elcometer® NDT

Flaw Detectors

FD700+ & FD700DL+, FD800DL & FD800DL+

These powerful bench top & hand-held flaw detectors combine state-of-the-art flaw detection with advanced material thickness capabilities.

With all the functionality of the top of the range material thickness gauge, the FD700 and FD800 series, when in flaw detection mode offers a variety of tool kits which enable fast and accurate flaw detection, ideal for weld inspection, forgings or composite material testing.

Tool kits include:

- TRIG enabling location of flaws in both surface distance and depth from the transducer.
- TCG (time corrected gain) increases gain as time increases, in order to achieve an overall level of sensitivity for the same flaw/reflector at different distances.
- DAC for the creation of DAC curves which are used to inform the operator of the size of any given flaw at any depth.
- AWS function provides automatic defect sizing in accordance with AWS D1.1 structural welding code.
- DGS/AVG allows automatic defect sizing from a single reference defect.

For the full range of transducers visit elcometerNDT.com

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 detect in ultrasonic measurement.

Flank

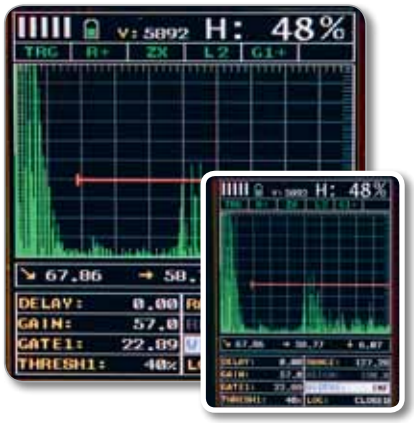
The gate is triggered by the flank (or side) of the pulse on the graph and the measurement taken at this exact point.

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).

TRIG

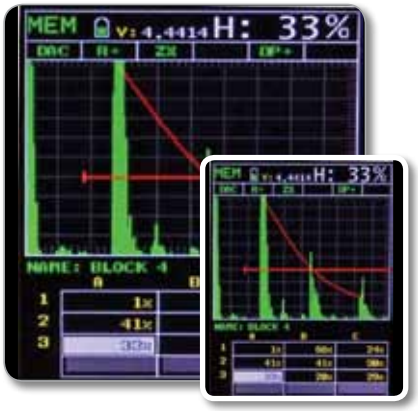
TRIG enabling location of flaws in both surface distance and depth.
Trigonometric display of beam path, depth, surface distance, and curved surface correction.
Used with angle beam transducers.



Flaw Detection Gauges

TCG

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

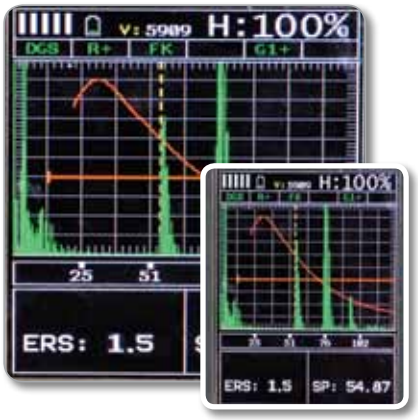


DAC

Distance amplitude correction for the creation of DAC curves which allow the operator to compare flaws of the same size at different depths.

AWS

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



DGS/AVG

Allows automatic defect sizing from a single reference defect.

compatible with ElcoMaster™

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

Features

- Exceptional visibility in sunlight (AMOLED) colour VGA display (320x240 pixels)
- Sizing Toolkits: DAC, AWS, TCG, DGS
- Pulse Repetition Frequency: 8 to 333 Hz, adjustable
- Screen Refresh Rate: Adjustable 60 & 120 Hz
- Detection: Z-Cross, Flank & Peak
- Automatic: probe zero, probe recognition, and temperature compensation
- Measurement: Variety of modes to address a number of applications
- Large data storage with multiple formats: Alpha numeric grid and sequential with auto identifier
- Download to ElcoMaster™ data management software

Whether you are on-site or in the laboratory these gauges are the tool you need for all your flaw detecting needs.

The time corrected gain (TCG) feature automatically compensates for sound attenuation through a material, further increasing the performance of the gauge.

The FD700DL+ stores up to 8,000 readings with A/B-scan images in alpha numeric batches with full data logging via RS232 data output to ElcoMaster™ data management software.

For the full range of transducers visit elcometerNDT.com

compatible with ElcoMaster™

The bench-top FD800 flaw detector series combines state-of-the-art flaw detection with advanced material thickness capabilities.

Features

- Blanview sunlight readable QVGA TFT colour display
- Sizing Toolkits: DAC, AWS, TCG, DGS
- Pulse Repetition Frequency: 8 to 333 Hz, adjustable
- Screen Refresh Rate: 60Hz
- Detection: Z-Cross, Flank & Peak
- Automatic: probe zero, probe recognition, and temperature compensation
- Measurement: Variety of modes to address a number of applications
- Large data storage: 6Gb internal & up to 64Gb external SD slot
- Multiple formats: Alpha numeric grid and sequential with auto identifier
- Up to 12 hours of battery life
- Download to ElcoMaster™ data management software

Designed for use in the laboratory these gauges are the tool you need for all your flaw detecting needs.

The time corrected gain (TCG) feature automatically compensates for sound attenuation through a material, further increasing the performance of the gauge.

Within the grid batching of the FD800DL+ the user has the capability to enter 'OBSTRUCT' on to the grid for easy identification of inaccessible locations to measure.

The FD800DL+ has a 6Gb internal memory and an external SD slot which allows up to 64Gb with full data logging via RS232 data output to ElcoMaster™ data management software.

compatible with ElcoMaster™

For the full range of transducers visit elcometerNDT.com

FD700+ & FD700DL+, FD800DL & FD800DL+

Material Thickness Features

Model & Part Number	FD700+ & FD700DL+	FD800DL & FD800DL+
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** **Flaw detection modes**	• • • • • + Rectified, - Rectified, Full Waveform (RF) TRIG, DAC, AWS, TCG, Zero Crossing, Flank, Peak	
Measurement Mode[1]	PE, PETP (Temp Compensation), EE (ThruPaint™), EEV, CT (Coating) & PECT	
Measurement Rate (Thickness Mode) **Manual:** **Scan mode** **Scan bar display**	 4 readings per second 32 readings per second 6 readings per second	
Measuring Range[2]	PE: 0.63 - 30480mm (0.025 - 1,200 inches) PETP: 0.63 - 30480mm (0.025 - 1,200 inches) EE: 1.27 - 102mm (0.050 - 4.000 inches) EEV: 1.27 - 25.4mm (0.050 - 1.000 inches) CT: 0.01 - 2.54mm (0.0005 - 0.100 inches) **PE**CT: 0.63 - 30480mm (0.025 - 1,200 inches) PE**CT**: 0.01 - 2.54mm (0.0005 - 0.100 inches)	
Measurement Accuracy[2]	± 1% or ±0.1mm whichever is the greater	
Measurement Resolution	0.01mm (0.001 inches)	
Velocity Calibration Range	256 - 16,000m/s (0.0100 - 0.6300in/ms)	
Additional Features: **High speed scan mode** **Differential mode** **Limit alarm mode**	 • • •	
B-Scan display speed	adjustable display speed	
Calibration Setups	6 factory & 64 user-definable setups transferrable to and from a PC archive	
Gates	3 fully adjustable gates: start, stop, width & threshold	
Damping	adjustable; impedance matching for optimising transducer performance	
Pulser Type	dual 200 volt square wave pulsers with adjustable pulse width (spike, thin, wide) and 50 volt cut/boost for greater penetration	FD800DL: two adjustable square wave pulsers. FD800DL+: two tone burst pulsers
Gain	manual, automatic gain control (AGC) with 110dB range with 0.2dB resolution	
Timing	precision 25MHz TCXO with single shot 100MHz 8bit ultra low power 8 bit digitizer	precision TCXO timing with single shot 100MHz 8bit ultra low power digitizer
Data Logging	• 8,000 with A/B-scan image & gauge settings • 210,000 - coating, material, min, max thickness • sequential and grid logging • Alpha numeric batch identification • OBSTRUCT indicates inaccessible locations	• 6Gb internal & up to 64Gb external SD slot • Bitmap graphic capture • sequential and grid logging • Alpha numeric batch identification • OBSTRUCT indicates inaccessible locations
Calibration Options	single, two point, velocity & material type	
Transducer Recognition	automatic	
V-path / dual path error correction	automatic	
Probe Zero	automatic	

[1] PE: Pulse-Echo Mode, EE: Echo-Echo (ThruPaint™) Mode.
[2] Measuring range & accuracy depends on material, surface conditions and the transducer selected.

Specifications

Flaw Detection Features

Flaw Detection Mode Features	FD700+ & FD700DL+	FD800DL & FD800DL+
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)	
Pulse Width	40 to 400 ns. Selectable step options 40, 80 & 400 ns (labeled spike, thin & wide)	
Frequency Bands	FD700+ & FD700DL+: Broadband 1.8 - 19 MHz (-3dB). FD700DL+: Three narrow bands at 2MHz, 5MHz, 10MHz	FD800DL & FD800DL+: Broadband 1.8 - 19 MHz (-3dB). Four narrow bands at 1, 2, 5, 10MHz FD800DL+: Additional narrow bands at 0.5MHz, 15MHz
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 1.78inches) viewable area	Blanview sunlight readable QVGA TFT colour display. 115.2 x 86.4mm (4.54 x 3.40 inches) viewable screen
Display Refresh Rate	60 & 120Hz	60Hz
Units (selectable)	mm or inches	
Backlight	adjustable brightness	
Repeatability / Stability Indicator	•	
Battery Type	3 x AA alkaline	6 x AA alkaline
Battery Life (approximate)	12 hours	
Low Battery Indicator	•	
Battery Save Mode	auto	
Operating Temperature		-10 to 60ºC (14 to 140ºF)
Size (w x h x d)	63.5 x 165.0 x 31.5mm (2.5 x 6.5 x 1.24 inches)	216.0 x 165.0 x 70.0mm (8.5 x 6.5 x 2.5 inches)
Weight (including batteries)	397g (14oz)	2.04kg (4.5lbs)
Case Design	Aluminium case design with gasket sealed end caps, waterproof membrane keypad	
Transducer Connector Type	LEMO	
RS232 Interface	Bi-directional	
Packing List	Elcometer NDT FD700+ or FD700DL+ gauge, couplant, carry case, user manual, test certificate, 3 x AA batteries, ElcoMaster™ software, transfer cable	Elcometer NDT FD800DL or FD800DL+ gauge, couplant, carry case, user manual, test certificate, 3 x AA batteries, ElcoMaster™ software, transfer cable

Corrosion Gauges

Precision Gauges

Velocity Gauges

Sonic Gauges

Flaw Detection

Bolt Gauges

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