

# Elcometer UG20DL Underwater Thickness Gauge

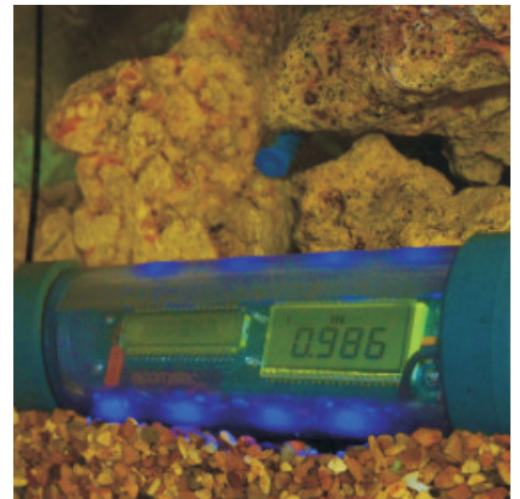


Waterproof to a depth of 300 metres the UG20DL offers many features and benefits of the CG100 series in an easy to use brightly lit gauge.

Offering both dual & single element transducers the UG20DL's memory allows users to store up to 5,000 individual readings, together with the A-Scan waveform which can be downloaded to the data management software for further analysis on dry land.

## Features

- 300 metre depth rating
- Single membrane & dual element probe transducers
- Automatic probe recognition & zero function
- Pulse-Echo, Pulse-Echo w/Coating, Echo-Echo
- Data Storage: Alpha Numeric & Sequential w/ID
- Data output and storage: 5,000 readings
- Download to ElcoMaster® data management software



## UG20 Features Explained

### Repeatability / Stability Indicator

Consisting of 6 vertical bars, when all the bars are fully illuminated and the last digit on the digital thickness value is stable, the gauge is reliably measuring the material thickness.

### V-Path Correction

Dual element transducers consist of a probe with two crystals (one to transmit and one to receive the sound pulse). The crystals are separated by an acoustic barrier - generating a 'V-shaped' sound path as the sound travels from one element to the other. This path is slightly longer than the direct path therefore V-path correction is used to calculate the correct thickness.



## UG20DL Measurement Modes Explained

### Pulse - Echo Mode (PE)

The normal display mode, measures the total thickness from the base of the transducer probe to the material density boundary (typically the back wall). Ideal for pit and flaw detection.

### Echo - Echo Mode (EE)

Also known as the ThruPaint™ Mode, EE ignores the coating thickness, displaying the material thickness from the top surface of the material to the material density boundary.

### Pulse - Echo Coating Mode (PECT)

Displays both the material thickness (PE) and the coating thickness (CT) at the same time.

## UG20DL Display Modes Explained

### Material Thickness Digits Display

The standard display on all models, this displays the numerical thickness value in either millimetres (mm) or inches (in).

### A-Scan Display; Full Wave (RF)

The A-Scan display shows the sine wave created by the reflected sound, or oscillation, from the material being measured. In RF mode the full wave form is displayed.

### A-Scan Display; Rectified (+ or -)

Users can select to view either the positive or the negative cycle of the full waveform (RF). This rectified (RECT) display shows the amplitude of the echo versus the transit time.

## Technical Specification

Model & Part Number	UG20DL
Material thickness digits display	■
Measurement Mode	Dual Element: PE, EE (ThruPaint™), PECT Single Element: EEV (ThruPaint™)
Measurement Rate Manual:	4 readings per second
Measurement Range	PE: 0.63 - 508mm EE: 2.54 - 102mm PECT: 0.63 - 508mm PECT: 0.01 - 2.54mm EEV: 1.00 - 150mm
Measurement Accuracy	0.01mm
Measurement Resolution	0.01mm
Velocity Calibration Range	1250 - 13,995m/s (0.0492 - 0.5510in/ms)
A-Scan	Stored in memory with each reading for review on PC
Calibration setups	1 user programmable & 8 pre-calibrated velocities for: aluminium, cast iron, iron, PVC, polyurethane, polystyrene, stainless steel & steel
Waterproof - depth ratings	Maximum depth 300 metres (1,000 feet) - equivalent to IP68
Pulser type	Dual square wave pulsers
Gain	Automatic gain control (AGC) with 100dB range, or selectable gain: vlow, low, medium hi or vhi
Timing	Precision 25MHz TCXO with single shot 100MHz 8bit ultra low power 8bit digitizer
Data logging	5,000 with A-scan image & gauge settings in one batch sequential and grid logging alpha numeric batch identification
Calibration Options	Velocity & material type
Transducer Probe Type	Dual and single element
Transducer Frequency Range	1 - 10MHz
Transducer recognition	Custom automatic (dual transducers) & manual - <i>selectable from a list</i>
V-path / dual path error correction	Automatic
Probe Zero	Automatic (dual transducers) & manual (via integrated probe disk)
Display	12.7mm 4.5 digit LCD
Display Refresh Rate	25Hz
Units (selectable)	mm
Backlight	on / off / auto
Repeatability / Stability Indicator	■
Battery Type	3 x AA alkaline
Battery Life (approximate)	50 hours on alkaline and 20 hours on NiCad (backlight off). 15 hours on alkaline and 8 hours on Nicad (backlight on)
Low Battery Indicator	■

Battery Save Mode	Auto
Operating Temperature	-29 to 60°C B44
Size (length x diameter)	229.0 x 60.33mm
Weight (including batteries)	680g
Case design	High strength transparent plastic housing with single, magnetically coupled, multifunction switch
Transducer connector type	LEMO underwater connectors
Interface	USB

## Packing List

Elcometer UG20DL Underwater Thickness Gauge

Couplant

Carry Case

User Manual

Test certificate

3 x AA batteries

ElcoMaster® software

Transfer cable

Spare Gaskets

Lubrication Set



## UG20DL Underwater Thickness Gauge Transducers

Part Number	Probe Diameter	Element Type	Connector Type			Suitable for measuring							
			Probe Characteristic	Potted	Lemo - UW <sup>4</sup>	Top	Cast Iron	Plastics	Thin Plastics	Steel	Glass	Aluminium	Titanium
<b>2.25 MHz Underwater Transducers</b>													
TX2M25EL-2	1/2"	Si/EI Membrane	Underwater		■	■					■		
<b>3.50 MHz Underwater Transducers</b>													
TX3M50EP-3	1/2"	Dual	Underwater	■		■	■	■					
<b>5.00 MHz Underwater Transducer</b>													
TX5M00EL-2	1/2"	Si/EI Membrane	Underwater		■	■					■	■	■
TX5M00EP-8	1/2"	Dual	Underwater	■		■			■	■	■	■	■
TX5M00EP-9	1/2"	Dual	Underwater - 15m	■		■			■	■	■	■	■

4 - Lemo UW - Lemo Underwater Connection

Underwater Gauge Transducers are both single and dual element transducers designed for use with the UG20 Underwater Thickness Gauge and are ideal for offshore inspections.

## Accessories

### Cables & Adaptors

TL-24030-4	T/Cable: 4' Single Lemo UW to Lemo UW
TL-24031	RS232 Cable; DB-9 to Lemo
TL-24032	USB to Serial Adapter

### Couplant

TC-24034-6	Underwater Gasket Lubricant, 6g
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### Other Accessories

TZ-24037	O-Ring Kit (1 Lubricant & 2 Gaskets)
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