**CHECKLINE®**
MADE TO MEASURE

# FX81-DL

## Flaw Detector & Advanced Thickness Gauge

### FLAW DETECTOR:

▶ Sizing Toolkits: DAC, AWS, TCG, DGS.

▶ P.R.F. - 8Hz to 2kHz, adjustable.

▶ Screen Refresh Rate: 60Hz.

▶ 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.

▶ Windows PC interface software included.

## SPECIFICATIONS

### PHYSICAL

**Size:** 8.5W x 6.5H x 2.5D in (216 x 165 x 70mm).

**Weight:** 4.5lbs (2.04kgs), with batteries.

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

**Display:** Blanview sunlight readable QVGA TFT color display (320 x 240 pixels). Viewable area 4.54 x 3.40 in (115.2 x 86.4mm), or 5.7 in (144.78mm) diagonal. 16 color pallete, 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.

**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 140°F (-10°C to 60°C).

**Environmental:** Meets IP65 requirements.

### PULSER

**Pulser Type:** Two tone burst pulsers.

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

**Pulser Voltage:** FX81-DL 100 - 400v.

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

### MEMORY

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

**Capacity:** 4Gb internal & up to 64Gb external memory.

**Screen Capture:** bitmap graphic capture for quick documentation.

**Custom Setups:** 64 user configurations.

### CONNECTIONS

**USB:** Direct USB 1.1 PC connectivity.

**Power Connector:** 12v @ 2amps, adapter 100-240 VAC, .7 Amps, 50-60 Hz.

**5 Pin Lemo (includes):**

**RS232Output:** RS232 PC serial interface. FX81-DL For use with B-Scan encoders (crawlers).

**Alarm Outputs:** Two independent alarm outputs triggered by the gates.

**Analog Out:** FX81-DL Proportional outputs (amplitude or distance), 0-10 volts.

**Transducer Connectors:** Two LEMO 00

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### RECEIVERS

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

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

**Frequency Bands:** FX81-DL Broadband 1.8 - 19 MHz (-3dB). Six narrow bands at 1MHz, 2MHz, 5MHz, 10MHz. .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.

### CALIBRATION

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

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

**Units:** English (in), Metric (mm), or Time (µs).

**Velocity:** 0.0100 to .6300in/µs (256–16,000m/s).

**Test Range:** 0 to 0.076in (1.93mm) minimum, to 1200in (30,480mm) maximum at steel velocity. Continuously variable.

**Zero Offset (Probe Zero):** 0–999.999 µs.

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

### 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. 50dB dynamic range, 20dB per microsecond, up to 8 points for curve definition.

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

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

**Detection Modes:** Zero Crossing, Flank and Peak.

**Display Freeze:** Holds current waveform on screen.

**Peak Memory:** Captures peak signal amplitude.

**Auto Interface Gate -** FX81-DL Automatic adjustment of interface gate for immersion testing (water path).

### VIDEO

**Remote Commander:** Java PC software allows remote display and control for training/presentation purposes, and custom system integration.

### THICKNESS GAUGE FEATURES

**Measurement Modes (Dual Element):**

**Pulse-Echo Mode (P-E) -** (Pit & Flaw Detection) measures from 0.025 in to 100 ft. (0.63mm to 3048cm).

**Pulse-Echo Coating Mode (PECT) -** (Material, Coating, Pit & Flaw Detection): Material: 0.025 in to 100 ft. (0.63mm to 3048 cm). Coating: 0.001 to 0.100 inches (0.01 to 2.54mm).

**Pulse-Echo Temp Comp Mode (PETP) -** (Pit & Flaw Detection) Auto temperature compensation -measures from 0.025 in to 100 ft. (0.63mm to 3048cm).

**Echo-Echo Mode (E-E) -** (Thru Paint & Coatings) measures from 0.050 to 4.0 inches (1.27 to 102mm). Will vary based on coating.

**Echo-Echo Verify (E-EV) -** (Thru Paint & Coatings) measures from 0.050 to 1.0 inches (1.27 to 25.4mm). Will vary based on coating.

**Coating Only Mode (CT) -** (Coating Thickness) Measures from 0.0005 to 0.100 inches (0.0127 to 2.54mm). 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.

64 custom setup configurations.

### TRANSDUCERS

**Delay line:** High Frequency single element delay line style for precision testing of thin materials.

**Pencil:** High Frequency single element delay line style for testing of materials in tight access areas and difficult geometries.

**Contact:** Single element contact style for general purpose longitudinal & Shear wave flaw detection.

**Dual:** Pitch/Catch dual element style for longitudinal & Shear wave corrosion inspections.

### POWER SOURCE

**Lithium Ion Pack:** 10.8v, 2 amp hrs, typical operation 18hrs.

**Battery Backup:** Emergency battery backup. Six 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.

### CERTIFICATION

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

**Flaw Detector:** EN22232-1 compliant.

### WARRANTY

2 year limited

### REPLACEMENT

FX81-DL replaces DFX-8+ & FD800DL+

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