# InteliSENS™ LN Series



## HIGH ACCURACY, NON-CONTACT MEASUREMENT
Measure continuous processes with 100% quality inspection
**INSPECT, ALARM, REPORT**

# INTRODUCTION

The InteliSENS™ TRIPLE-AXIS and DUAL-AXIS lump and neck detectors provide outstanding product quality supervision. Using LED light sources, high-speed digital signal processing (DSP) and specialized optical design technology to INSPECT, ALARM and REPORT Surface Quality Defects (SQD) as they happen, reducing customer complaints and improving your reputation as a quality product supplier.

The LN3030's three LED Constant Light Sources cover the Complete Circumference* of the product, and any immediate change in the surface profile is detected by the LED optical receiver, Alarming and Reporting the height, length and location of lumps and necks along and around the product.

The InteliSENS™ Lump and Neck Detectors are extremely easy to install, integrate and use.  The LN2030 and LN3030 can both be used as stand-alone devices or integrated to the machine PLC.  Audio / Visual Alarm, Fault Printer and Datalogging PC Software are available to complement the Lump and Neck Detector, closing the loop on Quality Control.

Applications include production processes such as Wire Drawing, Braiding, Cable Insulating and Jacketing, Rewinding and Coiling, Rubber and Plastic Extrusion Processes for Hose, Tube and Pipe production.
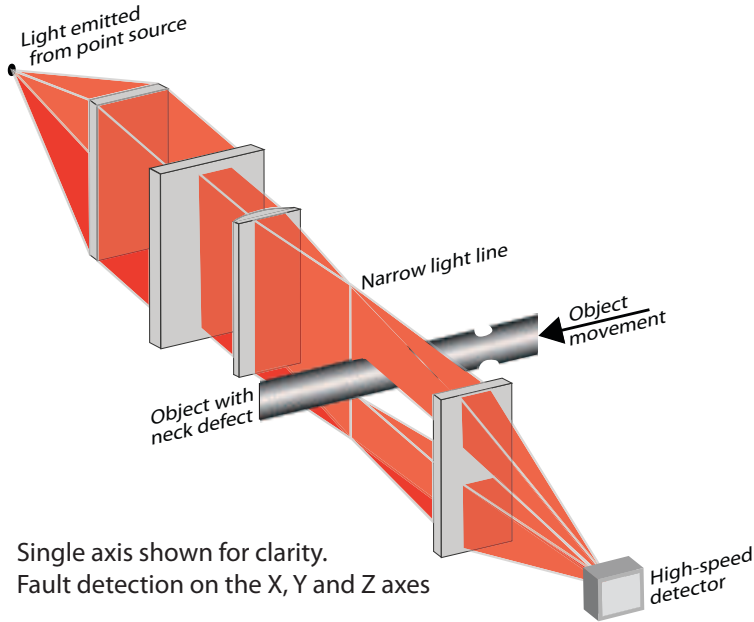
# NON-CONTACT MEASUREMENT

- Non-Contact
- No Moving Parts: No Wear
- Industrial Design: Harsh Environment
- Built-in lens airwipe system
- Easy Integration: Modern Communications
- Easy to Use: Bright Clear Displays
- Reliable: InteliSENS™ Technology 24/7
- Excellent Value: Low Cost of Ownership
- Fault Report Print Output
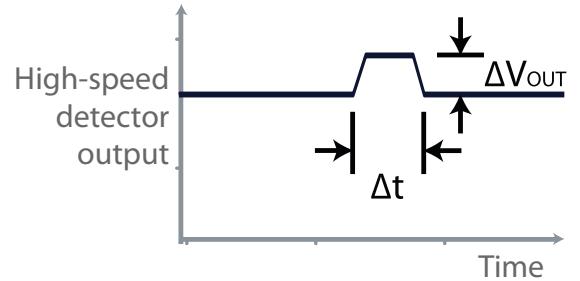- Logging of Faults on X, Y and Z Axes (LN3030)

## ■ Pipe ■ Tube ■ Hose ■ Wire ■ Cable

* see **Compare** diagram

## TECHNOLOGY

Light emitted from point source

Narrow light line

Object movement

Object with neck defect

Single axis shown for clarity.
Fault detection on the X, Y and Z axes

High-speed detector

## PRINCIPLE OF OPERATION

High-speed detector output

$\Delta V_{OUT}$

$\Delta t$

Time

$\Delta t \propto$ Defect length / speed
$\Delta V_{OUT} \propto$ Object diameter change

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### TYPICAL SURFACE QUALITY DEFECTS

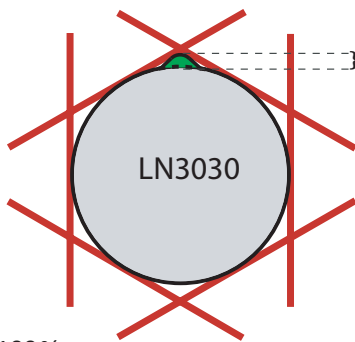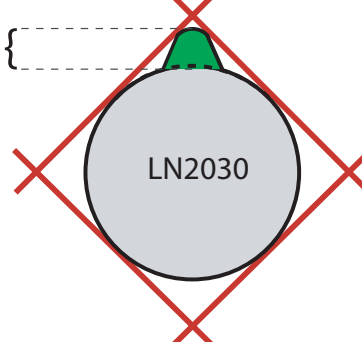| Break | Projecting wire/fibre | Lump | Neckdown |
|-------|----------------------|------|----------|

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## DUAL AXIS OR TRIPLE AXIS DETECTION

Defects generally result from a Process Problem or Material Contamination which result in Lumps, Breaks and Neck-downs. InteliSENS™ gauges Detect, Alarm and Report Surface Quality Defects (SQD) as they happen, using advanced 2- Axis or 3-Axis Visible LED Detection Technology, depending on production line requirements. The LN3030 covers the circumference of the product 3 times more effectively than the LN2030.

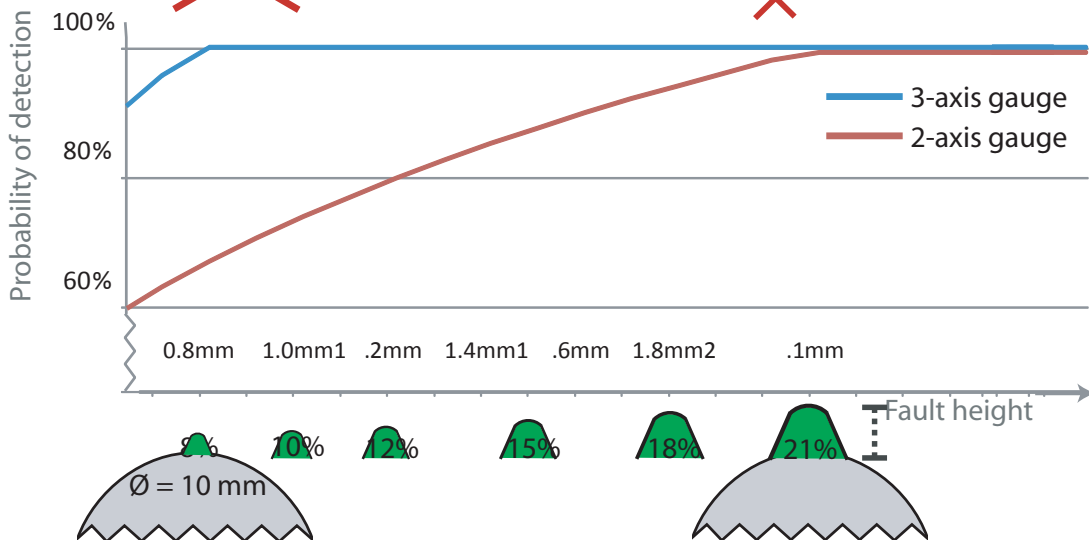**THREE-AXIS GAUGE**

LN3030

Max fault undetected

**TWO-AXIS GAUGE**

LN2030

Probability of detection

100%

80%

60%

3-axis gauge
2-axis gauge

0.8mm  1.0mm  1.2mm  1.4mm  1.6mm  1.8mm  2.1mm

Fault height

8%   10%   12%   15%   18%   21%

Ø = 10 mm

# CONNECT

Complementing the standard communications inputs and outputs is a wide range of factory fitted optional communications to meet your needs.
Connect to your existing indicator / display devices, PLC or PC.

*Airwipe air inlet*

PROFI    RS232/RS485    PWR    INTERFACE

## Standard communications

# CANBUS    Ethernet TCP IP    Bluetooth

*\* Bluetooth not available in Europe*

# RS232    RS422    RS485

## Optional communications

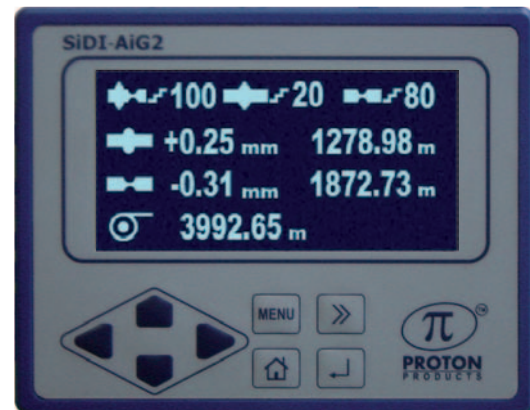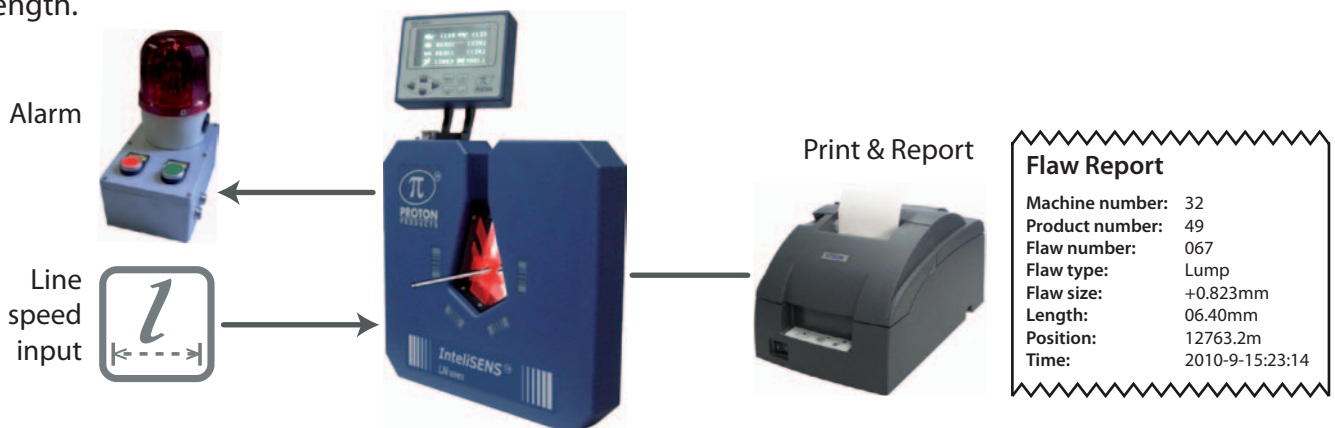PROFIBUS    INDUSTRIAL ETHERNET IP    DEVICENET    *Modbus*    Analogue

# DISPLAY

The AiG2 is a fully featured VFD display and interface unit. Connect to the LN via CANbus: attach to gauge head or mount remotely on a control panel.

SiDI-AiG2

100  20  80

+0.25 mm    1278.98 m

-0.31 mm    1872.73 m

3992.65 m

# REPORT

The InteliSENS™ LN Series detects faults as they happen, connects to a Visible / Audible Alarm to inform the process operator, and connects to a printer to report the fault dimensions, position and time, producing a Summary Report of all defects at the end of the production length.

Alarm

Line speed input

Print & Report

**Flaw Report**

| | |
|---|---|
| **Machine number:** | 32 |
| **Product number:** | 49 |
| **Flaw number:** | 067 |
| **Flaw type:** | Lump |
| **Flaw size:** | +0.823mm |
| **Length:** | 06.40mm |
| **Position:** | 12763.2m |
| **Time:** | 2010-9-15:23:14 |

# ACCESSORIES

The InteliSENS™ LN Series has a number of accessories that complement the gauge head. The AiG-2 can be connected directly on the gauge head or use one of the CAN cables to position the display in the production line control panel. If you are making several connections, such as for alarms and line speed input, the PSU-BOB makes it simple and easy to wire up. Consult your local Proton Products Representative to discuss which accessories will suit your requirements.
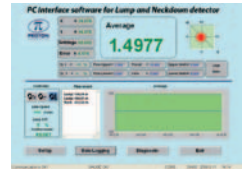
| POWER & CONNECT | PSU-BOB | PSU-UNI | Terminal Strip |
|---|---|---|---|

| DISPLAY & RECORD | AiG2: Interface, display | Event printer | PCIS: interface/ logging software |
|---|---|---|---|

## DIMENSIONS

Bluetooth* antenna

30

(397)

292

152

292

50

320
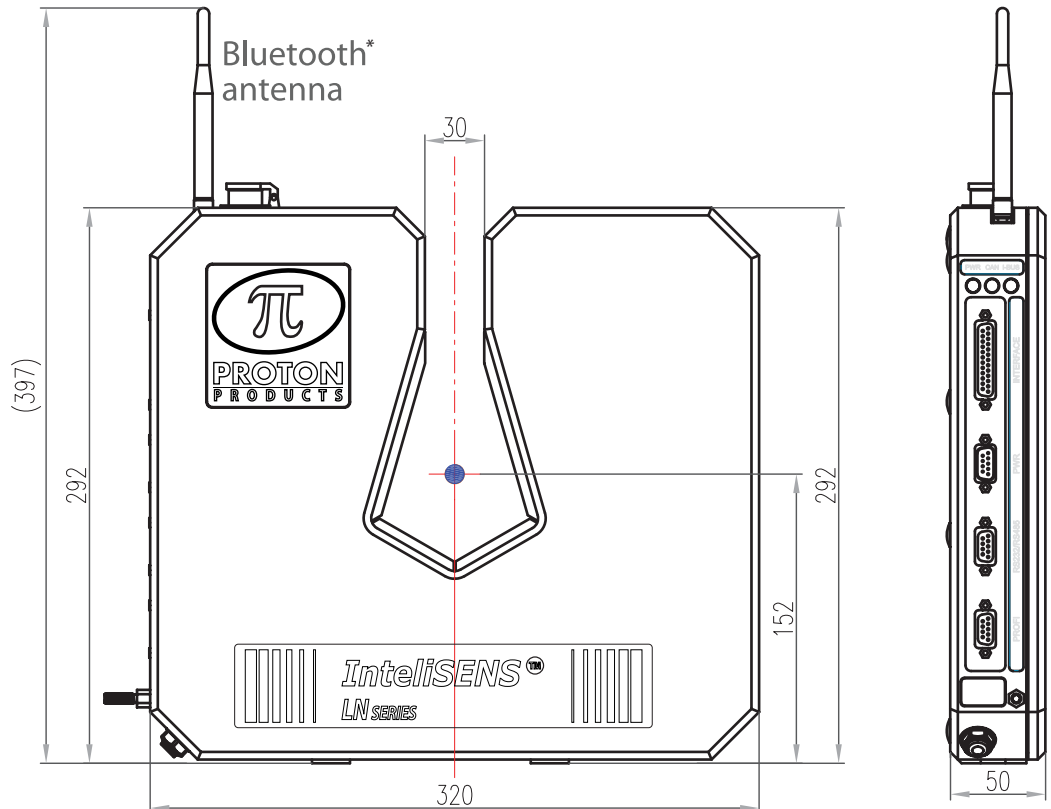
*Bluetooth not available in Europe*

# SPECIFICATIONS

| InteliSENS™ LN Series | LN2030 | LN3030 |
|---|---|---|
| Number of axes | 2 | 3 |
| Light source | 2x LED | 3x LED |
| Unit of measurement | mm / inch | |
| Gate size | 30 mm (1.18") | |
| Minimum object size | 0.04 mm (0.0016") | |
| Maximum object size | 25 mm (0.98") | |
| Minimum fault height | 0.04 mm (0.0016") + 1% of object diameter | |
| Minimum fault length | 0.5 mm (0.02") | |
| Tolerance setting range | 0.04 to 10 mm (0.001 increments) | |
| Tolerance setting resolution | 0.01 mm | |
| Maximum speed | 2500 m/min (8200 ft/min), dependent on fault length | |
| Minimum time between faults | 20 microseconds | |
| Signal processing rate | 200 kHz | |
| Gauge weight | 3 kg (6.6 lbs) | |
| Power requirement | 15 ~ 25 Vdc, 20 W max (with AiG2 display) | |
| Protection rating | IP67 | |
| Airwipe | Built-in airwipe: air input at corner of unit base | |
| Temperature range | 5° ~ 40°C (41°F ~ 104°F) | |

| InteliSENS™ Standard Communications | |
|---|---|
| 2x Digital inputs | Max input 24 Vdc, Length reset, End of reel / Print Activation |
| 3x Relay outputs | Volt-free contact; Max. voltage 50 Vdc 0.5A<br>Programmable: Gauge OK, Lump, Neck, Flaw Number Exceeded |
| Speed input | Analogue: 0 ~ 10 Vdc scalable.<br>Pulse: Max. frequency 250 kHz. Max. pulse height 30 V. Scalable for exact speed |
| Serial I / O | Selectable RS232, RS422, RS485; or Printer |
| CANbus | Connects to Proton Products AiG2 indicator and Proton NEXiS™ controllers |
| Ethernet | Ethernet TCP IP |
| Wireless comms | Bluetooth (Note: Bluetooth not available in Europe) |

| InteliSENS™ Communications Options | |
|---|---|
| 4x Analogue outputs | + / - 10 Vdc scalable output.  X, Y, Z |
| Additional protocols | DeviceNet, Modbus, Profibus, ProfiNet, and EtherNet Industrial Protocol |
| Analogue input | 0 ~ 10 Vdc scalable input.  For remote setting of flaw height |

# CONTACT

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