OLYMPUS®

Your Vision, Our Future

EPOCH LTC
Ultrasonic Flaw Detector

Rugged Handheld Flaw Detector

The EPOCH LTC Digital Ultrasonic Flaw Detector offers state-of-the-art technology in a package that is compact and lightweight 2.12 lbs (0.96 kg). Based on the design of the class-leading EPOCH XT, the EPOCH LTC is a full-featured instrument with EN12668-1 compliance and a wide variety of standard features as well as specialized options to meet your inspection needs.

The instrument features a bright multi-color transflective display with full VGA (640 x 480) resolution providing a high resolution A-scan and superior visibility in all lighting conditions, including direct sunlight. The EPOCH LTC is also designed to the requirements of IP67, assuring that the instrument will perform in the harsh environments common in the inspection field.

Features

- IP67-sealed to assure field ruggedness
- EN12668-1 compliant
- Only 2.12 lbs (0.96 kg)
- Full color VGA display with transflective technology
- USB On-the-Go Port for PC communication and direct printing
- Mini SD card storage and onboard storage with standard alphanumeric datalogger
- Standard Dynamic DAC/TVG
- Digital High Dynamic Range Receiver with digital filters
- High Performance Square Wave Pulser with tuning option

The **New Generation** of
EPOCH flaw detectors®

Innovation in NDT™

920-121-EN

Powerful Performance in a Compact Flaw Detector

The EPOCH LTC incorporates many standard features to meet your inspection needs. These include a square wave pulser, dynamic DAC/TVG, selectable digital filters, gain range from 0 to 110 dB, peak memory, 0.001 in. (0.01 mm) measurement resolution, and one gate with programmable alarms. In addition, the unit offers many optional application-specific software features: On-board DGS/AVG, Manual PRF Control, Pulse Width Tuning, GATE 2, Curved Surface Correction, and the GageView Pro Interface Program.

- Standard Square Wave pulser with PerfectSquare™ Technology
- Digital receiver filtering: standard, broadband and high-pass setting
- Four measurement displays that are fully customizable 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 1-10
  – Soundpath
  – Leg mode for angle beam inspection
  – Selectable 100% or 110% vertical display

Built For Tough Environments

The EPOCH LTC 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, 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, 20 sweep cycles
- Wide operating temperature range:
  – Lithium Ion: -10° to 50°C (14° to 122°F)
  – Battery storage temperature 0° to 50° C (32° to 122° F)
  – Recharge temperature: 0° to 40° C (32° to 104° F)
- Hand strap can be mounted for left or right hand operation
- Sealed battery compartment—no tools required for battery replacement
- Sealed I/O door for USB On-The-Go (OTG) connection, Mini SD card slot, and VGA / RS-232 port

Simplified Keypad Design

The EPOCH LTC features a simple keypad design that allows full control from left or right hand, for direct access to important functions. Rapid parameter adjustments, and recall of instrument setup (CAL) files are quick and easy.

Available in English, International Symbols, Japanese and Chinese.

Four customizable function keys allow the operator to select preset values for instrument setup parameters.

Advanced Software Features and Data Management

Standard 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 & TVG views, and custom DAC warning curves.

Software Options

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: EPLTC-DGS-AVG)

Manual PRF Control: Allows the operator to manually adjust the EPOCH LTC's pulse repetition frequency (PRF) from 10 Hz to 500 Hz in 10 Hz increments. (PN: EPLTC-PRF)

Extended Range: Extends the standard range of the EPOCH LTC to 0.144" to 400" (4 mm to 1000 mm) (PN: EPLTC-RANGE)

Gate 2 (Echo-to-Echo): Activates Gate 2 in the EPOCH LTC allowing Gate 2 measurements , Echo-to-Echo measurements and Gate 2 alarms. (PN: EPLTC-GATE2)

Tunable Square Wave Pulser: Allows the operator 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. (PN: EPLTC-SWP)

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

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: EPLTC-AWS)

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 LTC. The Interface Program is fully compatible with the EPOCH 4, 4B, 4*PLUS*, LT, and XT.

With Gageview Pro the operator can:

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

Optional Accessories

External Smart Battery Charger: (PN: EPXT-EC)

Chest Harness: (PN: EP4/CH)

Rubber Protective Case with Pipestand: (PN: EPLTC-RPC)

Clear Display Protectors (10): (PN: EPLTC-DP)

Instrument I/O Ports

The EPOCH LTC features a variety of I/O ports to meet your data management and training requirements.

USB On-The-Go: Dual purpose USB port that may be used for PC communication and for direct printing.

Mini SD Storage: Allows inspection data, instrument setup, and screen captures to be stored on a removable disc.

VGA Output: Allows the EPOCH LTC display to be projected or viewed on a standard PC monitor at full update rate (60 Hz)

RS-232 Port: Used to control the EPOCH LTC remotely with a PC.

Instrument I/O Cables

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

USB to Client Printer: (PN: EPLTC-C-USB-B-6)

RS-232 6 Foot Length: (PN:EPLTC-C-RS232-6)

VGA 6 Foot Length: (PN:EPLTC-C-VGA-6)

EPOCH LTC Specifications*

General

EN12668-1 Compliant
Weight: 2.12 lbs (0.96 kg) with Li Battery
Dimensions: 8.79" H x 5.07" W x 2.17" D; 223.3 mm x 128.9 mm x 55.1 mm
Keypad: English, International, Japanese or Chinese
Languages: English, Spanish, French, German, Italian, Japanese, Chinese, Russian, Norwegian, Swedish
Transducer Connections: LEMO 00
Battery: Rechargeable Lithium Ion. Pack for AA cells standard
Battery Operating Time:
  Lithium Ion Rechargeable Pack: 8 hours
  AA Lithium Ion Cells: 6 hours
  AA NiMH Cells: 4 hours
  AA Alkaline Cells: 3 hours
Power Requirements: AC Mains 100-120 VAC, 200-240 VAC, 50-60 Hz

Environmental Ratings

IP67 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, 60 g, 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, 20 sweep cycles

Display

Color Transflective Liquid Crystal Display: 60 Hz update, user-selectable color schemes and brightness, two split screen modes and one full screen mode.
Display Dimensions: 640 Pixels (W) x 480 Pixels (H) 2.95" W (75 mm) x 2.21" H (56 mm), 3.7" (94mm) diagonal
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

Pulser

Square Wave Pulser: Fixed width square wave pulser optimized for general flaw detection applications.
Pulse Width: Fixed Width in Base Instrument. Adjustable from 30 to 10,000 ns (0.1 MHz) with EPLTC-SWP Option
Pulse Repetition Frequency (PRF): Automatically controlled by the instrument software over the range of 10 Hz to 500 Hz. Manual PRF control option available (PN: EPLTC-PRF)
Measurement Rate: 10Hz to 500Hz. Always equal to PRF rate.
Energy Settings: 100 to 400 V in 100 V increments
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:
  Standard: 0.2 – 10.0 MHz
  Broadband: 2.0 – 21.5 MHz
  High Pass: 8.0 – 26.5 MHz
Rectification: Fullwave, Positive Halfwave, Negative Halfwave, RF
System Linearity: Horizontal: +/- 0.2% FSW
Vertical: 0.25% FSH, Amplifier Accuracy +/- 1dB
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: Base Instrument: 0.144 in. to 200 in. (4 mm to 5000 mm)
Extended Range Option: (PN: EPLTC-RANGE): 0.144 in. to 400 in. (4 mm to 10000 mm)
Velocity: 0.025 to 0.6000 in/μsec (635 to 15240 m/S)
Zero Offset: 0 to 750 μsec
Display Delay: -2.323" to Max Range (-59 mm to Max Range)
Refracted Angle: 10° to 85° in 0.1° resolution

Measurements

Types: Thickness, Soundpath, Projection, Depth, Amplitude, Time-Of-Flight for Gate 1
GATE 2 option: (PN: EPLTC-GATE2): Allows Echo-to-Echo measurements independent of Gate 2 measurements, and Gate 2 alarms.
Four Measurement Display Locations: User selects up to four measurements from either gate to display on the live screen.
Dynamic DAC/TVG Standard: ASME, ASME III, JIS, and CUSTOM DAC with up to six warning curves. Allows dynamic adjustment of curves with Gain, Dynamic range 110 dB, Slope 100 dB/usec and up to 50 points captured.
Amplitude Measurement: 0 to 110% full screen height
X-Value Correction: Removes distance from Beam Index Point to front of transducer from surface distance measurement.
Gate 1: Measurement of 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
Zoom: Displayed Range is Gate 1 Width.

Instrument Inputs/Outputs

USB: On-The-Go (OTG) Port for PC Communication, printing, and data storage with USB Drives
VGA Ouput Port: for connection with PC monitors and/or projectors
Mini SD: Card Slot for Data Storage

Data Storage

Up to 50,000: IDs with Waveforms, Measurements, and Setup Parameters in onboard memory. Mini SD card allows virtually unlimited data storage.

Standard Inclusions

EPOCH LTC Base Instrument Includes:
EP-MCA: AC Adaptor
EPLTC-TC: Transport Case
EPLTC-MAN: Instrument Operating Manual
EPLTC-HS: Hand Strap
EPLTC-BAT-L: Lithium Ion Rechargeable Battery
EPLTC-BAT-AA
Warranty: One year limited warranty.

Options

EPLTC-EW: Extended Warranty for one additional year.

Software Options

DGS/AVG: (PN: EPLTC-DGS-AVG)
Manual PRF Control: (PN: EPLTC-PRF)
Extended Range: (PN: EPLTC-RANGE)
GATE 2 (ECHO-TO-ECHO): (PN: EPLTC-GATE2)
Tunable Square Wave Pulser: (PN: EPLTC-SWP)
Curved Surface Correction: (PN: EPLTC-CSC)
AWS D1.1/D1.5: (PN: EPLTC-AWS)
GAGEVIEW PRO: (PN: GAGEVIEWPRO-KIT-USB)

PANAMETRICS-NDT™