Elcometer CG100 Corrosion Thickness Gauges

With a wide selection of display and measurement modes, automatic gain control and data-logging, the CG100 range of corrosion thickness gauges are ideal for measuring coating and material thickness as well as for locating pits, flaws and defects in materials.

The Elcometer CG100 ultrasonic corrosion thickness gauge is available in four models - from an entry level CG100B to the top of the range CG100ABDL+.

Features

- Supplied in a carry case - ideal for site tests
- Range of display & measurement options – *See Page 3*
- Adjustable gain: -30dB to 70dB range
- Automatic gain control (AGC)
- Time corrected gain (TCG)
- Gate control
- Threshold adjustment
- 64 User defined setups
- Multiple language display
- Multiple calibration and material selection options
- High speed scan mode: 32 readings per second
- Differential and minimal thickness alarm modes
- Data output and storage: 16,000 readings and waveforms or B-Scans
- Download to FREE ElcoMaster® data management software

CG100B

The CG100B Corrosion Thickness Gauge features automatic gain control (AGC) for ease of use or manual adjustment (-30dB to 70dB) to increase the amplitude of the received echo to suit the material properties.

P-E | E-E | PETP | CT | EEV | PECT | AGC | B-Scan

CG100BDL

The CG100BDL Corrosion Thickness Gauge stores up to 16,000 readings with individual waveforms in alpha-numeric batches and full data logging through RS232 data output to ElcoMaster® data management software.

P-E | E-E | PETP | CT | EEV | PECT | AGC | B-Scan

CG100ABDL

The CG100ABDL Corrosion Thickness Gauge stores up to 16,000 readings with individual waveforms, displays A-Scan and B-Scan and offers full data logging through RS232 data output to ElcoMaster® data management software.

P-E | E-E | PETP | CT | EEV | PECT | AGC | B-Scan | A-Scan

CG100ABDL+

With its high contrasting colour display the CG100ABDL+ Corrosion Thickness Gauge has a refresh rate of 120Hz providing users with an instant measurement response.

P-E | E-E | PETP | CT | EEV | PECT | AGC | B-Scan | A-Scan

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.

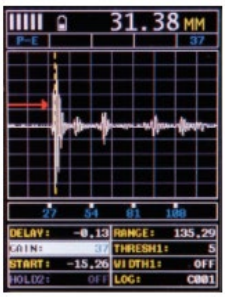
Limit Alarm Mode

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

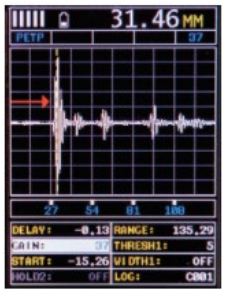
Dual element transducers consist of a probe with two crystals (one to transmit and one to receive the sound pulse). The crystals are separated by an acoustic barrier - generating a 'V-shaped' sound path as the sound travels from one element to the other. This path is slightly longer than the direct path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

CG100 Measurement Modes Explained



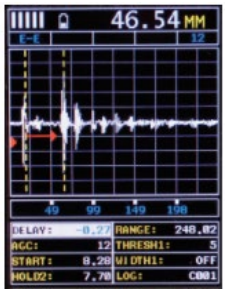
Pulse - Echo Mode (PE)

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.



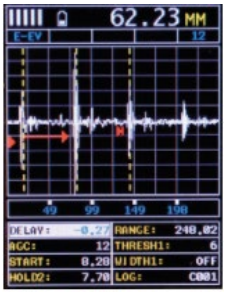
Pulse - Echo Temp Comp Mode (PETP)

Similar to the PE mode, PETP takes into account and compensates for the variations in measurement caused by temperature variations.



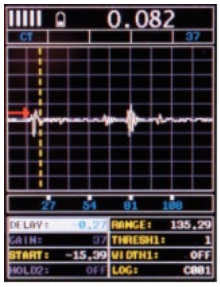
Echo - Echo Mode (EE)

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



Echo - Echo Verify Mode (EEV)

The echo-echo verify mode measures by comparing the values between 3 reflections and is commonly used to eliminate errors from surface coatings and to make measurements in multiple layered materials.

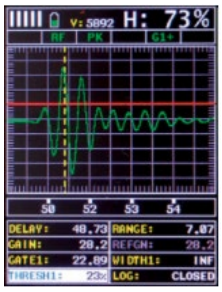


Coating Only Mode (CT)

Displays the thickness of the coating applied to the material.

Pulse - Echo Coating Mode (PECT)

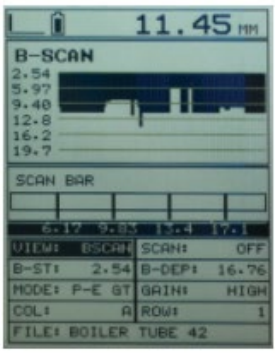
Displays both the material thickness (PE) and the coating thickness (CT) at the same time.



Basic Flaw Mode (FLAW MODE)

Basic prove-up flaw detection using single element angle beam transducers is available on the CG100ABDL and CG100ABDL+ corrosion thickness gauges.

CG100 Display Modes Explained



Material Thickness Digits Display

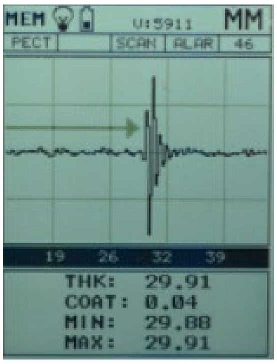
The standard display on all models, this displays the numerical thickness value in either millimetres (mm) or inches (IN).

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 Specification

Model & Part Number	**CG100B**	**CG100BDL**	**CG100ABDL**	**CG100ABDL+**
Material thickness digits display	■	■	■	■
B-Scan cross sectional display	■	■	■	■
Combined B-Scan & digits display	■	■	■	■
Scan bar display	■	■	■	■
Coating thickness display	■	■	■	■
A-Scan Display			+ Rectified, - Rectified, Full Waveform (RF)	+ Rectified, - Rectified, Full Waveform, Portrait & landscape views
Measurement Mode	PE, PETP, EE, EEV, CT & PECT	PE, PETP, EE, EEV, CT & PECT	PE, PETP, EE, EEV, CT & PECT	PE, PETP, EE, EEV, CT & PECT
Measurement Rate				
Manual Scan mode Scan bar display	8 readings p/sec 250 readings p/sec 10 readings p/sec	8 readings p/sec 250 readings p/sec 10 readings p/sec	8 readings p/sec 50 readings p/sec 10 readings p/sec	8 readings p/sec 50 readings p/sec 10 readings p/sec
Measuring Range	PE: 0.63 - 1219.2mm PETP: 0.63-1219.2mm EE: 2.54 - 152.4mm EEV: 2.54 - 25.4mm CT: 0.01 - 2.54mm PECT: 0.63-1219.2mm PECT: 0.01 - 2.54mm	PE: 0.63 - 1219.2mm PETP: 0.63-1219.2mm EE: 2.54 - 152.4mm EEV: 2.54 - 25.4mm CT: 0.01 - 2.54mm PECT: 0.63-1219.2mm PECT: 0.01 - 2.54mm	PE: 0.63 - 1219.2mm PETP: 0.63-1219.2mm EE: 2.54 - 152.4mm EEV: 2.54 - 25.4mm CT: 0.01 - 2.54mm PECT: 0.63-1219.2mm PECT: 0.01 - 2.54mm	PE: 0.63 - 1219.2mm PETP: 0.63-1219.2mm EE: 2.54 - 152.4mm EEV: 2.54 - 25.4mm CT: 0.01 - 2.54mm PECT: 0.63-1219.2mm PECT: 0.01 - 2.54mm
Measurement Accuracy	0.01mm	0.01mm	0.01mm	0.01mm
Measurement Resolution	0.01mm	0.01mm	0.01mm, 0.001mm selectable	0.01mm, 0.001mm selectable
Velocity Calibration Range	309.88 - 18,542m/s (0.0122 - 0.7300in/μs)	309.88 - 18,542m/s (0.0122 - 0.7300in/μs)	309.88 - 18,542m/s (0.0122 - 0.7300in/μs)	309.88 - 18,542m/s (0.0122 - 0.7300in/μs)
Additional Features High speed scan mode	■	■	■	■
Differential mode	■	■	■	■
Limit alarm mode	■	■	■	■
B-Scan display speed	10 to 200 readings p/sec	10 to 200 readings p/sec	10 to 200 readings p/sec	10 to 200 readings p/sec

Model & Part Number	CG100B	CG100BDL	CG100ABDL	CG100ABDL+
Flaw mode			Basic prove-up flaw detection using single element angle beam transducers	Basic prove-up flaw detection using single element angle beam transducers
Calibration setups	64 user-definable setups transferrable to and from a PC archive	64 user-definable setups transferrable to and from a PC archive	64 user-definable setups transferrable to and from a PC archive	64 user-definable setups transferrable to and from a PC archive
Gates			3 fully adjustable gates: start, stop, width & threshold	3 fully adjustable gates: start, stop, width & threshold
Damping			adjustable damping (50 - 100ohms)	adjustable damping (50 - 100ohms)
Pulser type	dual square wave pulsers	dual square wave pulsers	dual square wave pulsers	dual square wave pulsers
Gain	Automatic gain control (AGC) with 110dB range (limited), or selectable gain: vlow, low, medium hi or vhi	Automatic gain control (AGC) with 110dB range (limited), or selectable gain: vlow, low, medium hi or vhi	Manual, automatic gain control (AGC) with 110dB range (limited)	Manual, automatic gain control (AGC) with 110dB range (limited)
Timing	Precision 25MHz TCXO with single shot 100MHz 8bit ultra low power 8bit digitizer	Precision 25MHz TCXO with single shot 100MHz 8bit ultra low power 8bit digitizer	Precision 25MHz TCXO with single shot 100MHz 8bit ultra low power 8bit digitizer	Precision 25MHz TCXO with single shot 100MHz 8bit ultra low power 8bit digitizer
Memory & Data logging		4GB internal memory sequential and grid logging Alpha numeric batch identification OBSTRUCT indicates inaccessible locations Bitmap graphic capture	4GB internal memory sequential and grid logging Alpha numeric batch identification OBSTRUCT indicates inaccessible locations Bitmap graphic capture	4GB internal memory sequential and grid logging Alpha numeric batch identification OBSTRUCT indicates inaccessible locations Bitmap graphic capture
Calibration Options	Single, two point, velocity & material type	Single, two point, velocity & material type	Single, two point, velocity & material type	Single, two point, velocity & material type
Transducer Probe Type	Dual element	Dual element	Dual element & flaw prove up	Dual element & flaw prove up
Transducer Frequency Range	1 - 10MHz	1 - 10MHz	1 - 20MHz	1 - 20MHz
Transducer recognition	Automatic & manual - selectable from a list	Automatic & manual - selectable from a list	Automatic & manual - selectable from a list	Automatic & manual - selectable from a list
V-path / dual path error correction	Automatic	Automatic	Automatic	Automatic
Probe zero	Automatic & manual (via integrated probe disk)	Automatic & manual (via integrated probe disk)	Automatic & manual (via integrated probe disk)	Automatic & manual (via integrated probe disk)
Display	1/8 VGA (greyscale) 62 x 45.7mm viewable area	1/8 VGA (greyscale) 62 x 45.7mm viewable area	1/8 VGA (greyscale) 62 x 45.7mm viewable area	1/4 VGA AMOLED colour display 57.6 x 43.2mm viewable area
Display Refresh Rate	25Hz	25Hz	25Hz	60Hz
Units (selectable)	mm or inches	mm or inches	mm or inches	mm or inches
Backlight	on / off / auto	on / off / auto	on / off / auto	adjustable brightness

Model & Part Number	CG100B	CG100BDL	CG100ABDL	CG100ABDL+
Repeatability Stability Indicator	■	■	■	■
Battery Type	3 x AA alkaline	3 x AA alkaline	3 x AA alkaline	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	Alkaline: greyscale 35 hours, colour 12 hours Nicad: greyscale 10 hours, colour 5 hours NI-MH: greyscale 35 hours, colour 12 hours	Alkaline: greyscale 35 hours, colour 12 hours Nicad: greyscale 10 hours, colour 5 hours NI-MH: greyscale 35 hours, colour 12 hours	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	auto	auto	auto
Operating Temperature	-10 to 60ºC	-10 to 60ºC	-10 to 60ºC	-10 to 60ºC
Size (w x h x d)	63.5 x 165.0 x 31.5mm	63.5 x 165.0 x 31.5mm	63.5 x 165.0 x 31.5mm	63.5 x 165.0 x 31.5mm
Weight (including batteries)	383g	383g	383g	383g
Aluminium case design with gasket sealed end caps, waterproof membrane keypad	■	■	■	■
Transducer Connector Type	LEMO	LEMO	LEMO	LEMO
Data Output	USB	USB	USB	USB

Packing list

Elcometer NDT CG100B gauge
Couplant
Carry case
User manual
Test certificate
3 x AA batteries

Elcometer NDT CG100BDL gauge
Couplant
Carry case
User manual
Test certificate
3 x AA batteries
ElcoMaster® software
USB cable

Elcometer NDT CG100ABDL / NDT CG100ABDL+ gauge
Couplant
Carry case
User manual
Test certificate
3 x AA batteries
ElcoMaster® software
USB cable

Transducers

Corrosion Thickness Gauge Transducers

A complete range of dual element thickness transducers, ideal for inspecting metal substrates.

Part Number	Probe Diameter	Probe Characteristic		Connector Type						Suitable for measuring				
			Damping	ThruPaint™	Potted	Microdot	Lemo	Top	Side	Cast Iron	Plastics	Fibreglass	Thin Fibreglass	Steel
1.00 MHz Dual Element Thickness Transducer														
TX1M00EP-1	1/2"	Standard	S		■			■		■	■	■		
TX1M00EP-2	1/2"	Standard	S		■				■	■	■	■		
TX1M00EM-1	1/2"	Standard	S			■		■		■	■	■		
TX1M00EM-2	1/2"	Standard	S			■			■	■	■	■		
TX1M00EP-3	1/2"	Composite	S		■				■	■	■	■		
TX1M00EL	1/2"	Composite	S				■		■	■	■	■		
2.25 MHz Dual Element Thickness Transducer														
TX2M25CP-1	1/4"	Standard	S		■			■		■	■		■	
TX2M25CP-2	1/4"	Standard	S		■				■	■	■		■	
TX2M25CM-1	1/4"	Standard	S			■		■		■	■		■	
TX2M25CM-2	1/4"	Standard	S			■			■	■	■		■	
TX2M25CP-3	1/4"	Hi Temp[2]	S		■			■		■	■		■	
TX2M25CM-3	1/4"	Hi Temp[2]	S			■		■		■	■		■	
TX2M25EP-1	1/2"	Standard	S		■			■		■	■		■	
TX2M25EP-2	1/2"	Standard	S		■				■	■	■		■	
TX2M25EM-1	1/2"	Standard	S			■		■		■	■		■	
TX2M25EM-2	1/2"	Standard	S			■			■	■	■		■	
TX2M25EP-3	1/2"	Hi Temp[2]	S		■			■		■	■		■	
TX2M25EM-3	1/2"	Hi Temp[2]	S			■		■		■	■		■	
TX2M25EP-4	1/2"	Composite	S		■				■	■	■		■	
TX2M25EL-1	1/2"	Armoured	S				■		■	■	■		■	
3.50 MHz Dual Element Thickness Transducer														
TX3M50EP-4	1/2"	Standard	H	■	■				■	■	■		■	■
TX3M50EP-1	1/2"	Coating Thickness	CT	■	■				■	■	■		■	■

[2] High temperature probes suitable for measuring 343°C
S - Standard Undamped Transducer
CT - Damped Coating Thickness Transducer
H - Highly Damped Transducer

Part Number	Probe Diameter	Probe Characteristic		Connector Type						Suitable for measuring				
			Damping	ThruPaint™	Potted	Microdot	Lemo	Top	Side	Cast Iron	Plastics	Fibreglass	Thin Fibreglass	Steel
5.00 MHz Dual Element Thickness Transducer														
TX5M00BP-2	3/16"	Standard	S		■			■			■	■	■	
TX5M00BP-3	3/16"	Standard	S		■				■		■	■	■	
TX5M00BP-5	3/16"	Standard	H	■	■				■		■	■	■	
TX5M00BM	3/16"	Standard	S			■			■		■	■	■	
TX5M00BP-1	3/16"	Low Profile	S		■				■		■	■	■	
TX5M00BP-4	3/16"	Coating Thickness	CT	■	■				■		■	■	■	
TX5M00CP-3	1/4"	Standard	S		■			■			■	■	■	
TX5M00CP-9	1/4"	Standard	H	■	■			■			■	■	■	
TX5M00CP-4	1/4"	Standard	S		■				■		■	■	■	
TX5M00CP-10	1/4"	Standard	H	■	■				■		■	■	■	
TX5M00CM-1	1/4"	Standard	S			■		■			■	■	■	
TX5M00CM-2	1/4"	Standard	S			■			■		■	■	■	
TX5M00CM-9	1/4"	Standard	H	■		■			■		■	■	■	
TX5M00CP-1	1/4"	Low Profile 1" Wand	S		■				■		■	■	■	
TX5M00CP-2	1/4"	Low Profile 9" Wand	S		■				■		■	■	■	
TX5M00CP-6	1/4"	Coating Thickness	CT	■	■				■		■	■	■	
TX5M00CM-3	1/4"	Coating Thickness	CT	■		■			■		■	■	■	
TX5M00CP-7	1/4"	Hi Temp[2]	S		■			■			■	■	■	
TX5M00CP-8	1/4"	Hi Temp[2]	H	■	■			■			■	■	■	
TX5M00CM-4	1/4"	Hi Temp[2]	H	■		■		■			■	■	■	
TX5M00CM-5	1/4"	Hi Temp[2]	S			■		■			■	■	■	
TX5M00EP-2	1/2"	Standard	S		■			■			■	■	■	
TX5M00EP-3	1/2"	Standard	S		■				■		■	■	■	
TX5M00EP-10	1/2"	Standard	H	■	■				■		■	■	■	
TX5M00EM-1	1/2"	Standard	S			■		■			■	■	■	
TX5M00EM-2	1/2"	Standard	S			■			■		■	■	■	
TX5M00EP-4	1/2"	Coating Thickness	CT	■	■				■		■	■	■	
TX5M00EP-5	1/2"	Hi Temp[2]	S		■			■			■	■	■	
TX5M00EM-3	1/2"	Hi Temp[2]	S			■		■			■	■	■	
TX5M00EM-4	1/2"	Hi Temp[2]	S			■		■			■	■	■	
TX5M00EP-6	1/2"	Hi Temp[2]	H	■	■			■			■	■	■	
TX5M00EL-1	1/2"	Armoured	S				■		■		■	■	■	
TX5M00EP-1	1/2"	Cylinder Probe - Iron	S		■				■	■	■	■	■	

[2] High temperature probes suitable for measuring 343°C
S - Standard Undamped Transducer
CT - Damped Coating Thickness Transducer
H - Highly Damped Transducer

Part Number	Probe Diameter	Probe Characteristic		Connector Type						Suitable for measuring				
			Damping	ThruPaint™	Potted	Microdot	Lemo	Top	Side	Cast Iron	Plastics	Fibreglass	Thin Fibreglass	Steel
7.50 MHz Dual Element Thickness Transducer														
TX7M50BP-1	3/16"	Standard	S		■		■		■	■	■	■		
TX7M50BP-2	3/16"	Standard	S		■			■	■	■	■	■		
TX7M50BP-3	3/16"	Coating Thickness	CT	■	■			■	■	■	■	■		
TX7M50CP-1	1/4"	Exxon Spec	S		■		■		■	■	■	■		
TX7M50CP-2	1/4"	Exxon Spec	S		■			■	■	■	■	■		
TX7M50CM-1	1/4"	Exxon Spec	S			■	■		■	■	■	■		
TX7M50CM-2	1/4"	Exxon Spec	S			■		■	■	■	■	■		
TX7M50CP-3	1/4"	High Resolution	S		■		■		■	■	■	■		
TX7M50CP-4	1/4"	High Resolution	S		■			■	■	■	■	■		
TX7M50CP-6	1/4"	Standard	H	■	■			■	■	■	■	■		
TX7M50CP-5	1/4"	Coating Thickness	CT	■	■			■	■	■	■	■		
TX7M50CM-3	1/4"	High Resolution	S			■	■		■	■	■	■		
TX7M50CM-4	1/4"	High Resolution	S			■		■	■	■	■	■		
10.00 MHz Dual Element Thickness Transducer														
TX10M0BP-1	3/16"	Standard	S		■			■		■	■	■	■	
TX10M0BP-2	3/16"	Standard	S		■		■			■	■	■	■	
TX10M0CP-3	1/4"	Standard	S		■		■				■	■	■	
TX10M0CP-4	1/4"	Standard	S		■			■			■	■	■	
TX10M0CM-1	1/4"	Standard	S			■	■				■	■	■	
TX10M0CM-2	1/4"	Standard	S			■		■			■	■	■	
TX10M0CP-1	1/4"	Low Profile 1" Wand	S		■			■	■		■	■	■	
TX10M0CP-2	1/4"	Low Profile 9" Wand	S		■			■	■		■	■	■	
TX10M0EP-2	1/2"	Standard	S		■		■				■	■	■	
TX10M0EP-3	1/2"	Standard	S		■			■			■	■	■	
TX10M0EM-1	1/2"	Standard	S			■	■				■	■	■	
TX10M0EM-2	1/2"	Standard	S			■		■			■	■	■	
TX10M0EP-1	1/2"	Cylinder Probe -	S		■			■	■		■	■	■	

CT - Damped Coating Thickness Transducer S - Standard Undamped Transducer H - Highly Damped Transducer

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-24030-6	T/Cable: 4' Dual Lemo to Lemo
TL-24030-8	T/Cable: 4' Dual Lemo to Microdot Single
TL-24031	RS232 Cable DB-9 to Lemo
TL-24032	USB to Serial Adapter
T92031809	Rubber Protective Case
T92031810	Plastic Protective Case

Couplant

TC-24034-1	Couplant: Standard; 120ml Bottle (Material Safety Data Sheet)
TC-24034-2	Couplant: Standard; .350ml 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)