/min)	+/- 10000m/min (32,800ft/min)
Stand Off Distance	150mm (5.91")	300mm (11.8")	600mm (23.6")	1200mm (47.2")
Depth of Field	25mm (0.98")	60mm (2.36")	60mm (2.36")	120mm (4.72")

VLZ Series	
Accuracy	Better than 0.05%
Repeatability	Better than 0.02%
Acceleration Rate	>500ms^2
Measurement Update Rate	40µs (0.04ms) [1 measurement = 1 scan]
Direction Detection	Automatic
Power Requirement	15 - 25 Vdc, 20 Watts
Protection Rating	IP67
Temperature Range	5° ~ 40^{0}C (41° ~ 104°F)
Gauge Dimensions	LxWxH 220 x 140 x 90 mm (8.7" x 5.5" x 3.5")
Gauge Weight	3 kg (6.6 lbs)
Laser Spot Size	4mm (0.16") diameter
Units of Speed	m/min, ft/min
Units of Length	m, ft, yd
5x Digital Inputs	2 Fixed: Laser Enable, Optical Shutter Enable 3 Programmable: Reverse direction, Length hold, Display hold, Speed Hold, Reset (length or reel number), End of reel. Max Input 24Vdc
3x Relay Outputs	Volt-Free Contact; Max. Voltage 50Vdc 0.5A Gauge OK, Gauge Measuring, Laser On, Laser at Temp, Shutter Open, (Status Indicators) Preset Length 1, Preset Length 2
Serial I/O	Selectable RS232, RS485, RS422: Speed, Length, GR, (Status Indicators). Bluetooth
CANBUS	Connects to Products range of SiDI AiG2 & AiG3 Indicators. Can be used to supply power to gauge head.

VLZ Series	
Analogue Output	0 - 10Vdc Scaleable output. Output based on Speed or on Good Readings
3x Pulse Outputs	Opto-Isolated differential outputs. Configurable as Quadrature or Index. Default output 5V or user input to 24Vdc max. Max. Pulse Output up to 1MHz
Additional Protocols	DeviceNet, Modbus, Profibus, ProfiNet, EtherNet, Industrial Protocol, and SSI available

SPECIFICATIONS: VLX



Series	VLX1525	VLX3060	VLX6060	VLX120120
Minimum Speed	0.1m/min (0.3ft/min)	0.2m/min (0.6ft/min)	0.2m/min (0.6ft/min)	0.4m/min (1.2ft/min)
Maximum speed	2500m/min (8,200ft/min)	5000m/min (16,400ft/min)	5000m/min (16,400ft/min)	10000m/min (32,800ft/min)
Stand Off Distance	150mm (5.91")	300mm (11.8")	600mm (23.6")	1200mm (47.2")
Depth of Field	25mm (0.98")	60mm (2.36")	60mm (2.36")	120mm (4.72")

VLX Series	
Accuracy	Better than 0.05%
Repeatability	Better than 0.02%
Acceleration Rate	>500ms^2
Measurement Update Rate	40µs (0.04ms) [1 measurement = 1 scan]
Power Requirement	15 - 25 Vdc, 20 Watts
Protection Rating	IP67
Temperature Range	5° ~ 40°C (41° ~ 104°F)
Gauge Dimensions	LxWxH 230 x 130 x 75 mm (9" x 5" x 2.9")
Gauge Weight	3 kg (6.6 lbs)
Laser Spot Size	4mm (0.16") diameter
Units of Speed	m/min, ft/min
Units of Length	m, ft, yd
5x Digital Inputs	2 Fixed: Laser Enable, Optical Shutter Enable 3 Programmable: Reverse direction, Length hold, Display hold, Speed hold, Reset (length or reel number), End of reel. Max Input 24Vdc
3x Relay Outputs	Volt-Free Contact; Max. Voltage 50Vdc 0.5A Gauge OK, Gauge Measuring, Laser On, Laser at Temp, Shutter Open, (Status Indicators) Preset Length 1, Preset Length 2
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