

FX71-DL

Flaw Detector & Thickness Gauge



Flaw Detector:

- Sizing Toolkits: DAC, AWS, TCG, DGS
- Exceptional visibility in sunlight (AMOLED) color VGA display (320x240pixels)
- P.R.F. - 8 Hz to 2 kHz, adjustable
- Screen Refresh Rate: 60 Hz
- Detection: Z-Cross, Flank & Peak

Thickness Gauge:

- 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 w/auto identifier
- Up to 12 hours of battery life using 3 AA cells

Other:

- PC & OSX reporting software

FX71-DL Flaw Detectors & Thickness Gauge



The Dakota **FX71-DL** is both a **flaw detector** and an **ultrasonic material and coating thickness gauge**.

The FX71-DL Flaw detectors are designed to detect, size, position, and differentiate between flaw types in various materials and welded joints. Fast & High performance, with a 200 volt square wave pulser that can be adjusted for specific applications and transducers offers greater penetration for difficult material types, or increased resolution on noisy materials.

In addition, the FX71-DL serves the function of a thickness gauge are specifically setup to very accurately measure thickness, locate pits, flaws and blind surface corrosion and measure coating thickness.

SPECIFICATIONS

General

Size: 2.5W x 6.5H x 1.24D in (63.5 x 165 x 1.5mm).

Weight: 14 ounces (.397kgs), with batteries.

Case: Extruded aluminum body with nickel plated aluminum end caps (gasket sealed).

Display: 1/4 VGA AMOLED color display (320 x 240 pixels). Viewable area 1.7 x 2.27 in (43.2 x 57.6 mm). 16 color palette, multiple color options, and variable brightness.

Screen Refresh Rate: 60Hz.

Display Views: Flaw Detector: Full wave, +/- Rectified, or RF. Thickness Gauge: Digits, +/- Rectified, RF, or B-Scan.

Resolution (selectable): +/- 0.001 in (0.01 mm) or +/- 0.0001 in (0.001mm).

Timing: Precision TCXO timing with single shot 100 MHz 8 bit ultra low power digitizer.

Measurement Gates: Two independent gates (Flaw), and three gates (thickness). Start & width adjustable over full range. Amplitude 5-95%, 1% steps. Positive or negative triggering for each gate with audible and visual alarms.

Operating Temperature: 14 to 140F (-10C to 60C).

Environmental: Meets IP65 requirements.

Calibration

Automatic Calibration: Longitudinal (straight), or Shear (angle).

Probe Types: Single Contact, Dual, Delay, and Angle.

Units: English (in), Metric (mm).

Velocity: 0.0100 to .6300 in/ μ s (256-16,000 m/s).

Test Range: 0.007 in (.178mm) to 1200 in (30,480mm) maximum at steel velocity. Continuously variable.

Zero Offset (Probe Zero): 0-999.999 μ s.

Material Velocity Table: Contains longitudinal and shear velocities for a variety of material types.

Pulser

Pulser Type: Two adjustable square wave pulsers and receivers.

P.R.F.: 8 to 2000Hz in selectable steps (8, 16, 32, 66, 125, 250, 333, 1000, 2000Hz).

Pulser Voltage: 100-200 volt peak amplitude, rise/fall time < 10ns into 50ohm.

Pulse Width: 40 to 400 ns. Selectable step options 40, 80 & 400 ns (labeled spike, thin & wide).



Receiver

Gain: 0 to 110dB with 0.2dB resolution. Manual and AGC control.

Damping: 50, 75, 100, 300, 600, & 1500 ohms.

Frequency Bands: FX71-DL & FX71-DL: Broadband 1.8 - 19 MHz (-3dB). FX71-DL: 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.

Flaw Detector Features

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.

Measurement Mode: Pulse-Echo (P-E) range 0.025 in to 100 ft. (0.63mm to 3048 cm).

Auto-Cal: Provides automatic calibration with two reference points.

Detection Modes: Zero Crossing, Flank and Peak.

Display Freeze: Hold current waveform on screen.

Peak Memory: Captures peak signal amplitude.

Skip Bar: Displays skip legs in the waveform area.

Thickness Gauge Features

Measurement Modes (Dual & Single Element):

Pulse-Echo Mode (P-E) - (Pit & Flaw Detection) range 0.025 to 96 in (0.63mm to 244 cm). **Single Contact** - 0.040 in to 100 ft. (1 mm to 3048 cm).

Pulse-Echo Coating Mode (PECT) - (Material, Coating, Pit & Flaw Detection): Material: 0.025 in to 96 in (0.63mm to 244 cm). Coating: 0.001 to 0.100 inches (0.01 to 2.54 millimeters).

Pulse-Echo Temp Comp Mode (PETP) - (Pit & Flaw Detection) Auto temperature compensation -range 0.025 in to 96 in (0.63 mm to 244 cm).

Echo-Echo Mode (E-E) - (Thru Paint & Coatings) range 0.050 to 4.0 inches (1.27 to 102 millimeters). **Single Delay Line** - 0.007 to 1.00 in (.178 to 25.4 mm). **Single Contact** - 0.040 in to 10 ft. (1 mm to 305 cm). Will vary based on coating.

Echo-Echo Verify (E-EV) - (Thru Paint & Coatings) range 0.050 to 1.0 inches (1.27 to 25.4 millimeters). Will vary based on coating.

Coating Only Mode (CT) - (Coating Thickness) range 0.0005 to 0.100 inches (0.0127 to 2.54 millimeters). Range will vary +/- depending on the coating.

One and two point calibration option for material & coating, or selection of basic material types.

Auto probe zero, recognition and temperature compensation.

High speed scan up to 50 readings per second.

Audible alarm with hi/lo limits.

Built-in differential mode for QC inspections.

Linear time dependent gain (TDG) with adjustable slope (dB per microsecond).

Memory

Log Formats: Grid (Alpha Numeric), or Sequential (Auto Identifier).

Capacity: 4 Gb internal SD card.

Screen Capture: Bitmap graphic capture for quick documentation (.tif).

Custom Setups: 64 user configurations.

Power Source

Battery: Three 1.5V alkaline, 1.2V AA Nicad cells, 1.2V AA NI-MH, or other other equivalent power source. Battery life (continuous use): Alkaline (12 hrs), Nicad (5hrs), and NI-MH (12hrs), with default settings.

Line Power: USB-C to PC or power outlet.

Connections

Output: Direct USB-C 1.1 PC connectivity.

Transducer Connectors: Two LEMO 00 connectors.

Certification

Thickness Gauge: Factory calibration traceable to NIST & MIL-STD-45662A.

Flaw Detector: EN22232-1 compliant.

Warranty

2 year limited

REPLACEMENT

FX71-DL replaces DFX-7+ & FD700DL+

Made by Dakota NDT, USA