

## DFX Flaw Detector Series

Isn't performance what you need?

The **DFX series** ultrasonic flaw detectors are full featured digital scopes designed to handle the simplest to the most difficult applications. Whether the application requires high penetration for materials that are difficult to measure, or high resolution for precision aerospace parts, the DFX series flaw detectors are equipped with the necessary features to do the job.

- ▶ Transflective Color TFT Display
- ▶ Broad & Narrow Band Amplifier
- ▶ Square Wave Pulser (Active Edge™)
- ▶ Extruded Aluminum Case (IP65)
- ▶ USB / RS232 / Video / Analog Outputs
- ▶ Trig Functions
- ▶ Curved Surface Correction
- ▶ DAC/TCG/AWS/DGS (Defect Sizing)
- ▶ Automatic Calibration
- ▶ Long Battery Life (Li-Ion Pack)
- ▶ Water Path Correction (638 only)
- ▶ Fast Setup Screen Facility
- ▶ Alphanumeric Text
- ▶ Help Facility

**DFX series** can go where you go, to do the work you do, saving you time and money, making your inspections fast and accurate.

## Physical

**Size:** 9.25W x 7.13H x 4.0D in (235W x 181H x 102D mm)

**Weight:** 7.5 lbs. (3.4 Kgs) with Li-Ion cells

**Case:** Extruded Aluminum

**Display:** Transflective TFT Color.

**Display area:** 4.39in x 3.29in (111.4mm x 83.5mm) 320 x 240 pixels. A-Scan area: 255 x 200 pixels (315 x 200 expanded), 8 color options and variable brightness.

### Temperature:

Operating -10° to +55°C or 14° to 131°F  
-20° to +70°C or -4° to 158°F (survivable)

Storage -40° to +75°C or -40° to 167°F

**Environmental:** Meets IP65 requirements.

## Specifications

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

**Probe Zero:** 0–999.999μs.

**Velocity:** **615 & 625** 0.0393–0.3937in/μs (1000–9999m/s). **635 & 638** 0.0100in/μs (256–16000m/s.)

**Test Range:** **615 & 625** 0–0.2in (5mm) up to 0–400in (10,000mm) at steel velocity. Variable in sequence, 0.4 in or 0.04 in (10mm or 1mm). **635 & 638** 0–0.05 in (1 mm) up to 0–800 in (20,000mm) at steel velocity. Variable in 1, 2, 5 sequence or continuously in 0.05 in (1mm) increments. Also from 1 to 5000(μs).

**Test Modes:** Pulse-echo and transmit/receive.

**Gates:** **615 & 625** Start & Width adjustable over full range. Amplitude 0–100%, 0.5% steps. Visual & audible alarms. Single gate positive trigger, and two gates positive and negative triggering. Gate 2 has selectable 0.6 second delay on alarm. **635 & 638** Two fully independent gates with positive and negative triggering for each gate.

**Gate Expansion:** **635 & 638** Expands range to width of Gate 1.

**Gate Monitor Delay:** **635 & 638** Selectable 0.6 sec delay on gate 2 negative monitor.

### Measurement Modes:

Signal Monitor—**635 & 638**.

Depth—Depth and amplitude of signal in gate.

Echo Echo —Echo-Echo distance, automatic gate 2 position.

Gate to Gate—**625** Echo-Echo distance, manual gate 2 position. **635 & 638** Independent gates.

Trig—Trigonometric display of beam path, depth and surface distance. Calculation of skip depth and curve surface

compensation, X-offset for transducer.

T-Min—Holds minimum thickness in depth mode.

**System Linearity:** Vertical = 1% Full Screen Height (FSH) Amplifier Accuracy ±0.1%dB. Horizontal ±0.4% Full Screen Width (FSW).

**Pulsar Voltage:** **615 & 625** 200 volt peak amplitude, rise/fall time < 10ns into 50ohm. **635 & 638** 100V–350V (450V **638**) square wave pulser. Pulse width from spike to 2000ns duration—rise/fall times < 5ns into 50 ohms.

**Pulsar Width:** **615** fixed at 100ns. **625** 30–250ns linked to filter band. **635 & 638** Adjustable in 2% of nominal width, minimum 1ns maximum 40ns.

**ActiveEdge:** Unique active pulse control for enhanced near surface resolution and signal response. Replaces traditional damping control.

**P.R.F.:** **615 & 625** Selectable 35 to 1000Hz (**635 & 638** 5000Hz), 5Hz steps.

**Screen Update Rate:** 50 or 60Hz.

**Rectification:** Full wave, positive or negative half wave and unrectified RF.

**Delay:** **615 & 625** 0–400 in (10,000mm) **635 & 638** 0–800in (20,000mm) at steel velocity in 0.02 steps (0.05mm).

**Gain:** 0 to 110dB. Adjustable in 0.5, 2, 6, 14 and 20dB steps.

**Frequency Bands:** **615** 4Broadband 1–10 MHz (-6dB). **625** 4 Narrow Bands centered at 1MHz, 2MHz, 5MHz, & broadband 1.5–15MHz. **635 & 638** 6 narrow bands centered at 0.5, 1, 2.25, 5, 10 & 15 MHz. Broad band at 2 to 22 MHz (-6dB) and 1 to 35 MHz (-20dB).

**Vertical Linearity:** 1% full screen height.

**Amplifier Linearity:** +/- 0.1 dB.

**Horizontal Linearity:** +/- 0.4% full screen width (FSW).

**Reject:** **615 & 625** 50% suppressive reject. LED warning when selected. **635 & 638** 80% linear reject.

## Memory

**Thickness Logging:** Storage for 8000 readings stored in Block/Location/Number coding or alpha-numeric pre-programmed work sheets. Transferable to Excel using optional PC software.

**Panel Memory:** 100 storage locations for calibration settings.

**A-Scan Memory:** 800 waveforms.

## Features

**Wave Smoothing:** Produces a smooth signal envelope.

**AGC:** Automatic Gain Control sets selected echo to a user defined level (10–90%).

**DAC:** Up to 10 points may be entered and used to digitally draw a DAC curve. Reference -2, -6, -10, -12, -14 dB curves can be selected for JIS, ASME and EN1714 codes.

**AWS:** Automatic defect sizing in accordance with AWS D1.1 Structural Welding Code.

**API:** Automatic defect sizing in accordance with API 5UE.

**AVG/DGS:** Automatic defect sizing using probe data. 10 probe data sets can be stored.

**TCG:** **625, 635 & 638** Time corrected gain. 40 dB dynamic range, 30 dB per microsecond, up to 10 points for curve definition.

**Auto-Cal:** Provides Automatic calibration with two echoes.

**Reference Waveform:** Recalled waveform can be shown in a different color to live waveform for direct comparison.

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

**Peak Memory:** For echodynamic pattern determination.

**Online Help:** Instant operator guidance on operation accessed from direct key.

**Language Support:** Six user selectable languages from: English, German, French, Spanish, Dutch, Italian, Russian, Polish, Czech, Finnish & Hungarian. Others available on request.

## Power Source

**Battery:** Lithium Ion battery pack 14.4V, 5.0 Amp hrs. Minimum 11 hours use, typical 15 hours, indication of battery charge. Recharge time 4 hours.

**Charger:** 100–240 VAC, 50–60Hz.

## Connections

**USB:** For connection to PC, keyboard and printer.

**Outputs:** Serial Interface, composite video (NTSC & PAL), analog output for amplitude and distance updated at PRF rate. Transmitter sync output.

**Transducer Connectors:** available with BNC or LEMO 1 connectors (factory option).

## Additional 638 Features

**Interface Trigger:** Interface gate locks to surface echo and eliminates water path variation.

**High Power Pulsar:** 450 volt boost.

## Warranty

2 year limited