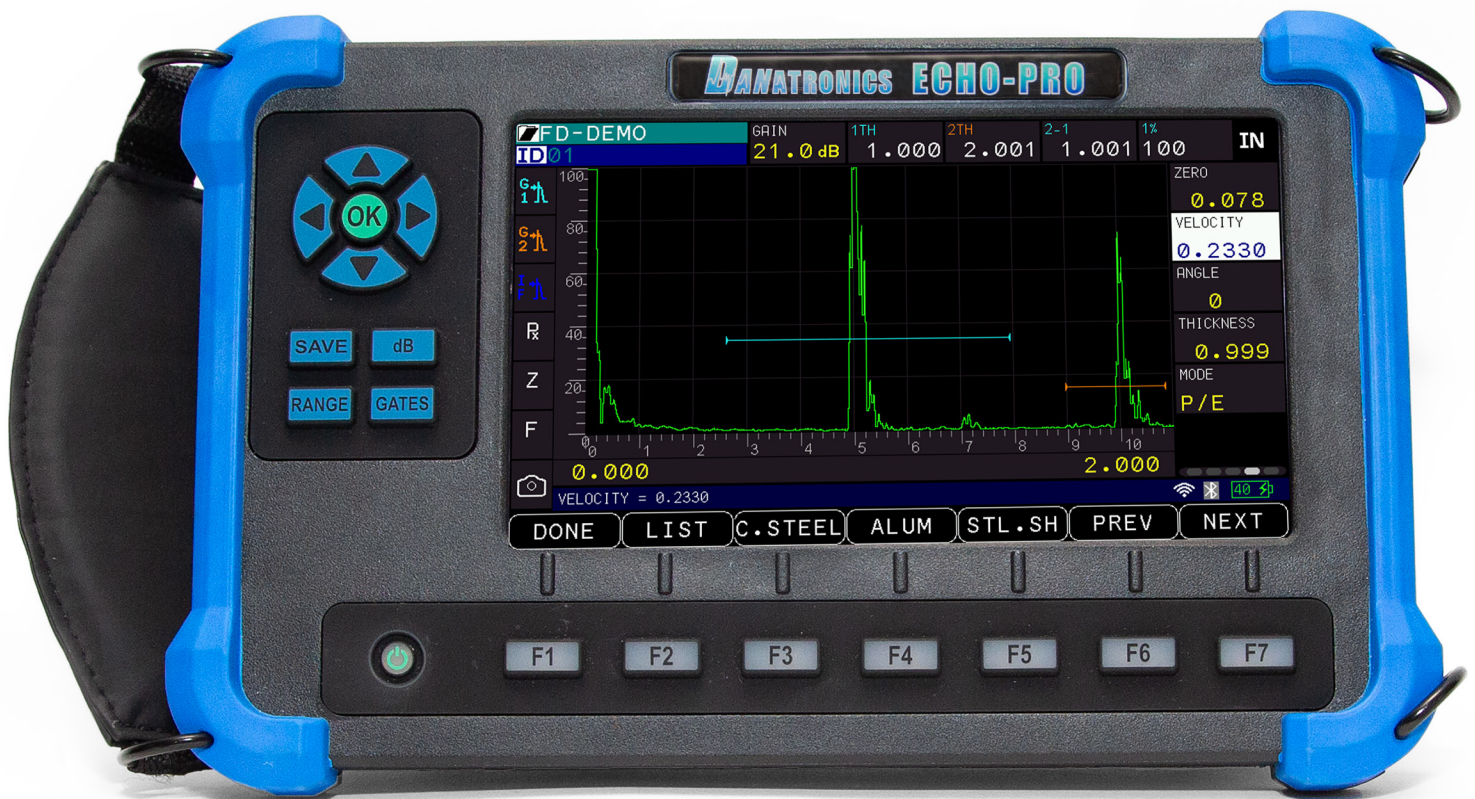# DANATRONICS
N D T
Made Easy

ECHO PRO
Ultrasonic Flaw Detector

- Hybrid touch screen and keypad operation
- 600V Pulser
- Flawview

- Brightest Display on the Market
- 14 Hour Battery Life
- IP67 Rated
- Made in the USA

Next Generation Flaw Detection, Made Easy

Danatronics ECHO PRO represents the latest generation of portable ultrasonic flaw detectors, built on over 70 years of digital ultrasonic expertise. Designed for speed, accuracy, and ease of use, these instruments combine advanced performance with simple, intuitive controls for reliable inspections in the field or on the shop floor.
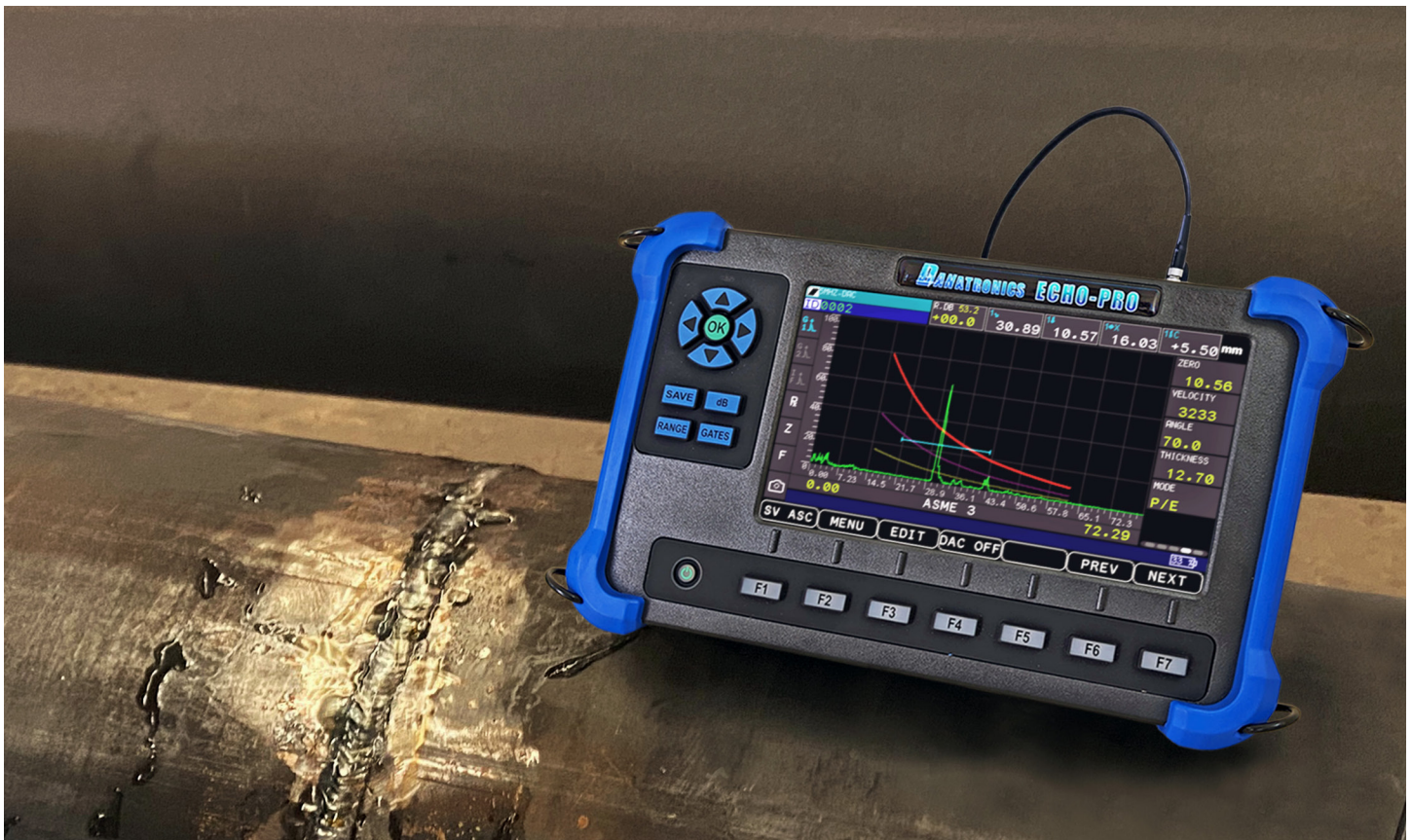
Our flagship ECHO PRO model comes equipped with a full range of standard features, including a built-in datalogger with seamless Excel® export, 2 gates, AWS, API 5UE, DAC, a high-output 600 Volt pulser, and up to 14 hours of continuous battery life. Advanced capabilities such as damping, digital filters, analog and alarm outputs, Wi-Fi, and Bluetooth® are included, with optional enhancements such as interface gates, floating and tracking gates, extended range, and back echo attenuation available to meet specialized needs.

New to the ECHO PRO is FlawView, a real-time visualization feature that helps distinguish between actual flaws and geometry related signals, reducing errors and improving decision-making. Picture looking inside the part as a side view and real time see where the ultrasonic reflections are coming from...it can't get easier than that!

For users who need a streamlined solution, the ECHO PRO B delivers the same dependable flaw detection performance in the same custom package with a bright display, 2 gates, DAC, TVG and AWS and the piece of mind to know you can quickly and easily upgrade your ECHO PRO B to a full ECHO PRO to add features like datalogger and FlawView. The B model is an ideal choice for applications where essential features and cost-effectiveness are the priority.

Whether you choose the feature-rich ECHO PRO or the straightforward ECHO PRO B, both models are engineered to provide fast, accurate, and dependable ultrasonic inspections in a rugged, portable design.

ECHO PRO Features

- Compatible with a wide variety of Danatronics and common competitors dual and single element transducers
- Change color and VIBRATE on alarm (ideal for inspections in loud environments)
- 10-14 hour battery life with hi-capacity rechargeable battery
- DAC/TVG Standard
- AWS, API5UE
- DGS
- Flawview
- PRF Control

- Back Echo Attenuator
- 600V Pulser (400V max for ECHO PRO B)
- Floating and Interface Gate
- Extended Range
- Inches, mm or μSec
- Multiple languages
- micro SD card standard expandable to 32 GB
- Datalogger interfaces with Microsoft Excel™
- Designed for IP67
- Software options are field upgradable and can be added remotely

ECHO PRO
Standard Inclusions

The ECHO PRO unit with 7" sunlight readable touchscreen display includes 2 independent gates, DAC, TVG, and AWS software, datalogger, b-scan, enclosure includes protective rubber corners with built in stand and padded hand strap, microSD card, rechargeable Li-ion battery, AC adapter with power cord, USB-C cable, plastic carrying case, couplant, Data XL interface program to export saved readings to p.c. (Microsoft Excel), ASTM E317-15 calibration certificate

ECHO PRO B
Standard Inclusions

The ECHO PRO B unit with 7" sunlight readable touchscreen display includes 2 independent gates, DAC, TVG and AWS software, enclosure includes protective rubber corners with built in stand and padded hand strap, microSD card, rechargeable Li-ion battery, AC adapter with power cord, USB-C cable, plastic carrying case, couplant, Data XL interface program to export saved readings to p.c. (Microsoft Excel), ASTM E317-15 calibration certificate

ECHO PRO Software Options

Software options are all field upgradeable

Floating Gate

Floating gate allows the gate to float vertically from -1 to -18 dB for consistent edge depth thickness readings and echo to echo thickness measurements

Interface Gate

Interface gate allows the user to accurately track and measure the distance to a variable interface

Back Echo Attenuator

Back wall attenuator allows for independent gain control of the backwall echo signal

Datalogger

Allows for the use of single element transducers along with up to 2,700 stored application setups with 1 micron resolution (0.0001" or 0.001mm).

B-Scan

B-Scan displays a cross sectional view of the material. Encoded -Bscan also available

Flawview

Interactive view of the tested component

Extended Range

Extended Range increases the display range to 227"-544"

Bluetooth

Allows ECHO PRO to export data such as a thickness reading or file to DataXL Mobile

Wifi

Ability to communicate over WiFi

Corrosion Module

Ultrasonic corrosion gage using primarily dual probes, A and B-scan, echo to echo, datalogger

Precision Module

Ultrasonic precision gage (1 micron resolution) using single element probes, A and B-scan, echo to echo, datalogger

Flaw Sizing

Our range of flaw sizing tools and software gives inspectors the precision, flexibility, and confidence needed for critical evaluations. From industry-standard techniques such as DAC, AWS, DGS, and TVG to cutting-edge visualization tools like our own FlawView. Each solution is designed to meet a specific inspection challenge and deliver accurate, reliable results. FlawView, DAC, TVG and DGS curves can be saved into memory for future use and called up for a quick setup change.

FlawView takes inspection analysis to the next level with interactive scan planning and real-time data visualization. Capable of modeling complex geometries, FlawView helps distinguish between genuine flaws and geometry-related signals, reducing false calls and unnecessary repairs. When used alongside our other sizing techniques, it adds an extra layer of clarity and efficiency to your inspection process.

Flaw Sizing Software

Integrated flaw sizing features include:

DGS

Distance Gain Size (DGS): Relates the amplitude of the echo from a reflector to that of a flat bottom hole, side drill hole or back at the same depth or distance and amplitude accounting for near field. A wide variety of commonly used DGS probes with their associated curves are conveniently pre-programmed into your ECHO PRO!

API5UE

American Petroleum Institute (API) code for Ultrasonic Evaluation of Pipe Imperfections. API5UE sizes flaws by referencing a known flaw to create a Peak Curve, then showing how the scanned discontinuity relates to that curve.

TVG

Time Varied Gain (TVG) adjusts instrument gain to 80% screen height so the echo amplitude of a given reflector is displayed at a constant display height regardless of the distance to the reflector. Echo height can then be adjusted via the gain control.
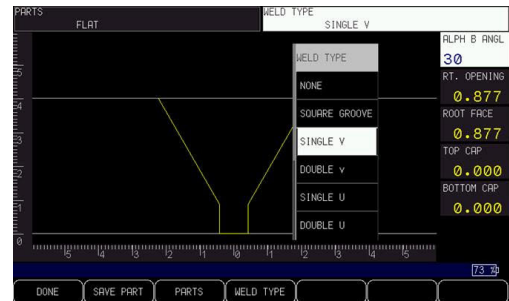
DAC

Distance Amplitude Correction (DAC) Adjusts for signal amplitude as a function of time and plots a visual curve to show the relationship. Available curves include: ASME, ASME-3, JIS and Custom

AWS D1.1

Ameican Welding Socity (AWS) code for D rating. Once calibrated, turning on AWS software displays the A, C and D calculations

FlawView

FlawView introduces a smarter way to interpret inspection results by giving operators a clear, interactive view of the tested component. Its customizable side view images can model a wide range of shapes and weld types, including curved profiles and complex joints. Paired with real-time visualization, FlawView makes it easier to tell the difference between an actual defect and a harmless geometric feature helping to reduce unnecessary rework and improve decision making. Flaw view can also be used in split screen mode to see A scan and flawView simultaneously.
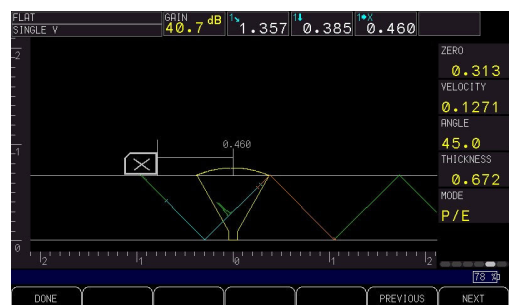
Edit and and select part type

Edit Weld type

Split Screen - A-Scan and FlawView

Full Screen FlawView

Data XL, Data XL Mobile and Data XL PRO

At Danatronics we believe managing your saved data should be simple. As such, every flaw detecor includes a free interface program we call Data XL available for download on our website.

Data XL

Data XL is the link to your computer. It's what you use to transfer data too and from your ECHO PRO to your computer.
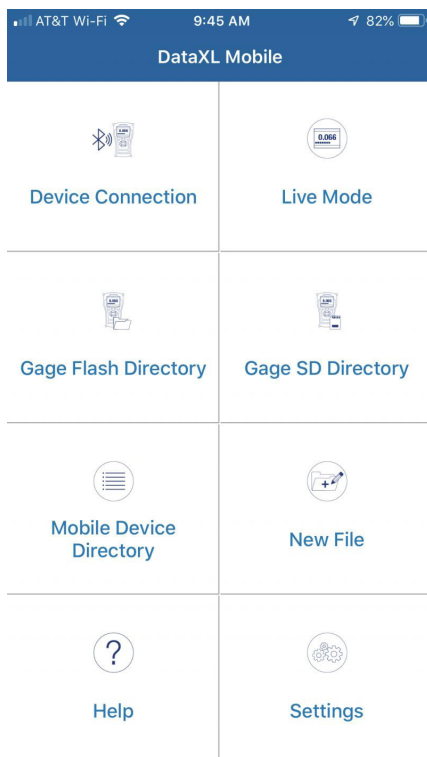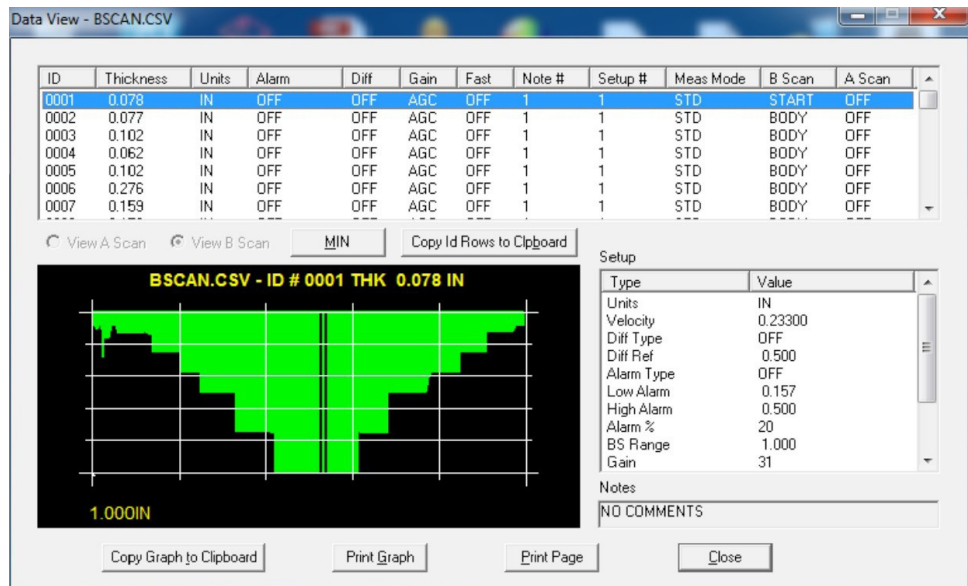
Data XL saves readings to .csv files that can be used in any spreadsheet program such as Microsoft Excel or Google Sheets. It's also used to update products to the latest version of software. New features are always being released, keeping your ECHO PRO updated ensures you're taking advantage of everything ECHO PRO has to offer

Key Features

- Write custom batch programs
- Simple double click the file to be transfer and Microsoft Excel™ with all i.d.'s and readings are displayed• Create file and send them to the ECHO PRO
- Merge files using Data XL
- Saved stored application setups can be sent to the ECHO PRO or multiple ECHO PRO units to ensure reliability and repeatability
- Update firmware (latest version of operating software is available on our website)
- Send Bit Maps (screen shots) to further document your inspections

Data XL PRO

DataXL Pro (pictured right) is a super charged, paid, version of our popular DataXL Program. DataXL Pro can be used to display both A-Scan and B-Scan images of your readings on your computer. DataXL Pro can also be used to interface with Ultrapipe. DataXL Pro is available as both an individual user license and as a site license for your entire team. am such as Microsoft Excel or Google Sheets.

Data XL Mobile

DataXL Mobile (pictured left) allows ECHO PRO flaw detectors to export data such as thickness readings or files to another device via internal bluetooth. Compatible with both iOS and Android phones and tablets, DataXL Mobile streamlines the transfer of information wherever you are. In live mode, the app goes a step further by displaying real-time thickness readings straight on your mobile device for added convenience in the field.

DataXL Mobile for ECHO PRO is coming soon in the Apple store and Google Play Store.

Specifications ECHO PRO

General

Size: 9.9" x 6.16" x 2.50" (252 mm x 157 mm x 64 mm)

Weight: 3.6 lbs (1.63 kg) with internal rechargeable battery. 2.6 lbs (1.18 kg) without battery

Operating Temperature: -4 to 122F (-20 to 50C)

Enclosure: Custom case with rubber over mold and padded hand strap, built in stand with variable angle, ¼-20 connector for magnetic pipe stand and 4 point chest harness optional

Battery Life: 10-14 hours (depending on parameters)

Battery Type: 7.2V, 13.6AHr rechargeable lithium-ion

Battery storage Temperature: 32 °F to 122 °F (0 °C to 50 °C)

Power Requirements: AC Mains: 100-240 VAC, 50-60 Hz 1.4A max Input

Units: inches, mm or μsec

Communication: USB, Wi-Fi 2.0, Bluetooth, RS-232 (Optional)

Languages: English, French, Spanish, Italian, Portuguese, German, Slovak, Swedish, Russian, Chinese, Japanese, Czech, Finnish, Hungarian

Standard Inclusions (ECHO PRO B): Digital Ultrasonic flaw detector with 7" color sunlight readable touch screen display including: 2 independent gates, DAC, AWS software, enclosure includes protective rubber corners with built in stand and padded hand strap, microSD card, rechargeable Li-ion battery, AC adapter with power cord, USB-C cable, plastic carrying case, couplant, Data XL interface program, ASTM E317-15 calibration certificate

Standard Inclusions (ECHO PRO): Digital Ultrasonic flaw detector with 7" color sunlight readable touch screen display including: 2 independent gates, DAC, TVG and AWS software, datalogger with B-Scan, Bluetooth, Wifi, enclosure includes protective rubber corners with built in stand and padded hand strap, microSD card, rechargeable Li-ion battery, AC adapter with power cord, USB-C cable, plastic carrying case, couplant, Data XL interface program to export saved readings to p.c. (Microsoft Excel), ASTM E317-15 calibration certificate

Certifications: CE certified, RHOS compliant, designed for IP67, ASTM E317-15 calibration certificate included with gage

Warranty: Limited 2 year warranty under normal use on parts and labor for the unit. Optional Dan-A-Care to add up to 3 more years

Display

Display: 7" sunlight readable Multi-Touch display with Wide VGA (800x480 pixels)

Backlight: Light Emitting Diode (LED) backlight. Includes variable light intensity

Interface: Operate with multi- touch screen and/or keyboard - complete one-hand operation

Inputs/Outputs

USB Port: USB-C (Supports USB 2.0 On-The-Go (OTG), Power in to charge the unit, Display output)

RS-232 Port: Optional

Video Output: Wide VGA output via USB-C (Requires USB-C to HDMI cable)

Analog Output: 1 analog output, Selectable 1 V/10 V Full Scale, 4mA max

Alarm Output: 3 alarm outputs, 5 V TTL, 10 mA

Trigger I/O: Trigger input, 5V TTL; Trigger output, 5V TTL, 10 mA max

Encoder Inputs: 2-axis encoder input

Charger Input: 12V DC, 5A

Transducer Connectors: Dual LEMO 00

Measurement

Transducer and Measurement Types: Single, dual, thru transmission, angle beam, delay lines, contact, immersion, echo to echo, dry couple

Measurement Rate: 10 Hz -2k Hz adjustable

Range: 0.353" to 277" (8.96 mm to 7035.8 mm) @ 5,900 m/s (0.2320 in./μ) Optional extended range 554" (14071.6mm)

Zoom: Zooms gate 1 width to minimum range capability

Display Delay: -0.018" to 276.647" (8.96 to 7035.8mm) @ longitudinal velocity in steel

Zero Offset: 0-2387 μsec.

Velocity: 0.0250"/μs to 0.6000"/μs (635 m/s to 15240 m/s)

Alarm: Dynamic change of color and vibrate on alarm for echo in gate, echo above DAC positive, DAC negative, gate, minimum depth alarm and polarity change (phase reversal)

Peak Hold: Holds curve of ECHO envelope with live echo. Peak on, Peak hold, Peak off, peak pitch memory (audible chirp based on maximum echo amplitude)

Freeze: Freezes for data storage and waveform viewing analysis - ideal for high temperature measurements

Waveform: Filled or outlined

Angle Beam: Displays all three leg components, angular distance, surface distance and depth (automatically displayed once an angle is entered) accounting for leg correction to correct for beam index point of wedge, fourth measurement box is gate 1 amplitude

Refracted Angle: 0° to 85° in 1° increments including 0, 30, 45, 60 and 70 as pre-set choices

Gate (1, 2): Thickness, Soundpath, Projection, Depth, Amplitude, Time-Of-Flight, Min./Max. Depth, Min./Max. Amplitude

Echo-to-Echo: Standard Gate 2-Gate 1, Optional IF Gate Tracking

Corrosion Mode (Optional): Zero-cross measurement algorithm, V-Path correction, Single or Echo-to-Echo, Encoded B-scan

Precision Mode (Optional): Ultrasonic precision gage (1 micron resolution) using single element probes, A and B-scan, echo to echo, datalogger

Other measurements: Overshoot (dB) value for DGS/TVG, ERS (equivalent reflector size) for DGS/AVG, AWS D1.1/D1.5 A, B, C and D values, Reject Value, Echo to Ref dB values

Specifications ECHO PRO

Measurement - Flaw Sizing

Flaw Sizing: DAC, TVG, DGS (DGS optional for ECHO PRO B)

DAC points: Up to 50 points, 110 dB dynamic range

Special DAC modes: Custom DAC (up to 6 curves), 20-80% View

Curved surface correction (Optional): Standard OD or Bar correction for Angle Beam measurements

Curves: TVG/DGS

Pulser

Pulser: Tunable Square Wave (1-25 MHz) or spike

Pulse Repetition Frequency(PRF): 10- 2000 Hz in 10 Hz increments

Pulser Voltage: 50V-600V (50V to 400V for ECHO PRO B) in 5V increments

Pulse Width: Adjustable from 20 ns to 2,000 ns (30MHz-0.5 MHz)

Damping: 50, 63, 150, 400 Ω

Receiver

Gain: 0-110db in (.1db increments for 0-100db)

Max Input Signal: 20 V p-p

Receiver Input Impedance: 400 Ω ± 5%

Receiver Bandwidth: 0.5 MHz to 25 MHz (-3 dB)

Filters: TBD

Rectification: RF, Full Wave, Half +, Half –, RF

Linearity: Per ASTM E317-15 (1% on vertical axis, .5% on horizontal axis)

Resolution: 1% FSH, amplifier accuracy ± 1dB

Reject: 0-80% FSH, completely linear with vertical indication bar

Amplitude Measurement: 0 to 100% full screen height with 1% resolution

Measurement Rate: Equivalent to PRF in all modes

Calibration

Auto Calibration: Velocity, Zero Offset, Straight Beam (First Backwall or Echo-to-Echo), Angle Beam (Soundpath or Depth)

Test Modes: Pulse Echo, Dual, or Through Transmission

Gates

Measurement Gates: 2 fully independent gates for amplitude and TOF measurements,Optional Interface gate

Gate Start: Variable over entire displayed range

GateWidth: Variable from Gate Start to end of displayed range

Gate Height: Variable from 2 to 95% full screen height

Alarms: Positive and Negative Threshold, Minimum Depth (Gate 1 and Gate 2)

Customizable Autoxx: Default Auto80 sets to 80% of FSH customizable from 40 to 95% FSH. Hot keys for 40, 60 and 80.

Gate Options: Floating, tracking and interface

Datalogger (optional for ECHO PRO B)

Datalogger: file types linear, 2D, 2D with custom point, 3D, 3D with custom point, boiler with and without waveform storage options.32 character file name and 20 character longer I.D. strings

Data storage: 100,000 IDs onboard, removable MicroSD card standard, expandable to 32Gb file types linear, 2D, 2D with custom point, 3D, 3D with custom point, boiler with and without waveform storage options. 32 character file name and 20 character longer I.D. strings

Stored Setups: Storage and recall of 2700 calibration and setup files

Data XL: Interface program to send and receive files to and from PC. Displays thickness with ID in Microsoft Excel

Hardware/Software

Software Options: Corrosion mode, precision mode, datalogger, Oxide Scale, bluetooth, floating gate, tracking gate, interface gate, pipe curvature correction, backwall echo attenuator (BEA), extended range up to 554"(14071.6mm or 14.07M), Flawview, DGS, upgrade from ECHO PRO B to full ECHO PRO

Hardware Options: Magnetic wheel encoder, RS-232, heavy duty bail, spare battery, external charger, foot switch, test blocks, cables, probes, couplant, and magnetic pipe stand, heavy duty Pelican case, chest harness

		ECHO PRO Flaw Detector	PRO B Basic Flaw Detector
Item	**Specification**	**ECHO PRO**	**ECHO PRO B**
Measurement Gates	2 fully independent gates for amplitude and TOF measurements,Optional Interface gate	✓	✓
Damping	Adjusts amplitude of signal. 4 settings - 50,63,150 and 400 Ohms	✓	✓
Energy	Set the strength of the signal from 50-400 Volts in 5 volt increments (600V optional)	✓	✓
Locks	Locks settings so they can't be changed	✓	✓
Hybrid Operation	Ultrasonic corrosion gage using primarily dual probes, A and B-scan, echo to echo, datalogger	✓	✓
Drag	Pinch, Zoom and drag many features such as gates, delay, gain, and range	✓	✓
Stored Setups	Storage and recall of 2700 calibration and setup files	✓	✓
Autocal	Distance Amplitude Correction (DAC), ASME, ASME 3, JIS and Custom	✓	✓
AWS	Ameican Welding Socity (AWS) code for D rating	✓	✓
DAC	Adjusts for signal amplitude as a function of time	✓	✓
TVG	Time Varied Gain - adjusts instrument gain so the echo amplitude of a given reflector is displayed at a constant display height regardless of the distance to the reflector	✓	✓
API5UE	American Petroleum Institue (API) code for Ultrasonic Evaluation of Pipe Imperfections	✓	O
DGS	Relates the amplitude of the echo from a reflector to that of a flat bottom hold at the same depth or distance	✓	O
Flawview	Interactive view of the tested component	✓	O
Curved Surface Correction	Standard OD or Bar correction for Angle Beam measurements	✓	O
600V Pulser	Maximum allowed energy setting (400V max for ECHO PRO B)	✓	O
PRF	Ability to adjust Pulse Repitition Frequency	✓	O
Bluetooth	For interface with DataXL Mobile IOS and Andriod App (requires hardware modification)	✓	O
WiFi	Ability to communicate over WiFi	✓	O
Filters	Allows broadband or narrowband settings to match the requirements of a given application	✓	O
Datalogger	100,000 IDs onboard, removable MicroSD card standard, expandable to 32Gb file types linear, 2D, 2D with custom point, 3D, 3D with custom point, boiler with and without waveform storage options. 32 character file name and 20 character longer I.D. stringsStored Setups: Storage and recall of 2700 calibration and setup files	✓	O
B-Scan (non-encoded)	Displays a cross section of the test piece	✓	O
B-Scan (encoded)	Displays a cross section of the test piece using the EZ Scan magnetic wheel linear access encoder	O	O
RS232	RS232 Port (requires hardware modification)	O	O
Floating Gate	Floats gate at -1 to -18dB for cosistent, 60 Hz update rate edge depth thickness readings	O	O
Interface Gate	Accurately track and measure the distance to a variable interface	O	O
Back Echo Attenuator	Allows independent gain control of the backwall echo signal	O	O
Extended Range	Increases the display range to 227"-544"	O	O
Corrosion Mode	Ultrasonic corrosion gage using primarily dual probes, A and B-scan, echo to echo, datalogger	O	O
Precision Mode	Ultrasonic precision gage (1 micron resolution) using single element probes, A and B-scan, echo to echo, datalogger	O	O
Oxide Scale	Simultaneously displays the thickness of the oxide layer and boiler tube thickness	O	O

O = Software Options that are field upgradeable. Encoded B-scan requires encoder

DANATRONICS
N D T
Made Easy

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