

# TOUCH THE FUTURE OF PORTABLE ULTRASONIC FLAW DETECTION...



Danatronics Corp. proudly introduces iFlaw, a portable digital ultrasonic flaw detector. Finally, a user friendly completely touch screen, sunlight readable instrument. Designed with more than 5 decades of experience, iFlaw utilizes the latest in micro electronic design with many practical, useful features.



# HAVE IT YOUR WAY!

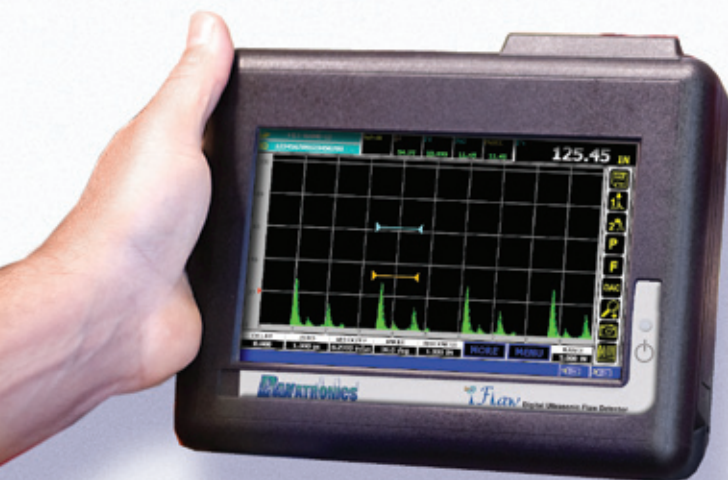
iFlaw is designed and built with many practical features such as a built in gyroscope to allow the user to automatically rotate the display from Landscape to Portrait mode. In addition, iFlaw has a built in light sensor that can automatically set the display to the optimal contrast.

When it comes to portable ultrasonic inspection, iFlaw can meet your every demand from an angle beam inspection with built-in trig function or dual thickness test with fast 60 Hz display update rate and on-board datalogging to interfacing with Encoders and TOFD applications; iFlaw has it all. Some customers prefer the display and orientation in landscape mode while others like a portrait display orientation...

don't worry, iFlaw can automatically rotate thanks to its built in gyroscope. iFlaw offers a 7" wide full VGA, sunlight readable display with complete touch screen capability. Simply touch what you want to adjust and go. iFlaw even has some dynamic controls for click and drag such as gates, echo height (gain or dB), range and delay...it can't get any easier!

## KEY FEATURES:

- 7" wide VGA Sunlight readable, Touch Screen Display
- Automatically rotates image from landscape to portrait mode
- Removable 32 GB mini SD card for "unlimited" storage
- 30 Mhz. adjustable square wave pulser
- Auto light sensing for display contrast
- As light as 2.5 lbs
- 8 Hr. battery life
- Field upgradeable software options DAC, TVG, Floating Gate, Interface Gate, Echo to Echo, Back Echo Attenuator, Encoded B-scan and more
- Multiple screen languages
- Click and drag control gates, range, delay and gain
- 2 gates standard
- Dynamic Echo Height Indicator (DEHI)
- Designed for IP67 rating for dust and moisture
- TOFD/Encoder input
- HDMI, USB, Video and Alarm output
- Custom engineered durable case
- 1 year warranty
- Vibrate on alarm
- Change color on alarm
- Auto Calibration
- Fast, 60 Hz. update rate
- Extensive datalogging in multiple file formats



Landscape mode, ideal for thickness gaging for maximum horizontal pixel resolution and general purpose testing.



Portrait mode for maximum vertical pixel resolution... ideal for flaw detection and flaw sizing.



iFlaw delivers: rain or shine, day or night thanks to its auto built-in light sensor and designed for IP67 rated, durable, custom packaging.

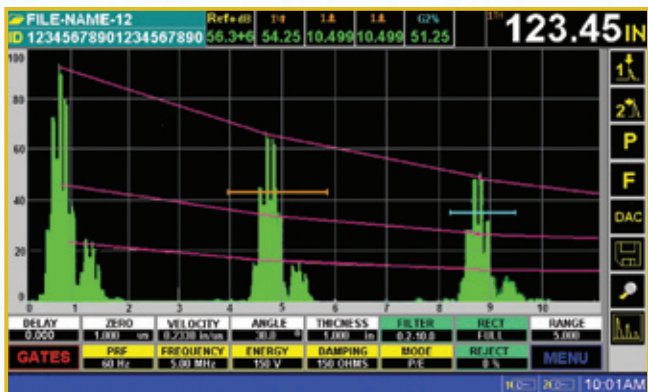
Danatronics researched the key features operators of portable ultrasonic flaw detectors were looking for such as:

- Large screen, ease of use, unlimited, removeable sd memory, fast response time, sunlight readable, wide band width, multiple display formats, long battery life, IP67 rated durable case.
- Simple user interface: Click and Drag gate Start, gate Width, gate level for each gate, gain, delay and range are also intuitive, simply click and drag features. The text editing box can be dragged to any location in the waveform and remembered where it was last positioned. Typically this is up and out of the waveform area such as the top right hand corner.

### DISPLAY:

iFlaw utilizes the latest in high contrast TFT Wide VGA displays for the ultimate in display size, contrast, viewing angle while optimizing battery life. iFlaw's display is specifically designed to be

used with fluids such as ultrasonic couplants, water and even operates with gloves on. The flexibility of the large 7" screen allows for multiple languages, many screen font sizes in both landscape and portrait and a built-in light sensor. We even allow the operator to position key parameters such as the save key to switch from the top right to the top left of the display for easy access to the thumb when saving readings. The operator can also choose color palettes for A-scan, grid, background... So come day or night, rain or shine, iFlaw can handle a wide variety of conditions and inspection environments.

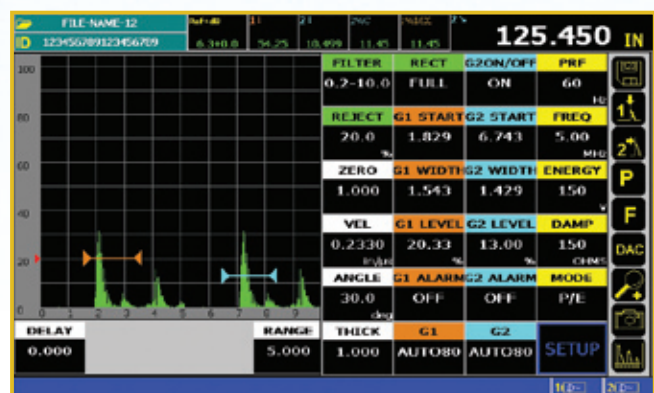


Distance Amplitude Correction (DAC)



Landscape mode with easy to adjust parameters

Danatronics makes adjusting the parameters easy while simultaneously displaying a live A-scan. Thanks to its wide full VGA sunlight readable TFT and complete touchscreen, iFlaw utilizes the maximum screen size in the smallest package available on the market today.



Split screen landscape for maximum parameter font sizes while viewing the live A-scan.

**BATTERY TYPE, LIFE AND CHARGING:**

Choose between either 1 or 2 High Capacity Li Ion batteries. If you want the lightest configuration of only 2.5 lbs or 1.2 kg, simply insert one battery for continuous 4 hour operation. If you require at least full 8 hour battery operation, insert the second battery. The total system only weighs 3 lbs with both batteries. iFlaw even allows you to do on board or off board charging of the Li Ion batteries, (external charger sold separately).

**PACKAGING:**

iFlaw is made of the same durable material as used in Shark Cages, Bullet proof glass in banks and in Ice Hockey rinks...Designed to meet IP67 rating, iFlaw will offer you years of trouble free service.

**TRANSDUCER CONNECTORS:**

Choose either traditional BNC transducers connectors or Large Lemo. In the top right is micro sd card (up to 32 GB), alarm out, video out, usb 2 and encoder input of encoded B-scan or TOFD (time of flight diffraction). Connector ports are covered with a rubber boot for environmental sealing.

**OPTIONAL PROTECTIVE RUBBER BOOT:**

iFlaw is available with an optional rubber boot with 4 point chest harness anchor points to protect and to assist in staging/rope access applications.

**MICRO SD CARD:**

On board memory and up to 32GB of removable SD cards provides you with essentially unlimited memory. You can leave iFlaw in the field and bring the micro sd card back to the I.T. facility for complete, independent offloading of data. Data can be sent to the P.C. via Data XL iFlaw interface program for complete datalogging and reporting.

**MICRO SD CARD REMOVAL:**

Remove the sd card for offloading of all data including thickness readings in linear, 2D, 3D or boiler files as well as A-Scan and B-scan images for reporting.



**TYPICAL APPLICATIONS:**

- Weld Inspection
- Bond Inspection
- Spot Weld Inspection
- De-laminations
- Porosity Inspection in castings
- Pump, shaft and ingot inspection
- Thickness surveys
- Encoded B-scans
- TOFD (Time of Flight Diffraction Inspection)
- Angle Beam inspection
- Billets, ingots and shafts

**INDUSTRIES SERVED:**

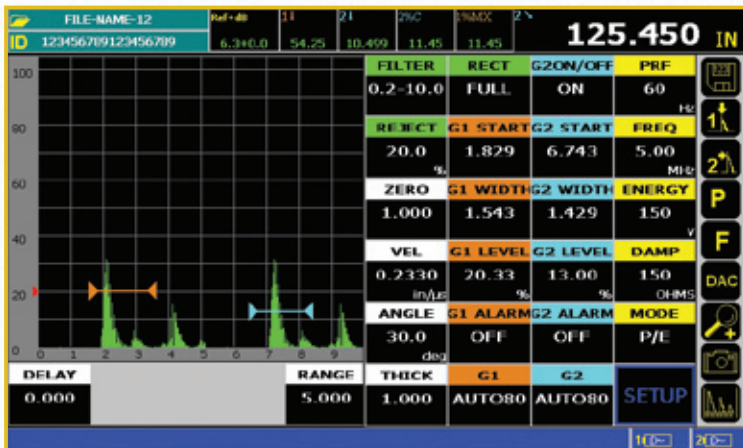
- Refining
- Forgings
- Steel
- Bridges
- Aircraft
- Aerospace
- Composites
- Casting
- Rubber
- Automotive
- Heavy Industry

**For more information; call, click or write to arrange for a demonstration:**

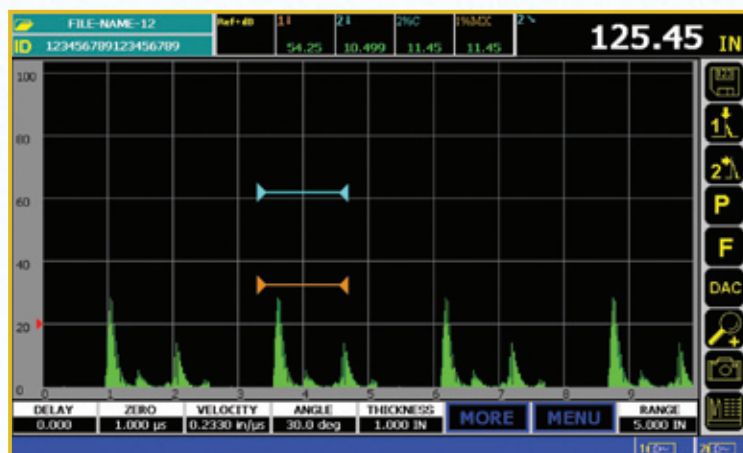
- **978-777-0081**
- **sales@danatronics.com**
- **www.danatronics.com**

## LANDSCAPE FULL SCREEN:

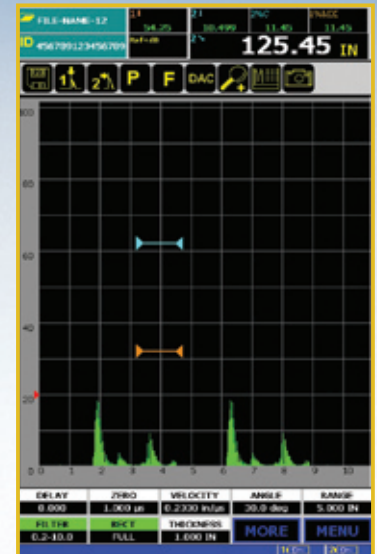
iFlaw offers a wide variety of display formats in either landscape or portrait mode. With the push of one button iFlaw can easily display the maximum font size while simultaneously viewing the live A-Scan. iFlaw can even click and drag the “text editing box” anywhere on the screen so that you can view changes to the waveform while making your parameter adjustments.



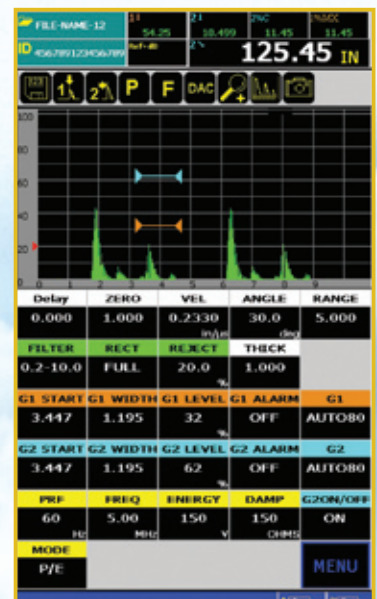
Landscape split screen



Landscape full screen



Portrait full screen for the maximum vertical pixel resolution ideal for flaw detection and flaw sizing.



Portrait split screen

# FLAW DETECTOR: MODEL iFlaw PRODUCT SPECIFICATIONS

## Overview:

iFlaw Digital ultrasonic flaw detector with large 7" WVGA(800x480) Sunlight viewable display, touch screen display, automatically rotates screen from landscape to portrait formats. iFlaw is Designed for IP67 rating

## General:

Enclosure Material: field proven, high impact custom plastic case designed for IP67 rating

Stand/Bail: Positions instrument (Specify either Portrait or Landscape mode)

Dimensions: 8.2" x 6.8" x 2.1"

Weight: 2.5lbs - 3.0 lbs (depends on one battery or 2 installed)

Battery: One or two Lithium Ion battery - 7.2V, 5.8 AH

Operating Time: 8 to 10 hours with 2 batteries, 4 to 5 hours with one battery.

Charger: Built in. External optional.

Charge Time: 2Hr 30Min.

Power Requirements: 100 to 240 VAC, 50/60Hz, 40W.

Rubber Boot (Optional): Custom made to protect the unit with chest harness mounting d-clips.

## Display:

Color TFT Liquid Crystal display with 60 Hz update with touch screen, user-selectable color schemes and brightness, split screen and full screen modes.

Gyroscope: Automatically can twist the display from Landscape to portrait

Pixels: 800x480 – WVGA

Dimensions: 7" diagonal,

Backlight: Exterior light based auto or manual adjustable LED backlight.

Click and drag: gates, gain, delay and range

Amplitude Grid Modes: 0 to 110% full screen height with 0.25% resolution

Thickness/Angle beam resolution:

Selectable from .001" or .01" in either straight beam, dual or angle

beam. Angle beam includes trig functions of sound path, surface distance and depth to indication accounting independent of leg.

X-value correction for angle beam can also be entered and calculated. (pipe curvature calculations available as an option)

Time Base Grid Modes: Standard 0 to 10 division, can be turned off.

Waveform Drawing: filled or outline

## Pulsar:

Tunable square wave pulser.

PRF: User Selectable or Auto from 10 Hz to 1000 Hz

Pulsar Voltage Settings: 50 to 600 V in 25 V increments

Pulse Width: Adjustable from 30 to 10,000 ns

Damping: 50, 63, 150, 400 Ohms

## Receiver:

Gain: 0 to 110 dB – 0.1dB increments with +/- 6, 12, 14dB steps or custom steps.

Total Instrument Bandwidth: 0.2 - 30 MHz @ -3 dB

Filters:

.2-1.2 Mhz, .2-10 Mhz, .5-4.0 Mhz, 1.5-8.5 Mhz,

2.0-21.5 Mhz, 5.0-15.0 Mhz, 8.0-26.5 Mhz.

Rectification: Fullwave, Positive Halfwave, Negative Halfwave, RF

System Linearity: Horizontal: +/- 0.2% FSW

Vertical: 0.25% FSW, Amplifier Accuracy +/- 1dB

Reject: 0 to 80% full screen height with visual warning

## Calibration: manual or auto calibration

Cal Zero, Cal Velocity to known thickness or Automatic for Velocity and Zero Offset

Test Modes: Pulse Echo, Dual, or Through Transmission

Units: Millimeters, Inches, or Microseconds

Range: 0.073 to 527" (1.86 to 13,400 mm)

Velocity: 0.025 to 0.6000 in/usec (635 to 15240 m/S)

Zero Offset: 0 to 4950 usec

Display Delay: -2.323" to 500" (-59 mm to 12700 mm)

Refracted Angle: 10° to 85° in 0.1° resolution

## Measurements:

Types: Thickness, Soundpath, Projection, Depth, Amplitude, Time-Of-Flight for both Gate 1 and Gate 2

Echo-To-Echo: Standard

Five Measurement Display Locations: User selects up to five measurements from either gate to display on the live screen.

DAC/TVG Standard: Up to 50 points captured, ASME, ASME III, JIS, 80-20%, CUSTOM DAC, and TVG Table. 40dB Dynamic Range, 40dB per usec range, and delay adjustments during setup, view switchable between DAC/TVG.

CUSTOM DAC with up to three warning curves from +10 dB to -24 dB

TVG Table setup for advanced Time Varied Gain applications. Also allows TVG setups to be built from DGS/AVG diagrams.

Amplitude Measurement: 0 to 110% full screen height with 0.25% resolution.

## Gates:

Two Fully Independent Gates for Echo Height, depth and Time-Of-Flight. Gates can be adjusted via a clicking and dragging by touching on the display.

Gate Start: Variable over entire displayed range

Gate Width: Variable from Gate Start to end of displayed range

Gate Level: Variable from 2 to 95% Full Screen Height

Gate Alarms: Positive and Negative Thresholds; Minimum Depth on Gate 1 and Gate 2

Gate Auto 80: Automatically sets the amplitude in gate 1 or gate 2 to 80 FSH

(Full Screen Height)

Zoom: Displayed Range is Gate 1 Width divided by ten to the lowest possible screen range (.040" or 1mm full screen in steel)

## Instrument Inputs / Outputs:

USB On The Go (USB OTG): For communication with computer, printer or USB drive to transfer data. USB on the go for direct printer output of displays for reporting.

Analog Out: Lemo 00 connector for 0 to 1V or 0 to 10V user selectable voltage output of the selected measurement.

Transducer Connections: BNC or Number 1 LEMO

Encoder/Alarm/Trigger: Ip67 rated 14 pin connector for:

- X-Y encoder inputs such as encoded B-Scan (EZ Scan iii) or TOFD scanners
- Gate 1, Gate 2 and combined alarm outputs
- Trigger input and trigger output

Video Output: to display to large monitor

Charger Input: DC jack. 2.1mm barrel

## Data Logger:

File Type: linear, linear + Custom, 2D, 2D+Custom points, 3D, Boiler

Storage Media: Removable mini SD card up to 32 GB (2 GB std and included)

Storage capacity: Up to 1.45M thickness with I.D.#'s, or 630,000 Waveforms with I.D.#'s (calculations based on standard 2 GB card included with iFlaw).

Stored Setups: storage and recall of hundreds calibration and set up files

## Software options:

AWS angle beam flaw sizing code, JIS, AVG, Back echo attenuation, spot-weld, B-Scan (time based and/or encoded), curved surface angle beam correction, spot weld software.

## Languages:

Display language in English, Spanish, French, Italian, German, Japanese, Chinese, Portuguese, Russian, Finnish, Czech, Romanian.

## Transport case:

Contains iFlaw digital ultrasonic flaw detector, charger with cables, bail, manual, USB cable. AC charger adapter 110-240 VAC, CE approval, Either large Lemo or BNC connectors, 1 or 2 internal batteries, 2 Gb micro sd card, usb cable, cd manual, interface program and transport case.