

# Elcometer PG70ABDL Precision Thickness Gauge



With a user selectable resolution of either 0.01 mm or 0.001 mm the PG70ABDL precision thickness gauge can display the thickness value together with A and B-Scan displays, providing users with the ability to accurately assess a wide range of materials.

The auto find feature locates the detection point(s) and adjusts the display settings to bring the waveform into view.

The high speed scan feature on the PG70ABDL precision thickness gauge speeds up the inspection process by taking 32 measurements per second. Remove the transducer from the test material and display the minimum measurement scanned.

Visual and audible alarm with high and low limit settings for specific application tolerances.

## Features

- 0.001mm high resolution
- Range of display options: A-Scan, B-Scan, Pulse-Echo, Echo-Echo
- Adjustable gain: -30dB to 70dB range
- Automatic gain control (AGC)
- User definable setups
- Multiple language display
- Multiple calibration and material selection options
- High speed scan: 32 readings per second
- Differential mode
- Minimal thickness alarm
- Data output and storage: 12,000 readings and waveforms
- Data management software



## PG70ABDL 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.

### High Speed Scan with Minimum Thickness Display

By significantly increasing the measurement refresh rate this mode allows the user to make scanned passes over the test material. The smallest thickness value is held in memory and displayed when scanning is complete. This feature can also be used in conjunction with the minimum & maximum limit alarm feature (model dependant).

### Differential Mode

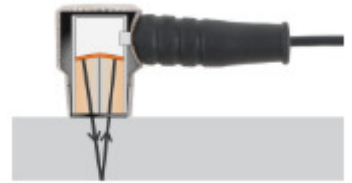
Once a user defined nominal thickness value has been set, the gauge will display the +/- thickness difference from the nominal value entered.

### Limit Alarm Mode

The user can define minimum and maximum thickness limits. If the measurement falls outside the upper or lower limit a red LED will light and the beeper sounds. A green LED will light to indicate an acceptable 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.



## PG70ABDL 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.



### Interface - Echo Mode (IE)

More accurate than the PE mode, IE displays the total thickness from the top surface to the material density boundary - i.e. ignores the couplant thickness.



## PG70ABDL Display Modes Explained

### Material Thickness Digits Display

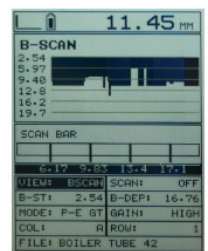
The standard display on all models, this displays the numerical thickness value in either millimetres (MM) or inches (IN).

### Scan Bar Display

A linear graphic display which allows users to graphically monitor changes in thickness readings. As the scale range can be adjusted by the user, this display is ideal for observing tiny variations in material thicknesses.

### B-Scan Display

A time based cross sectional 2D block view of the thickness provides a graphical view of the material thickness - ideal for relative depth analysis.

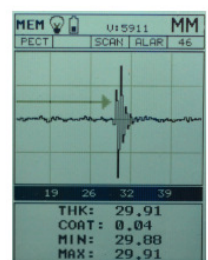


### A-Scan Display; Full Wave (RF)

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 Specifications

<b>Model &amp; Part Number</b>	<b>PG70ABDL</b>
Material thickness digits display	■
B-Scan cross sectional display	■
Combined B-Scan and digits display	■
Scan bar display	■
A-Scan display	+ Rectified, - Rectified, Full Waveform (RF)
Measurement Mode	PE, IE, EE EEV & IEE
<b>Measurement Rate</b>	
Manual	8 readings per second
Scan mode	250 readings per second
Scan bar display	10-33 readings per second
Measuring Range	Interface Echo (IE) on steel 1.27 - 25.4mm Interface Echo (IE) on plastic from 0.127mm Echo Echo (contact) (EE) on steel 2.54 - 914.4mm Pulse Echo (contact) (PE) on steel 1 - 9,140mm Echo Echo Verified (EEV) on steel 2.54 - 152.4mm Interface Echo Echo (IEE) on steel 0.152 - 12.7mm
Measurement Accuracy	0.001mm
Measurement Resolution	0.01mm, 0.001mm
Velocity Calibration Range	309.88 - 18542 m/s (0.0122 - 0.7300 "/μs)
High speed scan mode	■
Differential mode	■
Limit alarm mode	■
Selectable resolution	■
B-Scan display speed	10 to 200 readings per second
Calibration setups	64 custom user-definable setups, transferrable to and from a PC archive
Gates	• PE: 1 gate; IE, Plastic & EE: 1 gate with hold off • Adjustable threshold
Pulser type	Square wave pulser with adjustable pulse width (spike, thin, wide)
Gain	Manual or AGC gain control with 110dB Range, varies with mode selected. Adjustable damping (35, 50, 75, 300, 600 & 1500 ohms).
Timing	40MHz with ultra low power 8bit digitizer
Data logging	• 4GB internal memory • Grid logging • Alpha Numeric batch identification • OBSTRUCT indicates inaccessible locations • Bitmap graphic capture
Calibration Options	Single, two point, velocity & material type
Transducer Probe Type	Single element with delay tip, pencil with delay tip & contact probes
Transducer Frequency Range	1 - 25MHz
Transducer recognition	Manual - selectable from a list
V-path / dual path error correction	Automatic
Probe zero	Manual (via integrated probe disk)
Display	1/8" VGA (grayscale), 62 x 45.7mm viewable area
Units (selectable)	mm or inches
LED Backlight	on / off / auto
Repeatability / Stability Indicator	■
Battery Type	3 x AA alkaline

Battery Life (approximate)

Alkaline – greyscale 35 hours, colour 12 hours

Nicad – greyscale 10 hours, colour 5 hours

NI-MH – greyscale 35 hours, colour 12 hours

Low Battery Indicator	■
Battery Save Mode	auto
Operating Temperature	-10 to 60°C
Size (w x h x d)	63.5 x 165.0 x 31.5mm
Weight (including batteries)	383g
Aluminium case design with gasket sealed end caps, waterproof membrane keypad	■
Transducer Connector Type	LEMO
USB Interface	■

## Packing List

Elcometer PG70ABDL Precision Thickness Gauge
Couplant
Carry case
User manual
Test certificate
3 x AA batteries
Software
Transfer cable

## Precision Thickness Gauge Transducers

Part Number	Probe Diameter	Element Type	Probe Characteristic	Damping	Microdot	Top	Side	Plastics	Thin Plastics	Steel	Aluminium	Titanium	PG70 & Plastics	PG70ABDL
<b>2.25 MHz Single Element Precision Transducer</b>														
TX2M25CM-4	1/4"	Si/EI Contact	Standard	S	■		■	■		■	■	■		■
TX2M25EM-4	1/2"	Si/EI Contact	Standard	S	■		■	■		■	■	■		■
<b>5.00 MHz Single Element Precision Transducer</b>														
TX5M00AM-1	1/8"	Si/EI Contact	Standard	S	■		■	■		■	■	■		■
TX5M00CM-6	1/4"	Si/EI Contact	Standard	S	■		■	■		■	■	■		■
TX5M00EM-5	1/2"	Si/EI Contact	Standard	S	■		■	■		■	■	■		■
<b>10.00 MHz Single Element Precision Transducer</b>														
TX10M0BM-1	3/16"	Si/EI D/Line Pencil	1/16" Tip	S	■	■			■	■	■	■		■
TX10M0BM-2	3/16"	Si/EI D/Line Pencil	90° Right Angle	S	■		■		■	■	■	■		■
TX10M0CM-3	1/4"	Si/EI Contact	Standard	S	■		■	■		■	■	■		■
TX10M0AM-1	1/8"	Si/EI Contact	Standard	S	■		■	■		■	■	■		■
<b>15.00 MHz Single Element Precision Transducer</b>														
X15M0CMT	1/4"	Si/EI Delay Line	Standard	S	■		■		■	■	■	■	■	■
<b>20.00 MHz Single Element Precision Transducer</b>														
TX20M0CM	1/4"	Si/EI Delay Line	Standard	S	■		■		■	■	■	■	■	■

Elcometer Single Element Transducers are designed for the thickness measurement of thin materials with precision.



## Accessories

### Cables & Adaptors

TL-24030-1	T/Cable: 4' Single Lemo 00 to BNC
TL-24030-2	T/Cable: 4' Single Lemo 00 to Lemo 00
TL-24030-3	T/Cable: 4' Single Lemo 00 to Microdot
TL-24031	RS232 Cable; DB-9 to Lemo
TL-24032	USB to Serial Adapter

### Couplant

TC-24034-1	Couplant: Standard; 120ml Bottle (Material Safety Data Sheet)
TC-24034-2	Couplant: Standard; 1350ml Bottle (Material Safety Data Sheet)
TC-24034-3	Couplant: Standard; 3.8L (Material Safety Data Sheet)
TC-24034-9	Couplant: Hi-Temp 371°C; 60ml Tube (Material Safety Data Sheet)

### Delay Lines

TD-24033-1	Cone Tip Delay Line: Acrylic; 1/8"
TD-24033-2	Cone Tip Delay Line: Acrylic; 3/16"
TD-24033-3	Cone Tip Delay Line: Graphite; 3/16"
TD-24033-4	Delay Tip (P): Acry; 1/16" Dia x 0.45" L
TD-24033-5	Delay Tip (P): Acry; 1/8" Dia x 0.45" L
TD-24033-6	Delay Tip: Acrylic; 1/4" Dia x 1/2" L
TD-24033-7	Delay Tip: Acrylic; 1/4" Dia x 3/8" L
TD-24033-8	Delay Tip: Graphite; 1/4"

### Other Accessories

TZ-24035	6" Ext Wand for S/E Microdot Transducers
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