

UltraGauge

In Process Ultrasonic Wall Thickness
Measurement System

Table of Contents

Measurement Parameters	3
Freestanding Tank Configuration Specs	4
Tank-Mounted Configuration Specs	5
Tank Diagrams	6
Freestanding Accessories	7
Tank-Mounted Accessories	8
Processor & HMI Measurement Center	9
BenchLinc	10
UltraLinc	11
Common Line Setup Schematic	12
Processor Specs & UltraLinc	13
Ultrasonic Operating Principle & Thin Wall Measurement	14

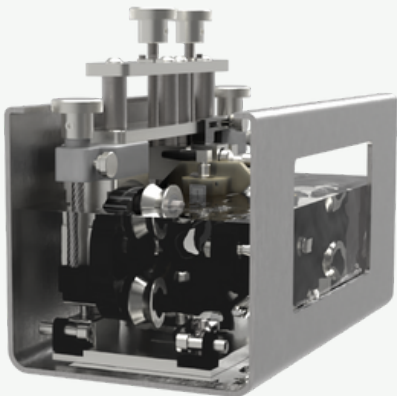
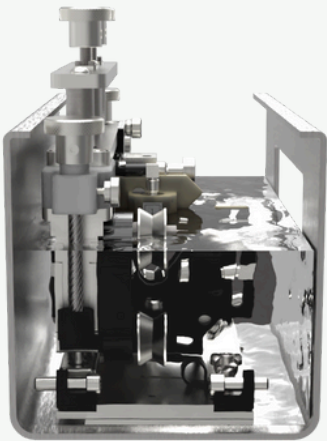


Measurement Parameters

Model		UG412 [0412-1100-00]	UG430 [0430-1101-00]	UG460 [0460-1100-00]
Measurement Points		4	4	4-8
Outer Diameter Range	Low Frequency	0.2-11.4 mm [0.01-.45 in]	0.5-29.2 mm [0.02-1.15 in]	6.3-60 mm [0.25-2.30 in]
	High Frequency	0.2-7.6 mm [0.01-0.30 in]	0.5-19.1 mm [0.02-0.75 in]	6.3-60 mm [0.25-2.30 in]
Wall Thickness Range	Low Frequency	0.08-5.08 mm [0.003-0.20 in]	0.08-12.7 mm [0.003-0.50 in]	0.10-25.4 mm [0.003-1 in]
	High Frequency	0.02-1.3 mm [0.001-0.05 in]	0.02-1.27 mm [0.001-0.05 in]	0.025-1.27 mm [0.001-0.05 in]

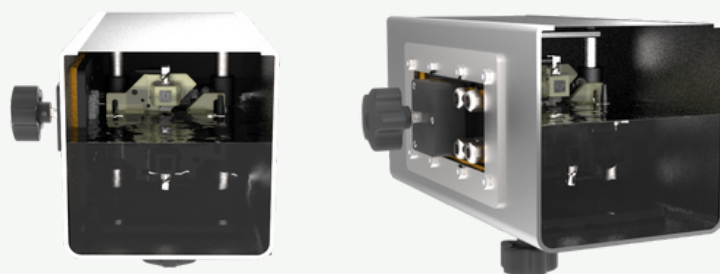
**Wall thickness ranges are approximate and dependent on material properties, acoustic impedance, transducer frequency, style, and, in some cases, orientation.*

**Low Frequency = 2.25 – 20 MHz / High Frequency = 30 – 50 MHz.*



Freestanding Model

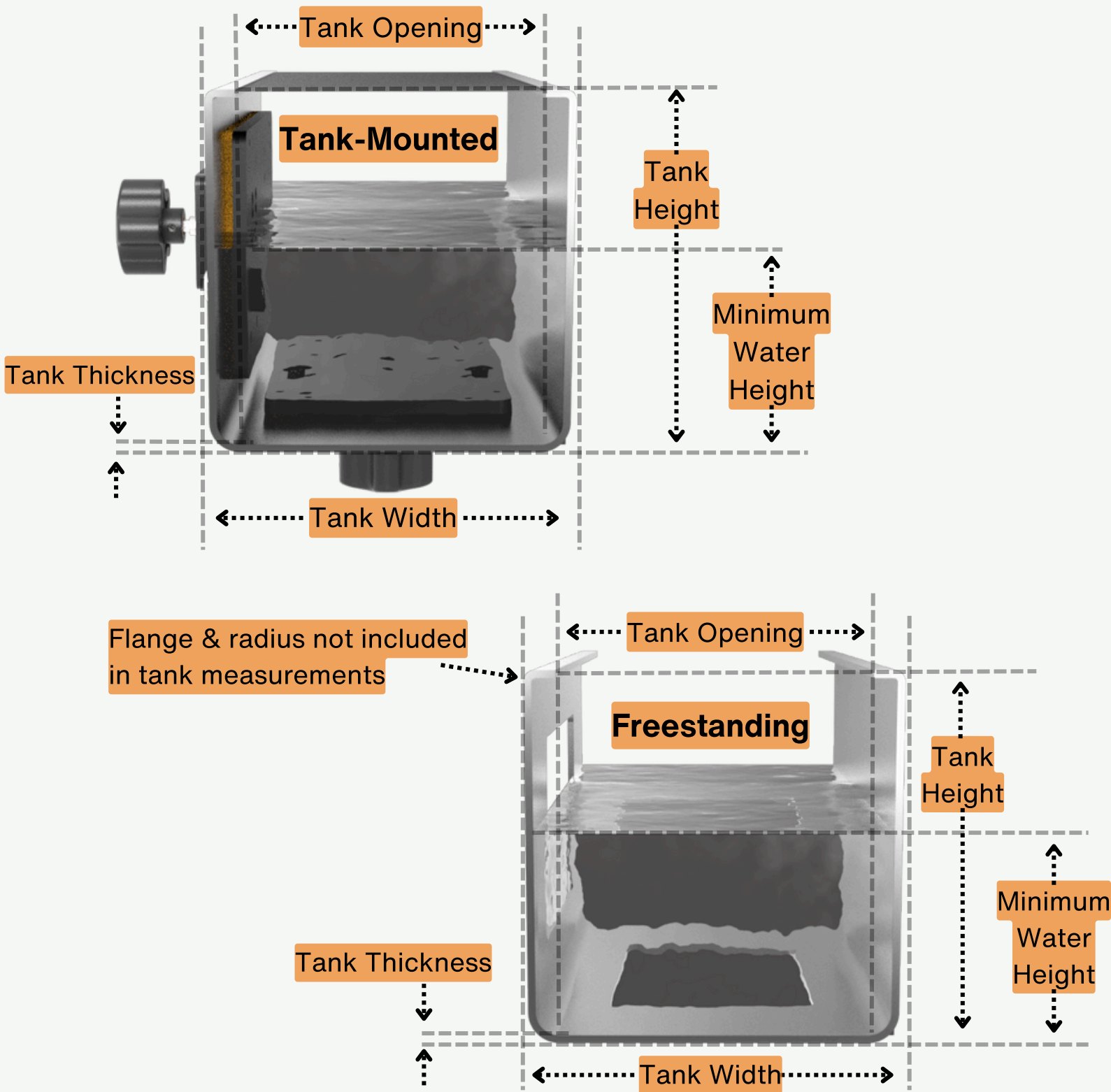
Model	UG412 [0412-0000-28]	UG430 [0430-0001-28]
Length	217.5 mm [8.56 in]	217.5 mm [8.56 in]
Width	98.4 mm [3.87 in]	114.3 mm [4.50 in]
Height	175.6 mm [6.91 in]	198.4 mm [7.81 in]
Additional Length Per Roller Guide	6.3 mm [0.25 in]	7.1 mm [0.28 in]
Vertical Adjustment	+/- 12.7 mm [0.50 in]	+/- 12.7 mm [0.50 in]
Horizontal Adjustment	+/- 3.17 mm [0.12 in]	+/- 3.17 mm [0.12 in]
Tank Length	223.82 mm [8.81 in]	231.7 mm [9.12 in]
Tank Width (Minimum)	101.6 mm [4.00 in]	120.6 mm [4.75 in]
Minimum Water Level	68.4 mm [2.69 in]	92.2 mm [3.63 in]
Water source accessory for air bubble purge (recommended)	6.3 mm [0.25 in] tube fitting on transducer assembly 15 GPH - 66 GPH flow rate	6.3 mm [0.25 in] tube fitting on transducer assembly 15 GPH - 66 GPH flow rate



Tank-Mounted Model

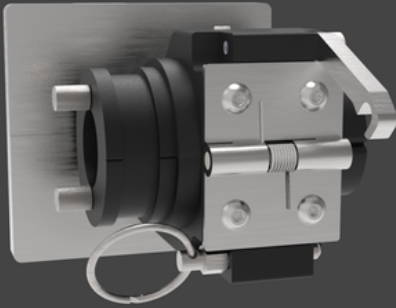
Model	UG412 [0412-1100-00]	UG430 [0430-0002-28]	UG460 [0460-0000-28]
Length	193.8 mm [7.62 in]		
Width	111.1 mm [4.37 in]	114.30 mm [4.5 in]	159.3 mm [6.27 in]
Height (Minimum)	142.9 mm [5.62 in]		187.20 mm [7.370]
Vertical Adjustment	+/- 6.3 mm [0.25 in]		
Horizontal Adjustment	+/- 3.8 mm [0.12 in]		
Tank Compartment Length	193.7 mm [7.62 in]		
Tank Width (Minimum)	152.4 mm [6.00 in]		203.2 mm [8.00 in]
Tank Opening (Minimum)	112.78 mm [4.44 in]		
Tank Height	152.4 mm [6.00 in]		203.2 mm [8.00 in]
Minimum Water Level (at top of adjustment)	100.3 mm [3.95 in]	107.9 mm [4.25 in]	125.7 mm [4.95 in]
Minimum Water Level (at bottom of adjustment)	87.6 mm [3.45 in]	95.2 mm [3.75 in]	113.0 mm [4.45 in]
Horizontal Adjustment Tank Cutout	89.0 x 171.4 mm [3.50 x 6.75 in]		
Vertical Adjustment Tank Cutout	89.0 x 171.4 mm [3.50 x 6.75 in]		
Maximum Tank Thickness (Consult LaserLinc if thicker)	3.3 mm [0.13 in]		
Water source accessory for air bubble purge (recommended)	6.3 mm [0.25 in] tube fitting on transducer assembly 15 GPH - 66 GPH flow rate	6.3 mm [0.25 in] tube fitting on transducer assembly 15 GPH - 66 GPH flow rate	6.3 mm [0.25 in] tube fitting on transducer assembly 15 GPH - 66 GPH flow rate

Tank Measurements



Freestanding Accessories

01

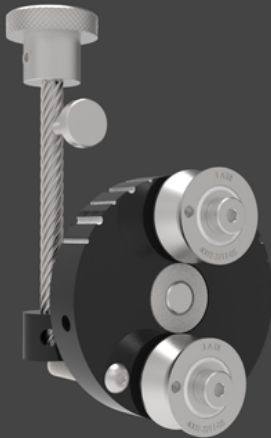


01

UG412 & UG430 Part Guiding Clamshell: Achieve optimal performance with part guidance tailored for freestanding configurations.

- **UG412:** 0412-0000-25
- **UG430:** 0430-0000-25

02

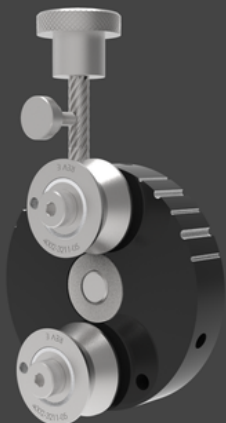


02

Tension Roller Guide: Right-mount adjustable pair of stainless steel tension roller guides to stabilize the product in the measurement field. Rotational and height adjustments allow for the precise product positioning of both floating and sinking products. Adjustment includes tension locking for improved product stability. Available for freestanding configurations.

- **UG412:** 0412-0001-61
- **UG430:** 0430-0003-61

03



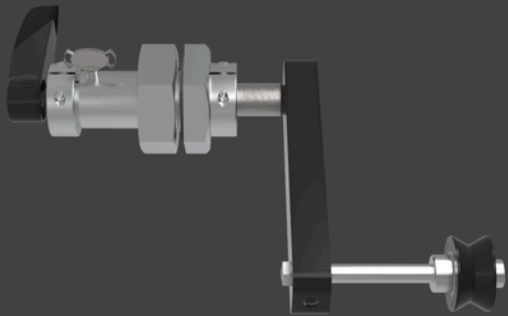
03

Tension Roller Guide: Right-mount adjustable pair of stainless steel tension roller guides to stabilize the product in the measurement field. Rotational and height adjustments allow for the precise product positioning of both floating and sinking products. Adjustment includes tension locking for improved product stability. Available for freestanding configurations.

- **UG412:** 0412-0001-61
- **UG430:** 0430-0003-61

Tank-Mounted Accessories

01



01

Part Guiding Roller Guides: Supports up to 3 lbs of downward force. Multiple roller guides can be used to distribute the load in both freestanding and tank-mounted configurations.

- Adjustable vertical height with lock
- 1.03" [26mm] hole required in-tank per roller guide
- **UG412:**
 - 0412-0004-61 [SS Rollers]
 - 0412-0005-61 [Delrin Rollers]
- **UG430:** 0430-0006-61 [SS Rollers]
- **UG460:**
 - 0460-0000-61 [Delrin Rollers]
 - 0460-0001-61 [SS Rollers]

Processor & HMI Measurement Center

01

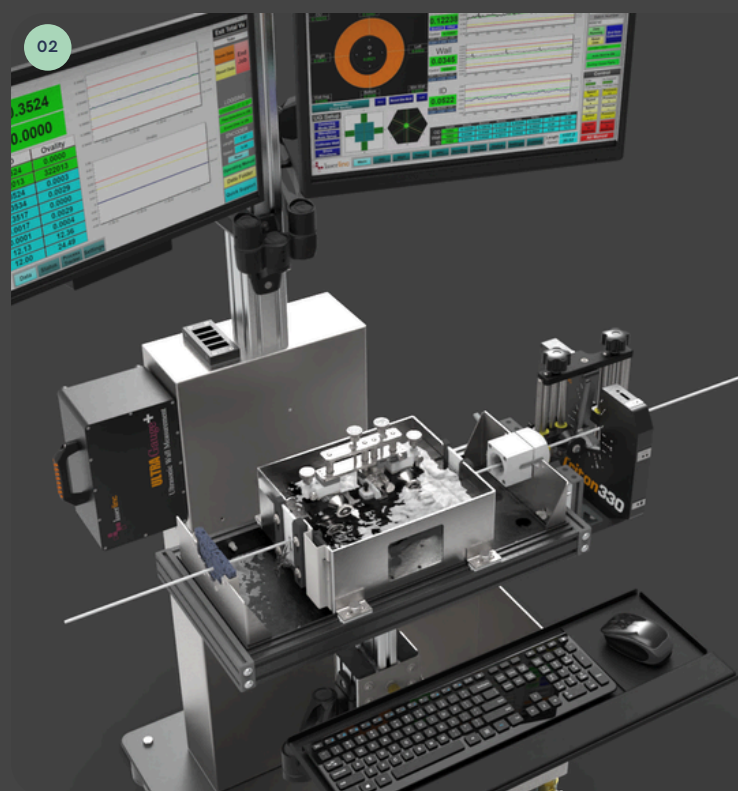


01

UltraGauge+ Processor: Features 4 or 8 ports, an Ethernet connection to the host, an IP65 rating, and switch-selectable power requirements of 115VAC at 60Hz with 0.40A or 230VAC at 50Hz with 0.20A.

- **4-Port:**
 - 2.25 MHz - 20 MHz: [4000-0006-00]
 - 30 MHz - 50 MHz: [4000-0004-00]
- **8-Port:**
 - 2.25 MHz - 20 MHz: [4000-0007-00]
 - 30 MHz - 50 MHz: [4000-0005-00]
- **Dual 4-Port (8 total) :** [4000-0008-00]

02



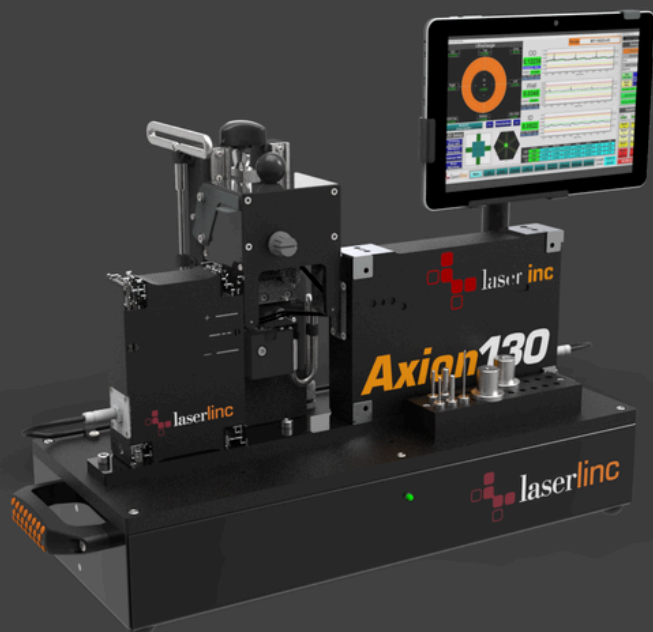
02

HMI UltraGauge+ Measurement Center: Seamlessly accommodates your unique setup needs, providing space for your UltraGauge+ configuration with a micrometer, PC, monitors, and more—all within one easy-to-use mobile form. With a wide range of customizable and add-on options, the HMI center can easily integrate into your workflow and be tailored to your specific requirements.

- 9600-0014-00

BenchLinc Solutions

01



02



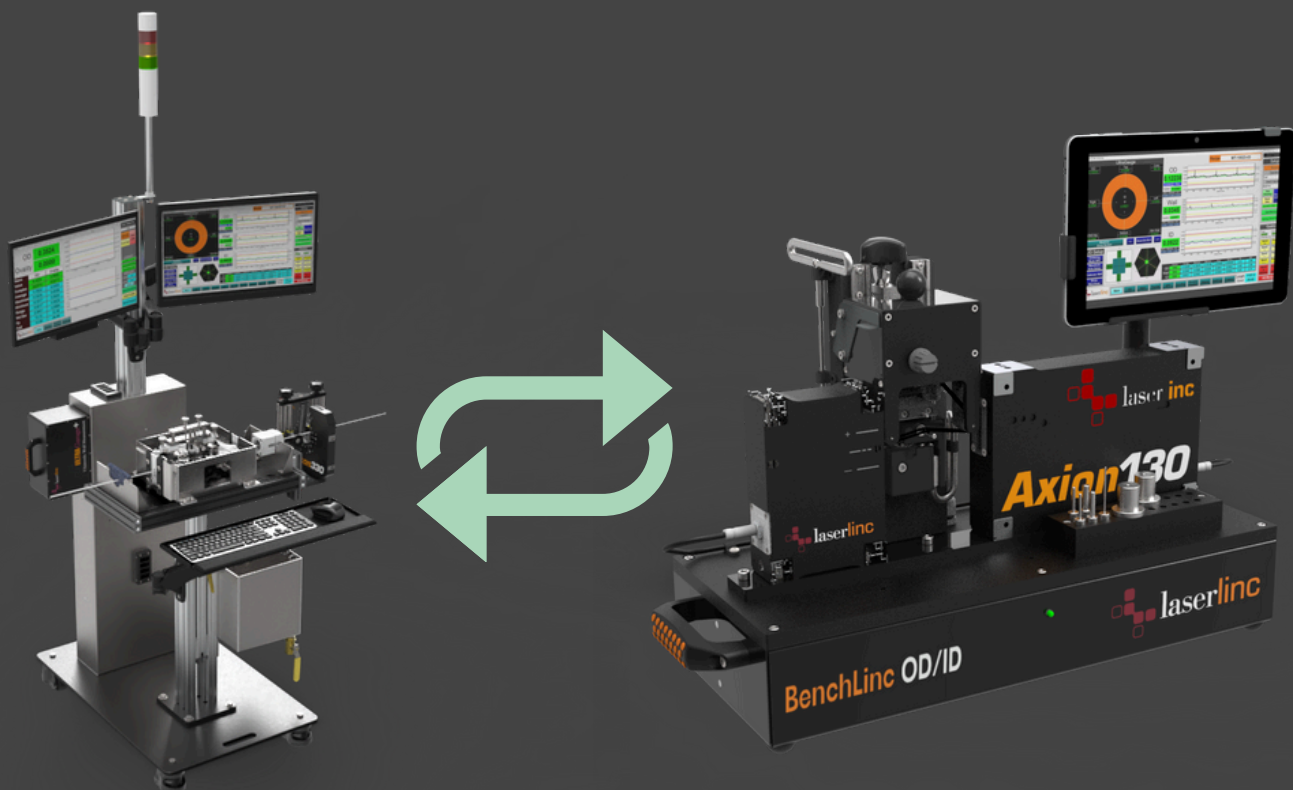
01

- **BenchLinc™ OD/ID:** A non-contact measurement solution that complements ultrasonic systems, is ideal for off-line sample inspection, providing thorough evaluations of wall thickness and inner and outer diameter for tube products. The BenchLinc ID/OD/Wall system features a smart controller for measurement and sample handling and an integrated load cell to maintain consistent pressure on samples, minimizing operator influence and enhancing measurement accuracy.

02

- **BenchLinc™ UT:** A cost-effective off-line measurement system for OD, ID, and wall thickness. The all-in-one design is ideal for medical devices. Its ultrasonic technology can measure thin-wall metal tubes to .003 inches [75 microns].

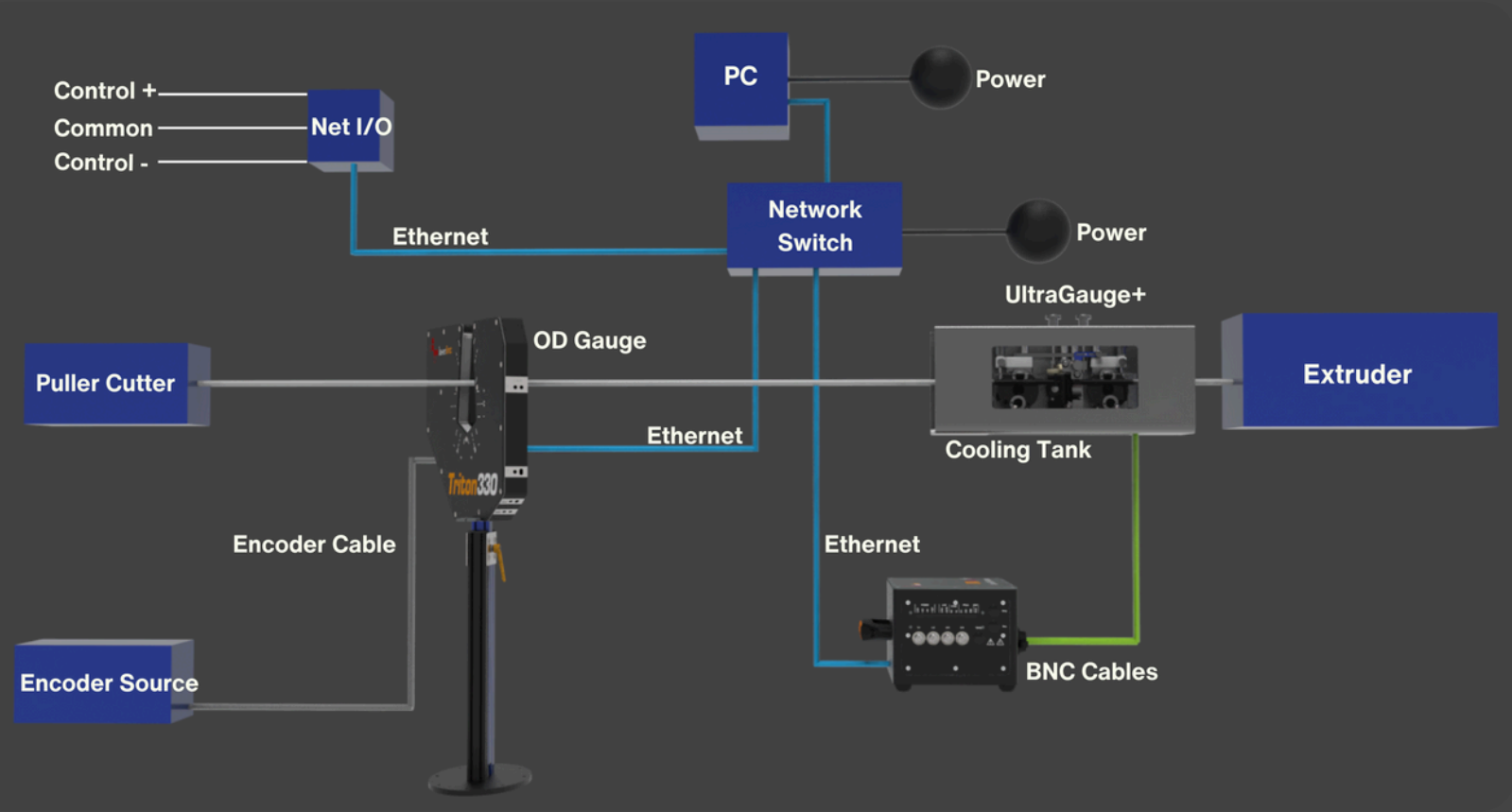
UltraLinc Solutions



The **UltraLinc™** software solution automatically associates and verifies dynamic in-process readings from LaserLinc's measurement equipment with offline measurements from this system.

- Simplifies the calibration process for in-line UltraGauge+ systems
 - Associate and verify dynamic in-process readings with off-line measurements
 - Total Vu HMI™ - uniform architecture for seamless integration between in-line and off-line
- Close the measurement Validation Loop

Common Line Setup: Tubing manufactured with cooling tanks





UltraGauge+ Processor Specs

Connection Type to PC	RJ45 (Cat5 or Cat6 Ethernet)
Number of BNC ports	4 or 8
Input Power	115 VAC or 230 VAC
IP rating	65
Sample Rate	2000 pings/sec*
Default Device IP Address	10.10.10.10

**Dependent on measurement settings.*

Ultrasonic Operating Principle

Ultrasound is a sound wave with a frequency higher than the upper limit of human hearing (approximately 20 kHz). LaserLinc uses ultrasonic frequencies from 2.25 MHz to 50 MHz.

Single-layer ultrasonic measurement involves a high-frequency sound wave transmitted from a transducer to the product. When the sound wave hits the surfaces, it generates echoes. The time difference between these echoes correlates with the product's thickness.

A multi-layer ultrasonic measurement is capable of supporting multi-frequency transducer arrays. It involves a high-frequency sound wave from a transducer that measures the product by generating echoes as it strikes surfaces and internal layers. The time between these echoes is proportional to layer thickness.

Thin Wall Measurement

One of the key advantages of LaserLinc's UltraGauge+ technology is its ability to measure thin-wall thickness. This solution has successfully measured wall thicknesses as small as 0.001 inches (25 μm) for micro polymer medical tubing and 0.003 inches (75 μm) for metal nickel-titanium (NiTi/Nitinol) stent tubing.

The UltraGauge+ product line includes a variety of sensor assemblies and accessories designed to support different production processes and locations on the production line.