



## The Complete Ultrasonic Flaw Detector

The Panametrics-NDT™ EPOCH XT Ultrasonic Flaw Detector is designed for great inspection flexibility and for use in extreme environments. It combines a multitude of enhanced flaw detection and measurement features, a bright multi-color LCD, versatile battery options, powerful data management, and numerous software features in a compact unit with a sealed case designed to meet IP67 requirements.

### Features

- EN 12668-1 compliant
- Tested for Explosive Atmosphere, Vibration and Shock
- Designed to meet IP67 requirements. Sealed to withstand harsh environments
- Dynamic DAC/TVG Standard
  - Dynamic DAC curves
  - Custom warning levels
  - Meets ASME and JIS requirements
  - Advanced TVG Table allows customized TVG setups
- Multiple Battery Options – can be used with Lithium Ion, NiMH, or C-Cells
- Host USB port for direct printing and storage to USB drives
- Client USB Port for PC communication
- “PerfectSquare™ Technology”: Pulse is electronically controlled on both the leading and trailing edges to maximize transducer performance and near surface resolution.
- PRF adjustable from 10 Hz to 1 kHz in 10 Hz increments. All measurements are taken “single shot”.
- Powerful alphanumeric datalogger
  - Corrosion thickness gage file types can be set up onboard.
- Simple incremental files
- Multi-color LCD
- Lightweight – 4.7 lbs (2.1 kg)

# Loaded With Practical Measurement Features

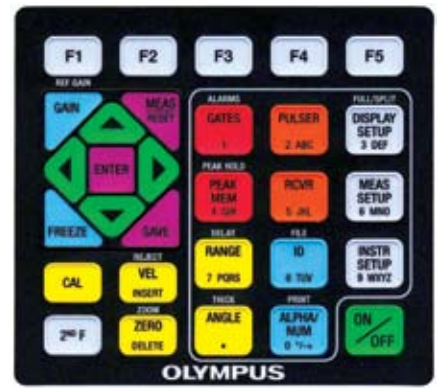
The EPOCH XT incorporates many standard measurement features including a tunable square wave pulser, selectable narrow-band and broad-band digital filters, gain range from 0 to 110 dB, peak memory and peak hold, adjustable PRF, 0.001 in. (0.01 mm) measurement resolution, and two gates with programmable alarms. In addition, the unit offers many standard and optional application-specific software features: Dynamic DAC/TVG (Distance Amplitude Correction/ Time Varied Gain), On-board DGS/AVG, AWS D1.1 & D1.5, Curved Surface Correction, and GageView Pro.

- Standard tunable Square Wave pulser with PerfectSquare™ Technology allows the operator to adjust pulse width to maximize transducer performance.
- Standard digital receiver filtering—broadband, several narrow band settings, and a high-pass setting
- Five measurement displays that are fully customizable to meet inspection needs. Select any Gate 1 or Gate 2 measurement for each display box.
- Amplitude measurement resolution of 0.25% full screen height
- Amplitude measurement from 0% to 110% full screen height
- Gate measurement modes: Peak, Edge and NEW First Peak Mode for thickness measurement applications
- Measurement rate adjustable from 10 Hz to 1000 Hz in 10 Hz increments on live screen
- Peak Mem and Peak Hold functions in all rectified modes. Peak Hold also functions in RF mode.
- New Grid Display Modes
  - Standard 1-10
  - Soundpath
  - Leg mode for angle beam inspection
  - Selectable 100% or 110% vertical display
- Leg indicator and measurement mode indicator for each gate
- Alarm indicator for each gate

## Built For Tough Environments

The rugged EPOCH XT is designed to meet the requirements of IP67. The instrument can withstand the rigors of field operation in harsh environments from offshore to deserts.

- Designed to meet IP67 environmental seal requirements
- Approved for Explosive Atmosphere per MIL-STD-810F, Procedure 1, NFPA 70E, Section 500, Class 1, Div. 2, Group D
- Shock tested per IEC 60068-2-27, 60 g's, 6 msec H.S., 3 axes, 18 total
- Vibration Tested – Sine Vibration per IEC 60068-2-6, 50-150 Hz @ .03" DA or 2 g's, 20 sweep cycles
- Wide operating temperature ranges:
  - Lithium Ion: -10° to 50°C (14° to 122°F)
  - Nickel Metal Hydride: 0° to 50°C (32° to 122°F)
  - Alkaline: -10° to 50°C (14° to 122°F)
  - Recharge temperature: 0 to 40°C (32° to 122°F)
- Hand strap can be mounted for left or right hand operation
- Easy-to-use rubberized Pipe Stand that can be folded in or removed
- Durable instrument-mounted D-rings for chest harness use
- Sealed battery compartment—no tools required for battery replacement
- Sealed I/O door for AC adapter and USB connections



## Direct-access Keypad

- Logical color-coded key organization
- Direct access to important instrument set-up parameters
- Direct entry of alphanumeric characters
- Five customizable function keys allow the operator to quickly select preset values.
- Available in English, International Symbols, Japanese, or Chinese

## Dual USB Ports

- USB Client Port for high-speed data transfer to computer
- USB Host Port to interface directly to printers with USB ports and back up critical inspection data to USB drives
- USB connections and AC input adapters are sealed behind a thumb-screw accessible door.

## Hardware Input/Output Port Option

- Optional 16 Pin HW I/O Port
  - Alarm outputs
  - Trigger Input/Output
- 16 Pin I/O cable available
  - PN: EPXT-C-16HW-6 (6 feet)
  - PN: EPXT-C-16HW-20 (20 feet)

## Multiple Battery Options

The EPOCH XT offers three battery options that provide long-lasting battery operating time depending on display brightness and battery selection.

- Internal, rechargeable: NiMH, Lithium Ion or Alkaline C-Cells
- Optional external “smart” battery charger



# Extensive Documentation and Data Management Capabilities

## GageView Pro

The optional GageView Pro Interface Program helps manage and format stored inspection data. Data can be printed or easily copied and pasted into word processing files and spreadsheets for further reporting needs. The GageView Pro Interface Program also allows the creation of a customized database of identifier (ID) strings that can be uploaded to the EPOCH XT. New features include remote display of live EPOCH XT screen on a PC, live screen capture mode, database backup/restore, and multi-view windows. The Interface Program is fully compatible with the EPOCH 4, 4B, 4PLUS, LT, and XT.

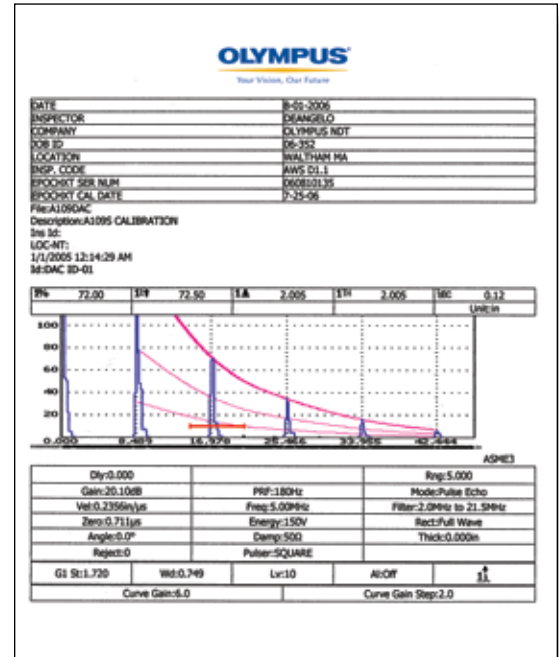
- Export thickness or amplitude data saved on the EPOCH to Excel, Word, or similar programs
- Create, format, and manage test databases
- View the live instrument display on a PC with Remote Display
- Import real-time screen snapshots
- Import and export setups between the EPOCH and a PC
- Create a custom DGS probe library
- Upgrade EPOCH operating software

## Data Logger and Documentation

The EPOCH XT's sophisticated datalogger is designed for ease of use while providing a wide range of features for many flaw detection and thickness gaging applications. Employing both EPOCH 4 Series and the Panametrics-NDT corrosion thickness gage technologies, the EPOCH XT is ready to meet your inspection and thickness measurement survey requirements.

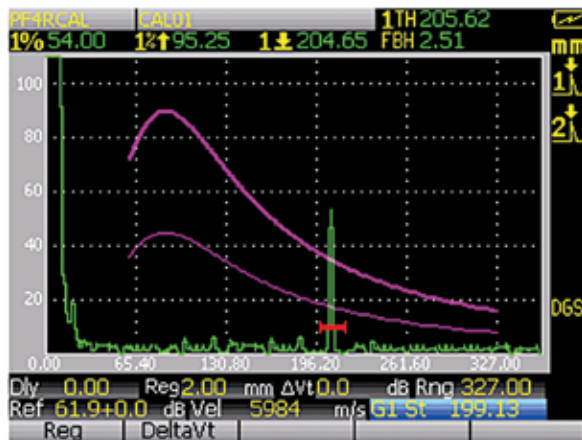
### File types to meet your needs:

- EPOCH 4 type files
- Sequential
- 2D, 2D EPRI
- 2D custom point
- 3D
- Boiler



The EPOCH XT also offers onboard report generation. Operators may set up custom report headers and print directly from the instrument using the USB Host Port.

## Powerful Software Capabilities



### CSC (Curved Surface Correction)

Corrects sound path information when using an angle beam transducer to circumferentially inspect a curved surface.

## Standard Software

**Dynamic DAC/TVG:** Calculates signal amplitude as a percentage or dB level compared to a DAC curve or a reference echo amplitude fixed with Time Varied Gain. DAC versions include ASME, ASME 3, JIS, and Custom. Contains several key features including: dynamically adjustable DAC curves, switchable DAC and TVG views, 80%-20% DAC/TVG, a flexible TVG table, and custom DAC warning curves.

## Software Options

### AWS D1.1 & D1.5

Provides a dynamic reflector "indication rating" for various AWS weld inspection applications. This allows for more efficient inspection by eliminating manual calculations. (PN: EPXT-AWS)

### DGS/AVG

Flaw sizing technique that permits echo signals to be evaluated using a DGS/AVG diagram associated with a particular type of probe and material. The DGS/AVG diagram shows the relationship among echo height, flaw size, and distance from the transducer. (PN: EPXT-DGS-AVG)

# EPOCH XT Specifications\*

## General

### EN12668-1 Compliant

**Weight:** 4.7lbs (2.1kg) with Li Battery

**Dimensions:** 10.9" H x 5.9" W x 2" D (at hand), 2.8" (at display); 277 mm x 150 mm x 51 mm (at hand), 71 mm (at display)

**Keypad:** English, International, Japanese or Chinese

**Languages:** English, Spanish, French, German, Italian, Japanese, Chinese, Russian, Korean, Norwegian, Swedish. Custom languages available.

**Transducer Connections:** BNC or Number 1 LEMO

**Battery:** Choice of Lithium Ion, Nickel Metal Hydride, and Alkaline C-Cells

### Battery Operating Time:

Lithium Ion: 9-10 Hours

NiMH: 5 Hours

C-Cells: 1-2 Hours

### Power Requirements:

AC Mains: 100-120 VAC, 200-240 VAC, 50-60 Hz

## Environmental Ratings

**IP67:** Designed to meet the requirements of Environmental Ingress Protection Rating

Explosive Atmosphere approved per MIL-STD-810F, Procedure 1, NFPA 70E, Section 500, Class 1, Div. 2, Group D

Shock tested per IEC 60068-2-27, 60g's, 6msec H.S., 3 axes, 18 total

**Vibration Tested:** Sine Vibration per IEC 60068-2-6, 50-150 Hz @ .03" DA or 2g's, 20 sweep cycles

## Display

**Color Liquid Crystal Display:** With 60 Hz update, user-selectable color schemes and brightness, and split screen and full screen modes.

### Display Dimensions:

320 Pixels (W) x 240 Pixels (H) Color  
4" W (101 mm) x 3" H (75 mm)

**Baseline Break Mode:** All zero cross points on the RF waveform are shown as zero points in Fullwave mode.

**Amplitude Grid Modes:** 100% or 110% Amplitude Display

**Time Base Grid Modes:** Standard 0 to 10 division, Soundpath Mode divides Range into 5 equal sections with grid lines, Leg Mode displays Soundpath Legs as grid lines

## Pulsar

### Tunable Square Wave Pulsar

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

**Energy Settings:** 50 to 475 V in 25 V increments

**Pulse Width:** Adjustable from 30 to 10,000 ns (0.1 MHz) with PerfectSquare™ Technology

**Damping:** 50, 63, 150, 400 Ohm

## Receiver

**Gain:** 0 to 110 dB – Two user-defined gain step adjustments and presets above function keys.

### Total Instrument Bandwidth:

0.2 – 26.5 MHz @ -3 dB

### Digital Filter Settings:

• 0.2 – 10.0 MHz • 2.0 – 21.5 MHz

• 0.2 – 1.2 MHz • 5.0 – 15.0 MHz

• 0.5 – 4.0 MHz • 8.0 – 26.5 MHz

• 1.5 – 8.5 MHz

**Rectification:** Fullwave, Positive Halfwave, Negative Halfwave, RF

**System Linearity:** Horizontal: +/- 0.2% FSW  
Vertical: 0.25% FSH, Amplifier Accuracy +/- 1 dB

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

## Calibration

### Automated Distance Calibration 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/μsec (635 to 15240 m/S)

**Zero Offset:** 0 to 4950 μsec

### 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%, CUS-TOM DAC, and TVG Table. 110 dB Dynamic Range, 100 dB per μsec adjustment, full gain, 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

Curved Surface Correction for Angle Beam measurements standard

X-Value Correction for distance from Beam Index Point to front of transducer.

## Gates

### Two Fully Independent Gates for Echo Height and Time-Of-Flight.

**Gate Start:** Variable over entire displayed range

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

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

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

**Zoom:** Displayed Range is Gate 1 Width

## INSTRUMENT INPUTS/OUTPUTS

**USB Client Port:** For communication with GageView Pro

**USB Host Port:** Allows direct printing to any PCL5 compatible Laser or Inkjet printer as well as data storage on USB drives.

### LEMO Hardware I/O (optional):

Alarm Outputs, Trigger In/Out

## Data Storage

Up to 10,000: IDs with Waveforms, Measurements, and Setup Parameters

## Warranty

One year limited warranty.

## Standard Inclusions

### EPOCH XT Base Instrument Includes:

- EP4/MCA: AC Adaptor
- EPXT-TC: Transport Case
- EPXT-MAN: Instrument Operating Manual
- EPXT-HS: Bi-Directional Hand Strap
- EPXT-PS: Rubber Coated Stainless Steel Pipe Stand
- EPXT-BAT-L: Lithium Ion or
- EPXT-BAT-N: Nickel Metal Hydride Battery
- Cap(s) for transducer connectors

## Optional Accessories

- EPXT-EC: External Smart Battery Charger
- EP4/CH: Chest Harness
- EPXT-RPC: Rubber Protective Case
- EPXT-DP: Clear Display Protectors (10)
- EPXT-C-16HW-6: 16 pin Hardware I/O cable with diagram
- EPXT-HWIO-B, L: Hardware I/O option
- EPXT-SEAL-KIT: Set of O-Rings and membrane
- EPXT-EW: Extended Warranty for one additional year.

## Software Options

**DGS/AVG:** (PN: EPXT-DGS-AVG)

**AWS D1.1/D1.5:** (PN: EPXT-AWS)

**GAGEVIEW PRO:** (PN: GAGEVIEWPRO-KIT-USB)

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