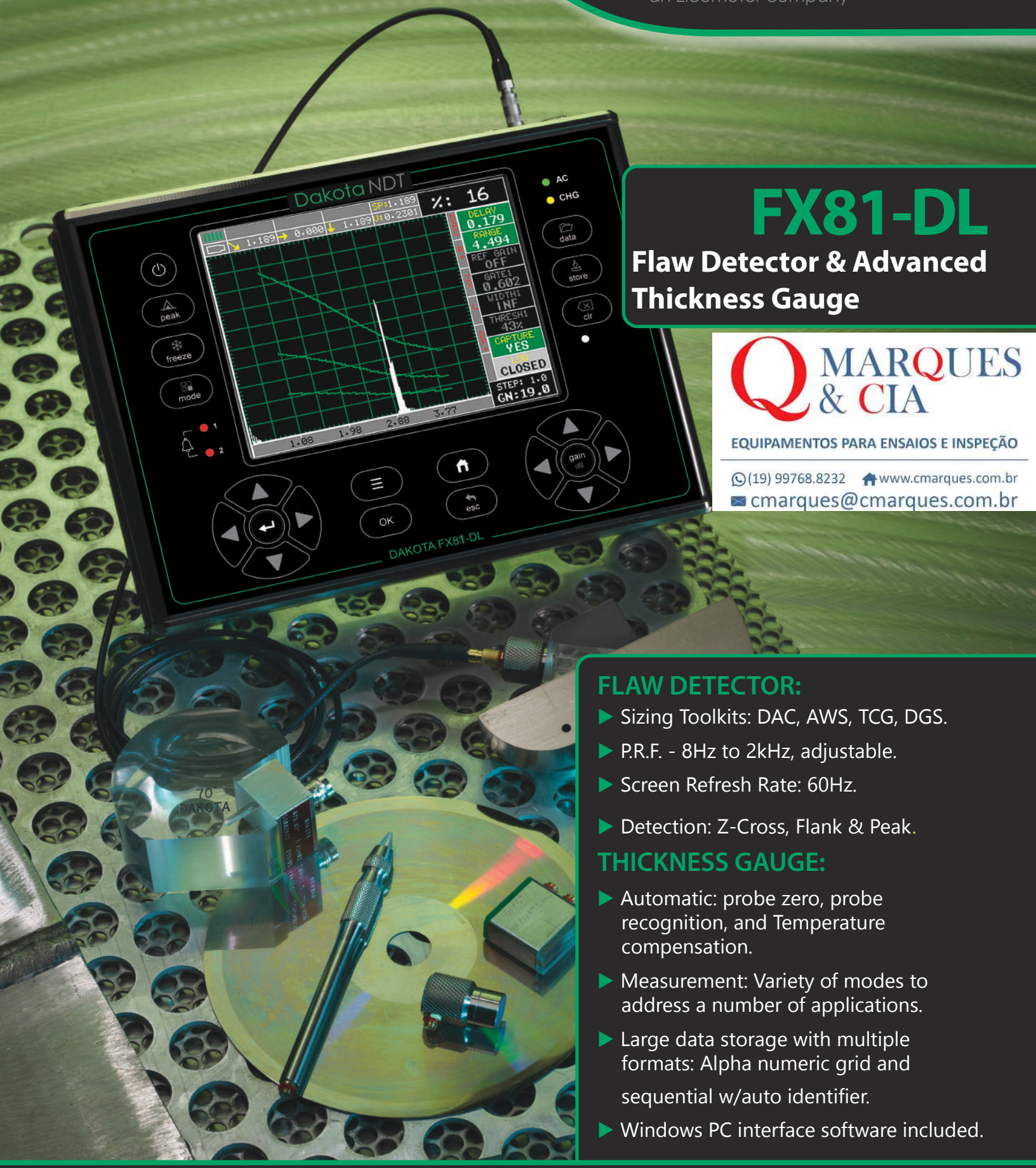
Dakota NDT
an Elcometer company



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.

DAKOTA FX81-DL FLAW DETECTOR

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

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+

CE UKCA

MADE IN THE USA

Dakota NDT

an Elcometer company

1500 Green Hills Road, #107, Scotts Valley, CA 95066 global.sales@dakotandt.com www.dakotandt.com