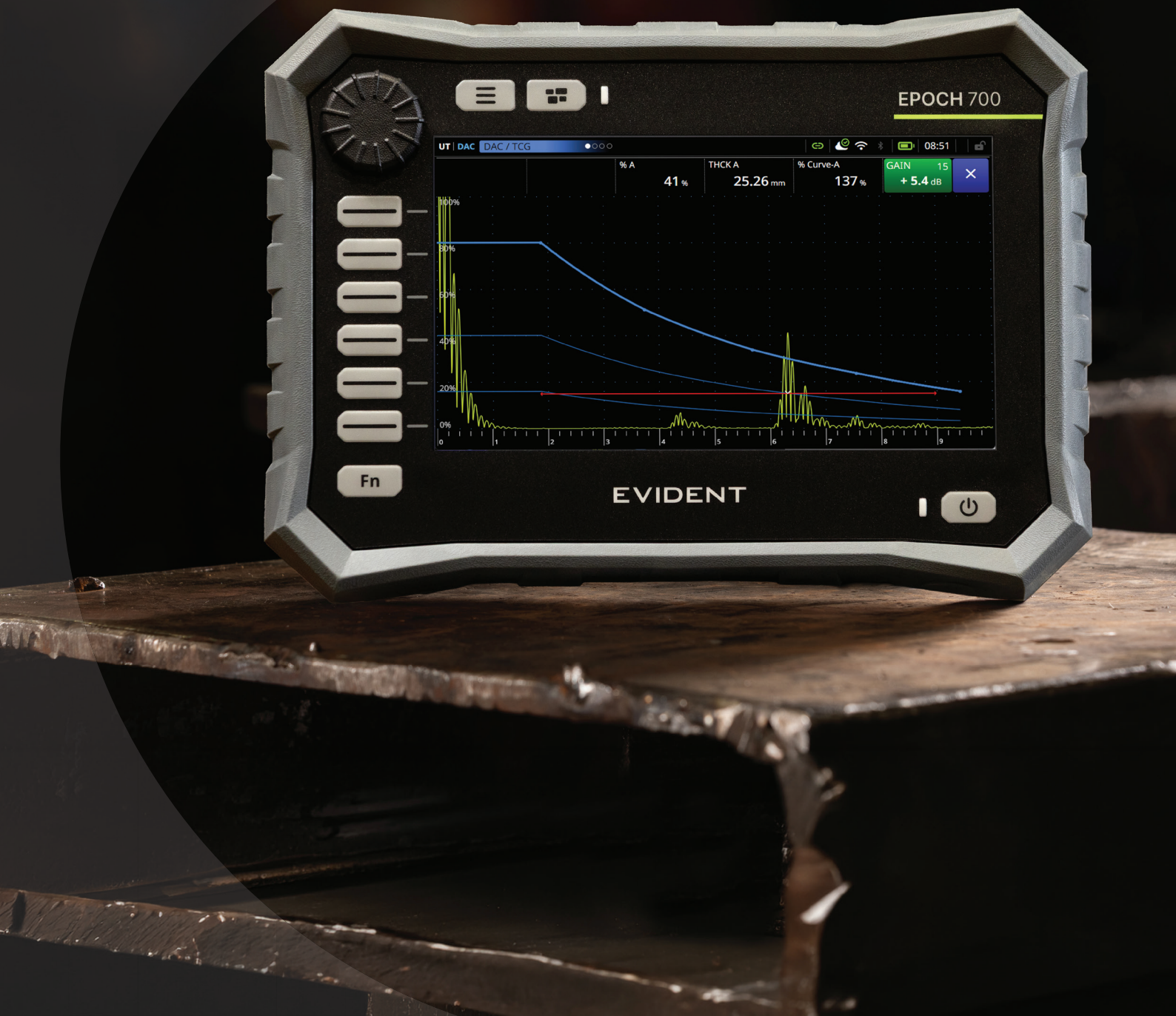
EVIDENT

EPOCH™ 700

Conventional Ultrasonic Flaw Detector



Future-Loaded.
Compromise-Free.

A groundbreaking evolution of the proven EPOCH™ platform, the EPOCH 700 conventional ultrasonic flaw detector enhances every signal, brings more confidence to every inspection, and seamlessly connects every result.

Its signal quality and resolution are unbeaten in the industry, capturing clear, accurate, easy-to-read data even in high-noise environments. It gives you the unique versatility of a touchscreen, adjustment knob, and button interface designed for real-world work. It empowers users of all levels to easily communicate inspection results. And it brings open-format .nde files to portable UT inspection for the first time, connecting critical data across every workflow.

The EPOCH 700 is a new benchmark in conventional UT, engineered for field realities, built with tools that deliver provable results, and designed to put inspection data to work long after the scan is complete.

Class-leading signal quality that performs without compromise and captures what others miss.

PERFECTSQUARE™ TUNABLE SQUARE WAVE PULSER

An adjustable pulse width from 20 ns to 5000 ns provides precise control over the energy and frequency of the transmitted sound pulse. Pulser voltage settings from 100 V to 400 V and a PRF range of 10 Hz to 2000 Hz—the full spectrum of conventional UT.

REDESIGNED DIGITAL FILTER SETS: MOST IN CLASS

More than twenty 100% digital filter sets. Optimized performance across the full range of transducer frequencies, from low-frequency inspection of materials like cast iron and austenitic stainless steel, to high-frequency inspection of aerospace components.

FULL SUITE OF SIZING METHODS

Dynamic DAC/TCG with support for ASME, JIS, CNDAC, and custom curve configurations; DGS/AVG for echo height-based flaw sizing against a reference reflector; and AWS D1.1/D1.5 for weld inspection applications requiring dynamic reflector indication ratings.

Sharpen **Every Signal.**

GROUNDBREAKING 24-BIT A-SCAN DIGITIZATION

A generational advancement in conventional UT signal processing. This level of resolution—unmatched in the industry—enables amplitude measurements up to 800% of full screen height, and reliable defect sizing even if gain is saturated. If you're evaluating subtle reflectors, near-surface indications, or complex geometries, this means complete confidence.

POWERFUL HIGH DYNAMIC RANGE RECEIVER

The foundation of the EPOCH 700's unrivaled signal integrity. Enabling its 24-bit amplitude depth, a digital high dynamic range receiver captures the full amplitude of the returning ultrasonic echo without saturation or clipping. A maximum input signal of 20 V peak-to-peak and a gain range of 0 to 110 dB maintain signal fidelity across today's widest range of inspection scenarios.

ENHANCED DISPLAY RESOLUTION

More pixels. More clarity. More useful information on every scan. A new, higher-resolution display delivers finer graphics, sharper A-scan rendering, and more readable data overlays—all critical for interpreting subtle signals in demanding lighting conditions. Better pixel density allows important data to be displayed simultaneously with no sacrifice in readability.

EPRI PDI Qualified

The EPOCH 700 has achieved EPRI PDI qualification for key nuclear inspection procedures, including weld examination, flaw sizing, and bolt inspection, further expanding its capabilities for critical asset integrity programs.

ISO 22232-1 Compliance

Essential for inspectors working under international inspection codes and quality management systems, particularly in power generation, oil and gas, and aerospace.

Control **Every Environment.**

An ultrasonic flaw detector that combines a user-friendly touchscreen with physical buttons and a dedicated adjustment knob.

TOUCHSCREEN + DIRECT-ACCESS BUTTONS

Modern interface. Physical control. A flaw detector that expertly delivers both. Introducing an intuitive touchscreen interface paired with both direct-access physical buttons and an easy-to-use adjustment knob. Adjust gain, move a gate, freeze your screen, or save a file without having to clean couplant off your hands or remove your gloves.

DEDICATED ADJUSTMENT KNOB

Smooth, continuous, tactile control, now on a modern platform. Complete with a center click for easy navigation and selection confirmation, the adjustment knob is a defining feature of the EPOCH 700. Perform precise gain adjustments with a single hand, without navigating a menu or lifting a finger from the inspection surface.

BALANCED ERGONOMICS FOR ALL-DAY OPERATION

The right weight, the right size, the right balance. At approximately 1.8kg (3.9 lb.) with battery, the EPOCH 700 sits in the right ergonomic window for a full-featured portable flaw detector. Substantial enough to feel solid and controlled and light enough for extended one-handed operation and strap-mounted field use.

MOBILE-INSPIRED USER INTERFACE

An immediately familiar layout comes to conventional UT for the first time. Burger menus, bento navigation, color-coded status indicators, and context-aware layouts are instantly inviting to inspectors accustomed to smartphone interfaces. No retraining needed for users transitioning from the EPOCH 650. Easy to use from the first power-on for operators of all experience levels.

IP65 ENVIRONMENTAL RATING

An IP65-rated enclosure design provides excellent protection against dust and water and delivers field reliability assurance. The EPOCH 700 is also tested to MIL-STD-810 standards for shock and vibration, built to survive drops and impacts.

TWO TRANSDUCER CONNECTOR OPTIONS

BNC and LEMO connectors eliminate the need for adapters, cable replacements, or procurement changes when upgrading instruments.

Trust **Every Answer.**

The tools that inspectors of all skill levels need to be certain—and the digital documentation to prove it.

OPEN .NDE FILE FORMAT SUPPORT: A PORTABLE UT FIRST

Inspection data that belongs to the inspector. The first portable conventional UT flaw detector to fully support .nde files, the industry's first open data format based on modern web technology. You now have a verifiable data file generated automatically from every inspection, and data can flow directly into Evident analysis platforms, as well as third-party tools and QA systems.

EPOCH 700 users are also positioned to meet rising regulatory and compliance expectations including alignment with the European Data Act, which formalizes user rights to access and portability of data generated by industrial equipment.

PART & WELD SETUP WITH INTEGRATED RAY TRACE VISUALIZATION

See exactly where the sound is going. Immediately connect A-scan data to the physical geometry being inspected, helping correlate signal indications with actual flaw locations, with less reliance on reference materials or manual calculations. This removes one of the most common sources of setup error: incorrect probe offset positioning relative to the weld centerline.

INTUITIVE GUIDANCE AT EVERY LEVEL

Even as highly experienced UT professionals retire, service demand keeps growing. The EPOCH 700's inspection guidance architecture is designed with this reality in mind. Part & Weld setup, visual sizing configurator, and contextual onboard assistance reduce the risk of error for less experienced operators without removing the depth and flexibility that experts demand.

From inspection to report, the EPOCH 700 supports both the highly experienced and the newcomer.

ENHANCED ONBOARD REPORTING

Allows you to generate structured documentation of inspection results directly from the device. Report generation no longer requires a PC, wired connections, a separate software application, or a photo of the screen taken with a smartphone.

A-SCAN RECORDING

Record up to 30 seconds of live A-scan data at 60 frames per second. Recorded sequences can be reviewed directly on the device and saved as .nde files, allowing for direct review and analysis on a PC.

ROBUST FILE MANAGEMENT

A modern file system UI and folder approach delivers reliable large-scale data management. Each device includes 64 GB of onboard storage with easy filter, sort, and display, enabling fast, accurate access to inspection data across jobs, sites, and teams.

VISUAL SIZING METHOD CONFIGURATOR

Renders a live preview of the selected curve type, making it immediately clear whether the selected configuration matches your inspection requirement. This reduces confusion when choosing appropriate curve sets for code requirements.

Connect
Every Workflow.

The EPOCH 700 is more than a flaw detector—
it's an intelligent inspection workflow platform.

A SHARED SOFTWARE FOUNDATION

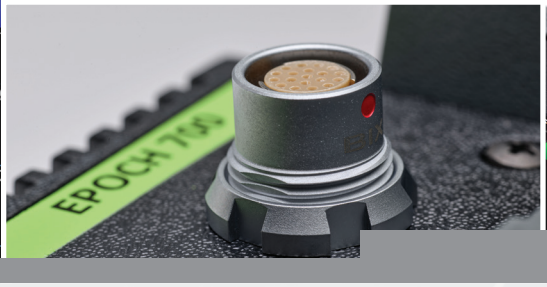
One architecture. A consistent experience. Evident's UNIS platform allows feature reuse, interoperability, and consistent workflow logic across multiple devices and product generations. UNIS also enables new features developed for one platform to be extended across the Evident portfolio, meaning you will continually benefit from ongoing advancements in inspection software.

GLOBAL SERVICE AND SUPPORT

Evident ensures that you have the expertise and resources to keep your inspection operations running without interruption, anywhere in the world. Responsive local support for calibration, maintenance, and repair minimizes downtime and keeps you mission-ready.

BUILT-IN WIRELESS REPORTING

Wi-Fi and Bluetooth® connectivity enables wireless transfer of inspection files and report sharing. Direct-from-gauge reporting provides the ability to send an inspection report from the device without a wired connection to a PC.



Standard Software Features

- **Dynamic DAC/TCG:** Versions include Standard, ASME 3, JIS, CNDAC, and Custom. Includes dynamically adjustable DAC curves, interchangeable DAC and TCG views, and customizable warning curve levels.
- **TCG Table:** Focused version of TCG allowing collection of TCG points through gated echoes or manually created points. Each point can be separated by as little as 0.125 microseconds and adjustable up or down across the full gain range of the instrument.
- **DGS/AVG:** Allows echo signals to be evaluated with a DGS/AVG diagram associated to a particular type of probe and material. DGS/AVG diagram illustrates the relationships between echo height, flaw size, and distance from the transducer.
- **AWS D1.1 and D1.5:** Provides a dynamic reflector indication rating for AWS structural steel weld inspection applications. Eliminates manual calculations.
- **Interface Gate:** Third measurement gate enables real-time tracking of a variable interface echo, usually from a water path in immersion inspection, in order to maintain consistent digital measurements relative to the component's interface.

Standard EPOCH 700 Package

- EPOCH 700 conventional ultrasonic flaw detector (AC or battery operation)
- Charger/AC adapter
- Rechargeable lithium-ion battery
- Transport case
- Hand strap
- USB memory stick with operation manuals
- Extra screen protector
- Printed safety leaflet

Optional Accessories

- Rechargeable lithium-ion battery
- Chest harness

EPOCH™ 700 Basic Specifications

For complete specifications, please download the full EPOCH 700 user manual at **wabtecint.com**.

GENERAL	
Housing Dimensions	230.7mm × 166.9mm × 71.9mm (9.1 in. × 6.6 in. × 2.8 in.)
Weight	1.8kg (3.98 lb.), including lithium-ion battery
Battery Model and Type	600-BAT-L-2 (Li-ion)
Battery Life	Over 8 hours for standard operation
Operating Temperature	-10 °C to 50 °C (14 °F to 122 °F) operating temperature range at 80% relative humidity
Storage Temperature	-20 °C to 50 °C (-4 °F to 122 °F) [with batteries]
Display Type	7-inch TFT LCD (thin-film-transistor liquid crystal display)
Display Dimensions (WxH, Diagonal)	154.2mm × 85.9mm, 177.8mm (6.1 in. × 3.4 in., 7.0 in.)
Power (DC-IN Voltage)	24 VDC (60 W)
DC Connector	Circular, 2.5mm pin adapter, center-positive
Data Storage	64 GB internal storage
PULSER	
Pulse Voltage	100, 200, 300, 400V, unipolar excitation
Pulse Damping	50 or 400 Ω
Pulse Repetition Frequency	10 to 2000 Hz, "Single Shot" (always equivalent to measurement rate)
Tunable Square Wave Pulser	20 nanoseconds to 5000 nanoseconds (100 kHz to 25 MHz), user adjustable
Pulse Modes	Pulse-Echo, Dual, Thru Transmission (TTU)
RECEIVER	
Gain	0 to 110dB, 0.1dB increments
Filters	23 Digital Filters*, Narrowband, Wideband, and Low-Pass
Rectification	Fullwave, Half+, Half-, RF (Unrectified)
A-Scan Bit Depth	24 bits
Stored A-Scan Samples	Minimum 1024 saved A-Scan points @ 24bit/point
Amplitude Range	User selectable 0-110%, 0-400%, or 0-800% full screen height
System Linearity	Horizontal: ± 0.5% FSW
Resolution	0.25% FSH, amplifier accuracy ± 1dB
Reject	0 to 85% FSH in 1% increment positions
Measurement Rate	Equivalent to PRF in all modes (single shot)
Sample Rate	User selectable Standard (200 MS/s), Extended Range (25 MS/s), or High Resolution (400 MS/s)

CALIBRATION	
Automated 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
Units	Millimeters, inches, or microseconds
Range	3.5mm to 24,500mm at 5,900m/s (0.138 in. to 1,000 in. at 0.2320 in./µs)
Velocity	635 m/s to 15240 m/s (0.0250 in./µs to 0.6000 in./µs)
Zero Offset	0 to 750 µs
Display Delay	0 microseconds to 2203 microseconds
Refracted Angle	0° to 85° in 0.1° increments, then jump to 90°
GATES	
Measurement Gates	2 fully independent flaw gates, 1 interface gate
Gate Start	Variable over entire displayed range
Gate Width	Variable from 0.040 microseconds to end of displayed range
Gate Threshold	Variable from 2 to 100% full screen height in 1% increments
MEASUREMENTS	
Measurement Display Locations	5 locations available (manual or auto selection)
Gate (A, B)	Thickness, Soundpath, Projection, Depth, Amplitude, Time-Of-Flight
Echo-to-Echo	Standard Gate B - Gate A
Other Measurements	Overshoot (dB) value for DGS/AVG, ERS (equivalent reflector size) for DGS/AVG, AWS D1.1/D1.5 A, B, C, D values
Sizing Methods	DAC/TCG, TCG Table, AWS D1.1/D1.5, DGS/AVG
ENVIRONMENTAL	
IP Rating	Rated IP65
Drop-Tested	Method 516.6 Procedure IV, 26 drops, package for shipment
Shock-Tested	MIL-STD-810H, Method 516.5 Procedure I, 6 cycles each axis, 15G, 11 ms half sine 6 cycles each axis, 15G, 11 ms half sine shock testing
Vibration-Tested	MIL-STD-810H, Method 514.5 Procedure I, Annex C, Figure 6, general exposure; 1 hour each axis vibration test
INPUT / OUTPUT	
Alarm Output	3 Digital Alarm Outputs, 5V TTL
Analog Output	2 Analog Outputs, 0-1 V or 0-10 V scaling
Encoders	2 axis quadrature encoder inputs
Synchronization (Trigger Sync)	Sync Input & Output Signals

Wabtec Inspection Technologies, Inc.
48 Woerd Avenue
Waltham, MA 02453
1-781-419-3900

Wabtec Inspection Technologies
Canada, Inc.
3415 rue Pierre-Ardouin
Quebec, Quebec G1P 0B3
Canada
418-872-1155

Wabtec Inspection Technologies
Japan Corporation
Shinjuku Nomura Building 18F,
1-26-2 Nishi-Shinjuku,
Shinjuku-ku, Tokyo 163-0518,
Japan
+81 3-3340-2772

wabtecint.com

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