



**OLYMPUS**

Your Vision, Our Future

ULTRASONIC FLAW DETECTOR

**EPOCH LTC**



## Rugged, Handheld Flaw Detector

The EPOCH LTC digital ultrasonic flaw detector offers state-of-the-art technology in a compact and lightweight package. Based on the class-leading EPOCH XT, the EPOCH LTC is full featured, complies with the EN 12668-1 standard, and has various specialized options to meet your inspection needs.

Ultrasonic flaw detection is widely used in locating and sizing hidden cracks, voids, disbands, and similar discontinuities in welds, forgings, billets, axles, shafts, tanks and pressure vessels, turbines, and structural components.

The EPOCH LTC features a bright, multi-color transfective, full-VGA (640 pixels x 480 pixels) display offering high-resolution A-scans and superior visibility in all lighting conditions, including direct sunlight. The EPOCH LTC is also designed for IP67 rating, ensuring that the instrument can perform in the harsh environments common in the inspection field.



**Part of the EPOCH  
 flaw detector family**

### Features

- Designed for IP67 rating to ensure field ruggedness
- Complies with the EN12668-1 standard
- Only 960 g (2.1 lb)
- Full-color VGA display with transfective technology
- USB On-The-Go port for computer communication and direct printing
- Onboard and miniSD Card storage capabilities for the data logger
- Standard dynamic DAC/TVG
- Standard onboard DGS/AVG
- Digital high dynamic range receiver with digital filters
- High-performance square wave pulser with tuning option

# Powerful Performance in a Compact Flaw Detector

The EPOCH LTC offers many standard features to meet your inspection needs. These include a fixed width square wave pulser, dynamic DAC/TVG, onboard DGS/AVG, selectable digital filters, gain range from 0 dB to 110 dB, peak memory, 0.01 mm (0.001 in.) measurement resolution, and one gate with programmable alarms. In addition, the EPOCH LTC offers many optional, application-specific software features such as AWS D1.1/D1.5 weld rating, manual PRF control, pulse width tuning, and the GageView Pro interface program.

- Standard fixed width square wave pulser with PerfectSquare™ technology
- Digital receiver filtering: standard, broadband, and high-pass settings
- Four, fully customizable measurement displays to meet inspection needs. Select any Gate measurement for each display box
- Amplitude measurement resolution of 0.25% full screen height
- Auto-calibration for thickness, soundpath, or angular depth
- Amplitude measurement from 0% to 110% full screen height
- PRF rate automatically controlled from 10 Hz to 500 Hz. Manual control is optional
- Grid display modes
  - Standard 1 to 10
  - Soundpath
  - Leg mode for angle beam inspection
  - Selectable 100% or 110% vertical display

## Simplified Keypad Design

The EPOCH LTC features a simple keypad design that allows full control with the left or right hand for direct access to important functions. The keypad design also makes for rapid and easy parameter adjustments and recall of instrument configuration (CAL) files.

The keypad is available in English, international symbols, Japanese, and Chinese.

Four custom function keys allow operators to select preset values for instrument configuration parameters.



Hand strap can be moved for use with left or right hand

## Built for Tough Environments

The EPOCH LTC can withstand the rigors of field operation in harsh environments, from offshore to deserts.

### Environmental Ratings

<b>IP rating</b>	Designed to meet the standards of the Ingress Protection (IP) rating number IP67
<b>Explosive atmosphere</b>	Safe operation as defined by Class I, Division 2, Group D, as defined in the National Fire Protection Association Code (NFPA 70), Article 500, and tested using MIL-STD-810F, Method 511.4, Procedure I.
<b>Shock tested</b>	IEC 60068-2-27; 60 g, 6 ms H.S., 3 axes, 18 shocks total
<b>Vibration tested</b>	Sine vibration as per IEC 60068-2-6; 50 Hz to 150 Hz at 0.03 in. DA or 2 g, 20-sweep cycles
<b>Drop tested</b>	MIL-STD-810F, 4.5.5 Procedure IV–Transit drop. 48 in. drop onto 2 in. plywood surface backed by concrete. Drop on each face, edge, and corner for a total of 26 drops
<b>Operating temperature</b>	Lithium-ion: -10 °C to 50 °C (14 °F to 122 °F)
<b>Battery storage temperature</b>	0 °C to 50 °C (32 °F to 122 °F)
<b>Recharge temperature range</b>	0 °C to 40 °C (32 °F to 104 °F)
<b>Battery compartment</b>	Sealed – no tools necessary to replace battery
<b>I/O door</b>	Sealed I/O door for USB On-The-Go connection, miniSD Card slot, and VGA/RS-232 port

# Advanced Software Features and Data Management

**Standard dynamic DAC/TVG:** Calculates signal amplitude as a percentage or decibel level compared to a DAC curve or a reference echo amplitude fixed at a time-varied gain. DAC versions include ASME, ASME 3, JIS, and Custom. Also includes several key features: dynamically adjustable DAC curves, switchable DAC and TVG views, and custom DAC warning curves.

**Standard onboard DGS/AVG:** Flaw sizing technique allowing echo signals to be evaluated with a DGS/AVG diagram associated to a particular type of probe and material. The DGS/AVG diagram illustrates the relationships between echo height, flaw size, and distance from the transducer

**Gate 2 (Echo-to-Echo):** Allows Gate 2 measurements, Echo-to-Echo measurements, and Gate 2 alarms

**CSC (Curved Surface Correction):** Corrects sound path information when using an angle beam transducer to circumferentially inspect a curved surface.

## Software Options

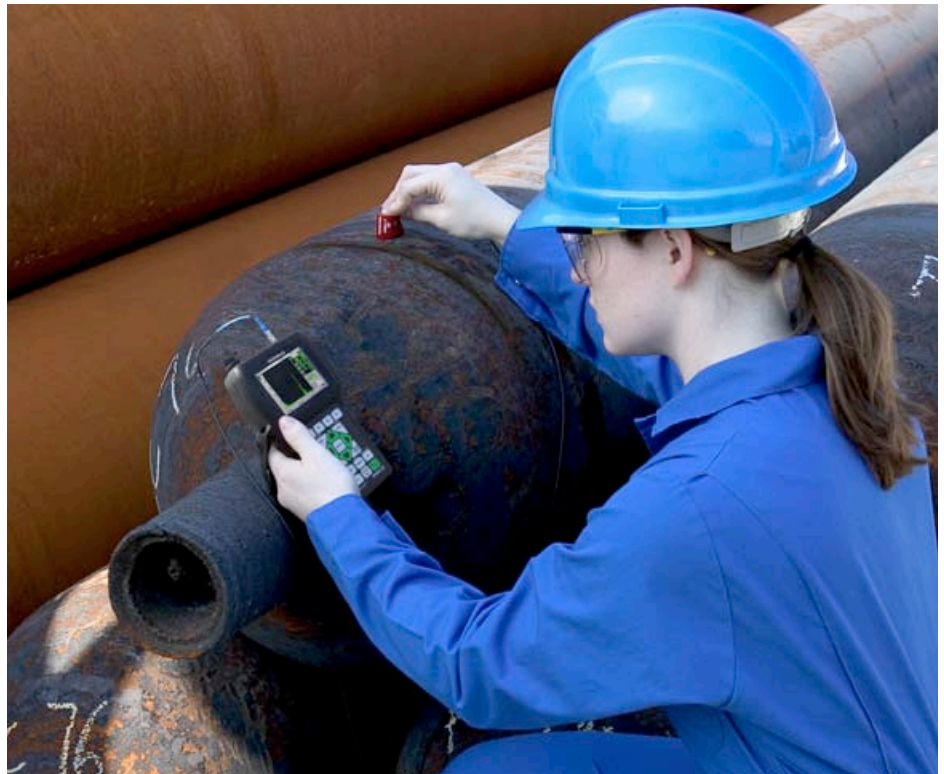
**Manual PRF control:** Allows operators to manually adjust the EPOCH LTC's pulse repetition frequency (PRF) from 10 Hz to 500 Hz in 10-Hz increments

**Extended range:** Extends the standard range of the EPOCH LTC to 3.36 mm to 13,404 mm (0.132 in. to 527 in.) at 5900 m/s (0.2320 in./ms) Includes Low Pass filter (0.5 MHz to 4.0 MHz).

**Tunable square wave pulser:** Allows operators to tune the pulse width of the square wave pulser to optimize transducer performance. This maximizes signal-to-noise ratio and penetration in difficult materials.

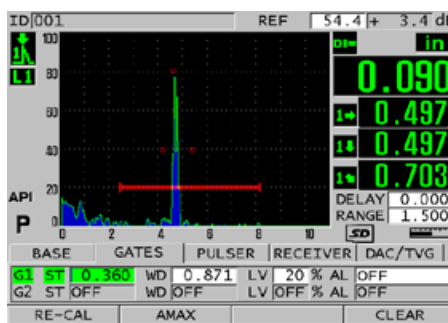
**AWS D1.1 and D1.5:** Provides a dynamic reflector indication rating for various AWS weld inspection applications. This allows more efficient inspections by eliminating manual calculations .

**API 5UE:** Allows defect sizing according to API Recommended Practice 5UE. Uses the Amplitude Distance Differential Technique (ADDT) to measure the size of potential defects during the prove-up process of OCTG pipe. The measurement process is simple and repeatable since all ADDT variables are captured from a Peak Memory envelope.



## Instrument Inputs/Outputs

<b>USB</b>	USB On-The-Go port for PC communication, printing, and data storage.
<b>VGA output port</b>	Standard
<b>miniSD</b>	miniSD Card slot for data storage.
<b>RS-232 port</b>	Yes
<b>Data Storage</b>	Capable of storing up to 50,000 IDs with waveforms, measurements, and configuration parameters in the onboard memory. The miniSD Card allows virtually unlimited data storage.



Software option API 5UE allows defect sizing according to API Recommended Practice 5UE

## GageView Pro

The optional GageView™ Pro interface program helps manage and format stored inspection data. Data can be printed or easily copied to word processing files and spreadsheets for further reporting needs. GageView Pro also allows creating customized databases of identifier (ID) strings that can be uploaded to the EPOCH LTC. The program is fully compatible with the EPOCH LT, XT, 600 and the 1000 Series.

With GageView Pro operators can:

- Export thickness or amplitude data saved on the EPOCH to Microsoft Excel, Word, or similar programs
- Create, format, and manage test databases
- Import and export configurations between the EPOCH and a computer
- Create custom DGS probe libraries
- Upgrade the EPOCH operating software

# EPOCH LTC Specifications\*

General	
Dimensions (W x H x D)	128.9 mm x 223.3 mm x 55.1 mm (5.07 in. x 8.79 in. x 2.17 in.)
Weight	960 g (2.12 lb) with Li-ion battery
Keypad	English, international symbols, Japanese, or Chinese
Display languages	English, Spanish, French, German, Italian, Japanese, Chinese, Russian, Norwegian, Swedish
Transducer connection	LEMO 00
Battery	Rechargeable Lithium-ion. Standard AA battery tray
Battery operating time	Lithium-ion rechargeable battery: 8 hours; AA Li-FeS <sub>2</sub> : 6 hours AA NiMH cells: 4 hours; AA alkaline cells: 3 hours
Power compatibility	100/120 VAC, 200/240 VAC, 50-60 Hz
Display type	Color transfective LCD, refresh rate of 60 Hz, user-selectable color schemes and brightness, two split-screen modes and one full-screen mode
Display dimensions (W x H)	640 pixels x 480 pixels, 75 mm x 56 mm (2.95 in. x 2.21 in.), 94 mm (3.7 in.) diagonal
Pulser	
Pulser	Fixed width square wave pulser optimized for general flaw detection applications
Pulse width	Fixed width in base instrument. Adjustable from 25 ns to 5,000 ns (0.1 MHz) with EPLTC-SWP option
Pulse repetition frequency (PRF)	Automatically software controlled over the range of 10 Hz to 500 Hz. Manual PRF control option available
Energy settings	100 V to 400 V in 100 V increments
Damping	50 Ω, 100 Ω, 200 Ω, 400 Ω
Receiver	
Gain	0 dB to 110 dB — Two user-defined gain step adjustments and presets
Total instrument bandwidth	0.2 MHz to 26.5 MHz at -3 dB
Digital filter settings	<b>Standard:</b> 0.2 MHz to 10.0 MHz <b>Broadband:</b> 2.0 MHz to 21.5 MHz <b>High Pass:</b> 8.0 MHz to 26.5 MHz
Rectification	Full wave, positive half wave, negative half wave, RF
System linearity	Horizontal: ±0.2% FSW
Resolution	0.25% FSH, amplifier accuracy ±1 dB
Amplitude measurement	0 to 110% full screen height with 0.25% resolution
Reject	0% to 80% full screen height with visual warning
Measurement rate	Equal to PRF in all modes
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	3.36 mm to 6,702 mm (0.132 in. to 263 in.) at 5900 m/s (0.2320 in./ms)
Extended range option	3.36 mm to 13,404 mm (0.132 in. to 527 in.) at 5900 m/s (0.2320 in./ms)
Velocity	635 m/s to 15240 m/s (0.0250 in./μs to 0.6000 in./μs)
Zero offset	0 μs to 750 μs
Display delay	59 mm to maximum range (-2.323 in. to maximum range)
Refracted angle	10° to 85° in 0.1° resolution
Measurements	
Measurement display locations	5 locations available (manual or auto selection)
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
Other measurements	Overshoot (dB) value for DGS/AVG, ERS (equivalent reflector size) for DGS/AVG, AWS D1.1/D1.5 rating (D), Reject Value
DAC/TVG	Standard
DAC points	Up to 50 points, 110 dB dynamic range
Special DAC modes	Custom DAC (up to 6 curves)
Curved surface correction	Standard OD or Bar correction for Angle Beam measurements

## Standard PACKAGE

The EPOCH LTC package includes:

**EP-MCA (U8050397):** AC adaptor

**CASE-10015-0000 (U8764103):** Transport case

**910-266:** Instrument user's manual

**EPLTC-HS (U8780043):** Hand strap

**EPLTC-BAT-L (U8760002):** Lithium-ion rechargeable battery

**EPLTC-BAT-AA (U8760001):** AA battery cell tray

## Instrument I/O cables

**EPLTC-C-USB-A-6 (U8840031):** USB-to-Host PC

**EPLTC-C-USB-B-6 (U8840033):** USB-to-Client printer

**EPLTC-C-RS232-6 (U8840029):** RS-232 cable (1.83 m/6 ft)

**EPLTC-C-VGA-6 (U8840035):** VGA cable (1.83 m/6 ft)

## Software Options

**EPLTC-PRF (U8140067):** Manual PRF control

**EPLTC-RANGE (U8140065):** Extended range

**EPLTC-SWP (U8140093):** Tunable square wave pulser

**EPLTC-AWS (U8140063):** AWS D1.1/D1.5

**EPLTC-API 5UE (U8140140):** API 5UE

**GAGEVIEWPRO-KIT-USB-A-AB (U8140076):** GageView Pro

## Optional Accessories

**EPXT-EC:** External smart battery charger

**EP4/CH (U88140055):** Chest harness

**EPLTC-RPC (U8764008):** Rubber protective case with pipestand

**EPLTC-DP (U8780042):** Clear display protectors (10)

OLYMPUS NDT INC. is ISO 9001 and 14001 certified.

**OLYMPUS**

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