

elcometer®



Elcometer FD700
Flaw Detector

Elcometer FD700

Mini Flaw Detector

The hand-held **Elcometer FD700** flaw detector range combines state-of-the-art flaw detection with advanced material thickness capabilities.

Automatic: probe zero, probe recognition, and temperature compensation

Large data storage with multiple formats: Alpha numeric grid and sequential with auto identifier

Compatible with ElcoMaster® PC for instant report generation and firmware updates

Measurement: Variety of modes to address a number of applications

Sizing Toolkits: DAC, AWS, TCG, DGS



Pulse Repetition Frequency: 8 to 2000Hz, adjustable



STANDARDS:
ASTM E 797, EN 14127, EN 15317

Elcometer FD700

Mini Flaw Detector

Versatile

Two gauges in one

The FD700 series has two functions, a thickness gauge and a flaw detector. When the FD700 is set to thickness gauge it has the ability to measure coatings and material thickness simultaneously. When set to flaw detector the gauge has the ability to detect the size and position of flaws and to differentiate between flaw types in various materials and welded joints.

Intelligent

User definable limits for pass/fail indication

Set hi/lo limits for pass/fail indication with audible warnings and built-in differential mode for quality control inspections.

Powerful

Store each measurement for further analysis

Up to 4GB of readings can be saved into the gauge memory as each measurement is taken, which can be downloaded later into an inspection application or into ElcoMaster® Software for further analysis and reporting.

Customisable

Customisable tool kits and reading display

The FD700 has a choice of display modes allowing the user to select the most appropriate for their needs; from A & B-Scan displays to flaw detection modes such as TRIG, DAC, TCG, Flank and Peak.

Detection Methods



Zero Crossing

The gate detects the flank of the pulse, but the measurement is taken at the next crossing of the x axis. This is the most common type of detection method in ultrasonic measurement.



Flank

The gate is triggered by the flank (or side) of the pulse on the graph and the measurement taken at this exact point.



Peak

The gate is triggered by the intersection with the A-scan pulse and the detection is taken from the next peak in the signal (when it stops rising and starts falling).

Elcometer FD700

Mini Flaw Detector

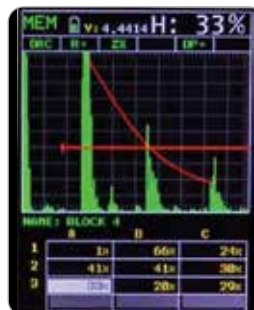
Material Thickness Product Features

Model & Part Number	FD700+ & FD700DL+
Display Mode	
Material thickness digits display	■
B-Scan cross sectional display	■
B-Scan with digits display	■
Scan bar display	■
Coating thickness display	■
A-Scan display	+ Rectified, - Rectified, Full Waveform (RF)
Flaw detection modes	TRIG, DAC, AWS, AVG/DGS, TCG
Measurement Mode	PE, PETP (Temp Compensation), EE (ThruPaint™), EEV, CT (Coating) & PECT
Measurement Rate (Thickness Mode)	
Manual	8 readings per second
Scan Mode	50 readings per second
Scan Bar Display	10 readings per second
Additional Features:	
High Speed Scan Mode	■
Differential Mode	■
Limit Alarm Mode	■
B-Scan Display Speed	Adjustable display speed
Calibration Setups	64 user-definable setups transferable to and from a PC archive
Gates	2 (flaw) and 3 (thickness) adjustable gates: start, stop, width & threshold
Damping	50, 75, 100, 300, 600, & 1500ohms
Pulsar Type	Two adjustable square wave pulsers and receivers
Gain	Manual, automatic gain control (AGC) with 110dB range with 0.2dB resolution
Timing	Precision TCXO timing with single shot 100MHz 8 bit ultra-low power digitizer
Memory and Data Logging	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
Transducer Recognition	Automatic
V-path / dual path error correction	Automatic



TRIG

TRIG enabling location of flaws in both surface distance and depth. Trigonometric display of beam path, depth, surface distance, and curved surface correction. Used with angle beam transducers.



DAC

Distance amplitude correction for the creation of DAC curves which are used to inform the operator of the size of any flaw at any depth.

Elcometer FD700

Mini Flaw Detector

Flaw Detection Product Features

Automatic Calibration:	Longitudinal (straight), or Shear (angle)
Probe Types:	Single Contact, Dual, Delay & Angle
Material Velocity Table:	Contains longitudinal and shear velocities for a variety of material types
TRIG	Trigonometric display of beam path, depth, surface distance, and curved surface correction. Used with angle beam transducers
DAC	Up to 8 points may be entered and used to digitally draw a DAC curve. Reference -2, -6, -10, (-6/-12), (-6/-14), (-2/-6/-10) dB. Amplitude displayed in %DAC, dB, or %FSH
AWS	Automatic defect sizing in accordance with AWS D1.1 structural welding code.
AVG/DGS	Automatic defect sizing using probe data. Stores up to 64 custom setups
TCG	Time corrected gain. 50 dB dynamic range, 20 dB per microsecond, up to 8 points for curve definition
Detection Modes	Zero Crossing, Flank and Peak
Display Freeze	Hold current waveform on screen
Peak Memory	Captures peak signal amplitude
PRF	8 to 2000Hz in selectable steps (8, 16, 32, 66, 125, 250, 333, 1000, 2000Hz)
Skip Bar	Displays skip legs in the waveform area
Pulse Width	40 to 400 ns. Selectable step options 40, 80 & 400 ns (labeled spike, thin & wide)
Frequency Bands	FD700+ & FD700DL+: Broadband 1.8 - 19MHz (-3dB). FD700DL+: Three narrow bands at 2MHz, 5MHz, 10MHz
Horizontal Linearity	+/- 0.4% FSW
Vertical Linearity	+/- 1% FSH
Amplifier Linearity	+/- 1 dB
Amplitude Measurement	0 to 100% FSH, with 1% resolution
Delay	0 - 999in (25,375mm) at steel velocity
Display	1/4 VGA AMOLED colour display 57.6 x 43.2mm (2.27 x 1.78") viewable area
Display Refresh Rate	60Hz
Units (selectable)	mm or inches
Backlight	adjustable brightness
Repeatability / Stability Indicator	■
Low Battery Indicator	■
Battery Save Mode	auto



AWS

The American Weld Standard function provides automatic defect sizing in accordance with AWS D1.1 structural welding code.



TCG

Time corrected gain increases gain as distance increases, in order to achieve an over all level of sensitivity for the same flaw/reflector at different distances.

Elcometer FD700
Mini Flaw Detector
Technical Specification

Part Number	Description	Certificate
FD700+	Elcometer FD700+ Mini Flaw Detector	○
FD700DL+	Elcometer FD700DL+ Mini Flaw Detector	○
Transducer Probe Type	Single & Dual Element	
Thickness Gauge: Measurement Range ¹		
Pulse Echo (PE)	0.63 - 2,440mm (0.025 – 96”)	
Pulse Echo (single contact)	1.0 - 30,480mm (0.040 - 1200”)	
Echo Echo ThruPaint™ (EE)	1.27 - 102mm (0.050 - 4.0”)	
Echo Echo (single delay line)	0.178 - 25.4mm (0.007 -1.00”)	
Echo Echo (single contact)	1.0 - 3,050mm (0.040 - 120”)	
Echo Echo Verify (EEV)	1.27 - 25.4mm (0.050 - 1.0”)	
Pulse Echo Temp Comp (PETP)	0.63 - 2,440mm (0.025 – 96”)	
Coating Thickness (CT)	0.0127 - 2.54mm (0.0005 - 0.100”)	
Pulse Echo Coating Thickness (PECT)	0.63 - 2,440mm (0.025 – 96”)	
Pulse Echo Coating Thickness (PECT)	0.01 - 2.54mm (0.001 - 0.100”)	
Measurement Accuracy ¹	0.01mm (0.001”)	
Resolution	0.01mm (0.001”), 0.001mm (0.0001”)	
Memory	4GB internal memory	
Operating Temperature	-10 to 60°C (14 to 140°F)	
Data Output	USB	
Power Supply	3 x AA batteries and via USB	
Battery Life ²	Alkaline (12hrs), Nicad (5hrs), and NI-MH (12hrs)	
Gauge Weight	397g (14oz) - including batteries	
Gauge Dimensions	63.5 x 165 x 31.5mm (2.5 x 6.5 x 1.24”)	
Packing List	Elcometer NDT FD700 gauge, couplant, carry case, operating instructions, test certificate, 3 x AA batteries, ElcoMaster® Software, transfer cable	

¹ Measuring range & accuracy depends on material, surface conditions and the transducer selected.

² Approximate battery life, when in continuous measurement mode.

○ Test Certificate supplied as standard.

Elcometer FD

Single Element Transducers



Single Element Transducers are the common 0° transducers and are ideal for inspecting large, simple geometry materials.

Disk	Part Number	Probe Diameter	Probe Characteristic	Connector Type						Suitable for measuring																	
				Microdot	Lemo	BNC	Top	Side	End	Cast Iron	Plastics	Thin Plastics	Fibreglass	Thin Fibreglass	Steel	Glass	Aluminium	Titanium	All Metals	Common Metals	Rough Surfaces	Castings	Billets	Extruded Parts	Weld Inspection	Weld Inspection (Tight Areas)	FD700+
1.00MHz Single Element Contact Transducers																											
●	TF1M00C-1	¼"	Finger Tip Composite	S	•			•		•	•	•	•					•		•	•	•				•	•
●	TF1M00E-1	½"	Finger Tip Composite	S	•			•		•	•	•	•					•		•	•	•				•	•
3.50MHz Single Element Contact Transducers																											
●	TF3M50E-1	½"	Finger Tip Composite	S	•			•		•								•		•					•	•	
5.00MHz Single Element Contact Transducers																											
●	TF5M00CG-1	¼"	Finger Tip	HG	•			•										•	•						•	•	
●	TF5M00EG-1	½"	Finger Tip	HG	•			•										•	•						•	•	
10.00MHz Single Element Contact Transducers																											
○	TF10M0CG-1	¼"	Finger Tip	HG	•			•										•	•						•	•	
15.00MHz Single Element Contact Transducers																											
●	TF15M0AH-1	⅛"	Finger Tip Slim Line	H	•			•										•	•						•	•	
20.00MHz Single Element Contact Transducers																											
●	TF20M0AH-1	⅛"	Finger Tip Slim Line	H	•			•										•	•						•	•	

* Damping: S - Standard undamped Transducer, H - Highly Damped Transducer, HG - High Gain Damping Transducers

Elcometer FD

Shear Wave Transducers



Shear Wave Transducers are designed to be used with angle beam wedges. The transducer is secured to the wedge with screws.

For standard and dual shear wave transducers visit www.elcometer.com.

Disk	Part Number	Probe Diameter	Probe Characteristic	Damping*	Microdot	Suitable for measuring																			
						Lemo	Cast Iron	Plastics	Thin Plastics	Fibreglass	Thin Fibreglass	Steel	Glass	Aluminium	Titanium	All Metals	Common Metals	Corrosion Prove Up	Castings	Billets	Extruded Parts	Weld Inspection	Weld Inspection (Tight Areas)	FD700+	FD700DL+
1.00MHz Shear Wave - Quick Change Transducers																									
●	TF1M00CG	¼"	Composite	HG	●	●												●	●	●	●	●	●	●	●
●	TF1M00CR	¼"	Composite	R	●	●												●	●	●	●	●	●	●	●
●	TF1M00ER	½"	Composite	R	●	●												●	●	●	●	●	●	●	●
2.25MHz Shear Wave - Quick Change Transducers																									
●	TF2M25CG-4	¼"	Standard	HG	●	●												●	●	●	●	●	●	●	●
●	TF2M25CR-4	¼"	Standard	R	●	●												●	●	●	●	●	●	●	●
5.00MHz Shear Wave - Quick Change Transducers																									
●	TF5M00CG-4	¼"	Standard	HG	●													●	●	●	●	●	●	●	●
●	TF5M00EG-5	½"	Standard	HG	●													●	●	●	●	●	●	●	●
●	TF5M00CR-4	¼"	Standard	R	●													●	●	●	●	●	●	●	●
●	TF5M00ER-4	½"	Standard	R	●													●	●	●	●	●	●	●	●
10.00MHz Shear Wave - Quick Change Transducers																									
○	TF10M0CG-4	¼"	Standard	HG	●													●	●	●	●	●	●	●	●
○	TF10M0CR-4	¼"	Standard	R	●													●	●	●	●	●	●	●	●

* Damping: **HG** - High Gain Damping Transducers, **R** - Resolution Transducer

Elcometer FD

Transducer Wedges



A range of versatile **wedges** available in 45°, 60° and 70° angles for use with Elcometer **shear wave quick change transducers**.

For transducer wedges suitable for standard and dual shear wave transducers visit www.elcometer.com.



Wedges - Standard Quick Change Transducers

Shear Wave Contact Transducers

Part Number	Probe Diameter	Angle	Suitable for	
			FD700+	FD700DL+
Wedge - Standard Quick Change Transducers				
TF9999C45-2	1/4"	45°	•	•
TF9999E45-2	1/2"	45°	•	•
TF9999C60-2	1/4"	60°	•	•
TF9999E60-2	1/2"	60°	•	•
TF9999C70-2	1/4"	70°	•	•
TF9999E70-2	1/2"	70°	•	•

Part Number	Probe Diameter	Angle	Suitable for	
			FD700+	FD700DL+
4.00 MHz Shear Wave Contact Transducers				
TF4M0045	2/5" (10mm)	45°	•	•
TF4M0060	2/5" (10mm)	60°	•	•
TF4M0070	2/5" (10mm)	70°	•	•

Cables & Adaptors

Part Number	Description	Suitable for													
		MTG	PTG	CG70BDL	CG70ABDL	CG100B	CG100BDL	CG100ABDL	CG100ABDL+	UG20DL	PG70ABDL	FD700+	FD700DL+	BG80DL	BG80TDL
TL-24030-2	T/Cable: 1.2m (4') Single Lemo 00 to Lemo 00					•	•	•	•		•	•	•		
TL-24030-3	T/Cable: 1.2m (4') Single Lemo 00 to Microdot					•	•	•	•		•	•	•	•	•
TL-24030-9	T/Cable: 1.2m (4') Dual Lemo to M/dot, HT Armoured			•	•										
TL-24030-10	T/Cable: 3m (10') Single Lemo to Microdot													•	•
TL-24030-11	T/Cable: 6m (20') Single Lemo to Microdot Single													•	•

elcometer®
www.elcometer.com

ENGLAND

Elcometer Limited
Tel: +44 (0)161 371 6000
sales@elcometer.com
www.elcometer.com

FRANCE

Elcometer Sarl
Tel: +33 (0)2 38 86 33 44
fr_info@elcometer.com
www.elcometer.fr

GERMANY

Elcometer Instruments GmbH
AALEN
Tel: +49 (0) 7361 52806 0
Fax: +49 (0) 7361 52806 77

LEER

Tel: +49 (0) 7361 528 06 60
Fax: +49 (0) 7361 528 06 68

de_info@elcometer.com
www.elcometer.de

THE NETHERLANDS

Elcometer B.V.
Tel: +31 (0)30 259 1818
Fax: +31 (0)30 210 6666
nl_info@elcometer.com
www.elcometer.nl

JAPAN

Elcometer KK
Tel: +81-(0)3-6869-0770
jp_info@elcometer.com
www.elcometer.co.jp

REPUBLIC OF SINGAPORE

Elcometer (Asia) Pte Ltd
Tel: +65 6462 2822
asia@elcometer.com
www.elcometer.com

UNITED ARAB EMIRATES

Elcometer LLC
Tel: +971 4 295 0191
+971 4 280 3526
uae_sales@elcometer.com
www.elcometer.ae

USA

MICHIGAN
Elcometer Inc
Tel: +1 248 650 0500
Toll Free: 800 521 0635
inc@elcometer.com
www.elcometer.com

TEXAS

Elcometer of Houston
Tel: +1 713 450 0631
Toll Free: 800 521 0635
inc@elcometer.com
www.elcometer.com