

# EPOCH IIIB

General Purpose Compact  
Digital Ultrasonic Flaw Detector

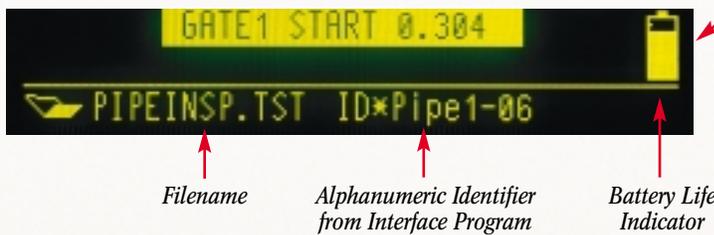
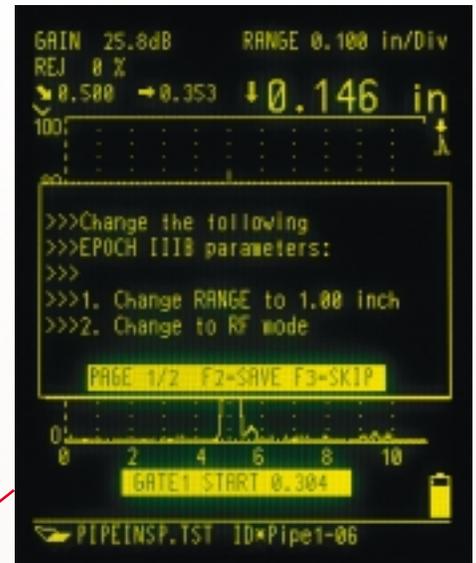


# EPOCH IIIB...

## A Versatile Internal Datalogger and Interface Program for Complete Documentation

All stored inspection data can be directly transferred via the EPOCH IIIB's bi-directional RS232C to computers and printers for fast and extensive documentation.

The Optional Windows-based Interface Program helps manage and format stored data for rapid transfer to word processing applications. The Interface Program is compatible with Windows<sup>®</sup> 95, NT<sup>™</sup>, and 3.1. Multiple format data bases can be created and down loaded to the EPOCH IIIB for automatic tracking of inspection routes.



Filename

Alphanumeric Identifier from Interface Program

Battery Life Indicator

## Standard Enhanced Database Tracking

Instructional memos are automatically recalled on the EPOCH's display to inform the inspector of special test conditions at predetermined locations in the database.

## Alphanumeric Capabilities

Created in the Interface Program, alphanumeric identifiers can be downloaded to the EPOCH IIIB. Data can then be stored at these predetermined locations and subsequently be uploaded back to the computer for complete documentation.

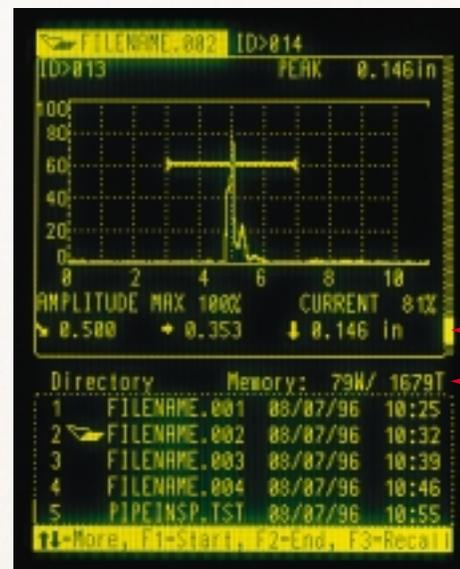
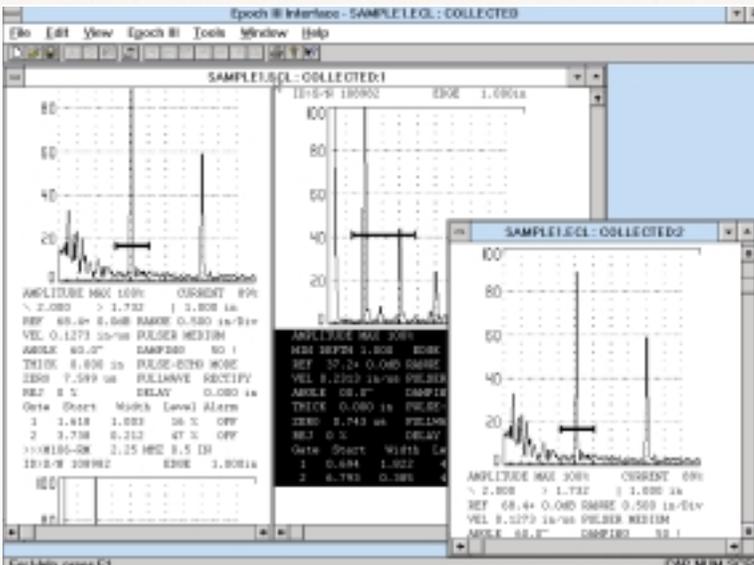
## Interface Programs

### ❖ 32-bit version

Performance and compatibility with Windows 95 and NT. Features include improved graphics with dockable toolbar, and enhanced Object Linking and Embedding (OLE) features.

### ❖ 16-bit version

For use with Windows 3.1. Includes many of the features found in the 32-bit version.



Scroll Bar

Remaining Memory

## Store, Recall, Retrieve

The EPOCH IIIB's database stores up to 50 waveforms or 1,000 thickness readings (optional 130 waveforms or 3,000 thickness readings). This time saving feature enables you to scroll, review, and recall all parameters, waveforms, and calibration setups. Recalled setups are exact and may only require verification on a test block.

# EPOCH IIIB...

## A Digital Ultrasonic Flaw Detector That Is Powerful and Affordable

*The performance of the highly touted EPOCH III is legendary. Now Panametrics recreates this power in a more affordable version: the EPOCH IIIB...a general purpose, intuitive, digital ultrasonic flaw detector with many practical features for flaw detection and thickness measurements. Fewer keys, a quick 3-key control, and the ability to easily recall stored waveforms and setups will make your inspections easier than ever before.*

### Rugged and Reliable

The EPOCH IIIB is also rugged and reliable — its splash proof housing is made of impact resistant, durable Lexan® to withstand years of heavy use in adverse working conditions. The sealed keypad prevents contamination and facilitates easy cleanup. A soft carrying case with a plastic keypad cover, shown in the adjacent photo, offers additional protection.



### Inspections in Hard to Reach Areas

Combining a host of practical features, the EPOCH IIIB provides maximum portability (only 2.6 lbs or 1.2Kg) with the belt-mount battery pack. The chest harness allows the unit to comfortably hang "hands free" while the IIIB's unique flat design provides a straight-on view of the high resolution display. In addition, the unit comes standard with a Pipe Stand for secure operation and a 3-sided Sunshade that folds down to protect the EPOCH IIIB's display.

# EPOCH IIIB...

## A Unique Combination of High Performance and Ease-of-Use

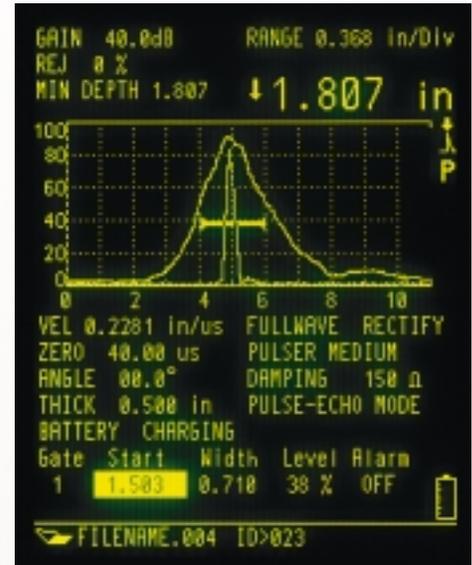
The EPOCH IIIB incorporates many high performance features such as an Internal Datalogger, a fast 60Hz display Update Rate, and a Soundpath Calculator for angle beam testing. Its ergonomically designed, direct-access keypad has fewer but larger keys for easy, intuitive operation. The quick 3-key Control feature lets you adjust all important test parameters by simply toggling the Item Select key and the two Arrow keys.



## Outstanding Features

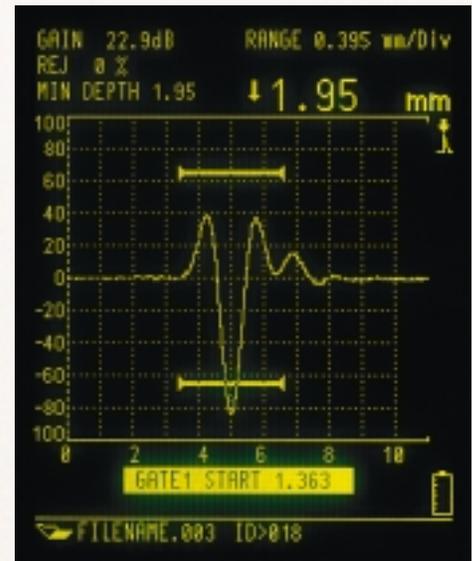
- ❖ Compact, only 2.6 lbs (1.2Kg) when using belt-mount battery pack
- ❖ Large, bright, high resolution electroluminescent display
- ❖ Quick 3-key control of all important test functions
- ❖ Soundpath Calculator for angle beam testing
- ❖ Housing made of high durability Lexan
- ❖ Sunshade and Pipe Stand are standard features
- ❖ Fast, minimum 60Hz display update rate
- ❖ RF waveform display
- ❖ PRF Pulse Repetition Frequency control
- ❖ Minimum Depth Alarm
- ❖ Zoom Mode for improved resolution
- ❖ Peak Memory Mode
- ❖ RS-232 communications port
- ❖ Internal numeric datalogger stores 50 A-Scans or 1,000 thickness readings
- ❖ Optional: Expanded Memory stores 130 A-Scans and 3,000 thickness readings
- ❖ Optional: DAC curve with DAC alarm
- ❖ Fully upgradeable to an EPOCH III

The "split screen" display allows the operator to view all parameters and A-Scan simultaneously.



## Peak Memory

Peak Memory Mode simultaneously displays the live waveform and peak envelope of the A-Scan display. This feature is ideal for verifying beam index point with angle beam transducers.



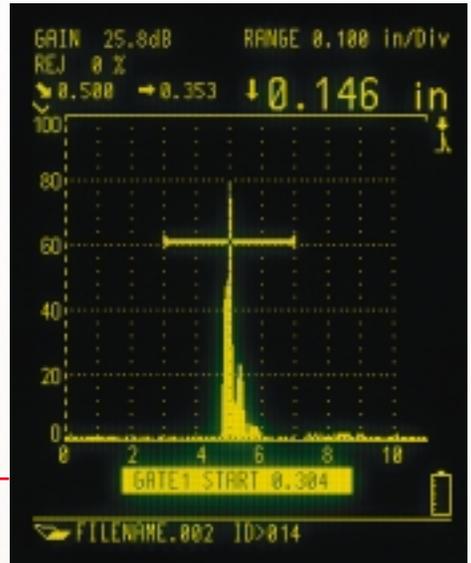
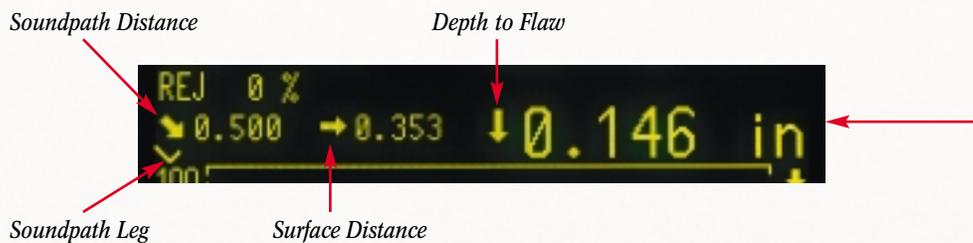
## RF Waveform

An RF waveform can be displayed at any screen range and eliminates the need to output to an oscilloscope for RF verification. This feature is particularly useful for tip defraction and sizing, and phase reversal for bond inspection.

# The EPOCH IIIB...

## A General Purpose Flaw Detector for Demanding Applications

The EPOCH IIIB can be used for numerous applications such as weld inspection, bond inspection, thickness monitoring, erosion/corrosion surveying, crack detection and sizing, and porosity. Features including the Soundpath Calculator, Peak Memory Mode, and Reference Gain give inspectors the tools necessary to help locate discontinuities and eliminate manual calculations.



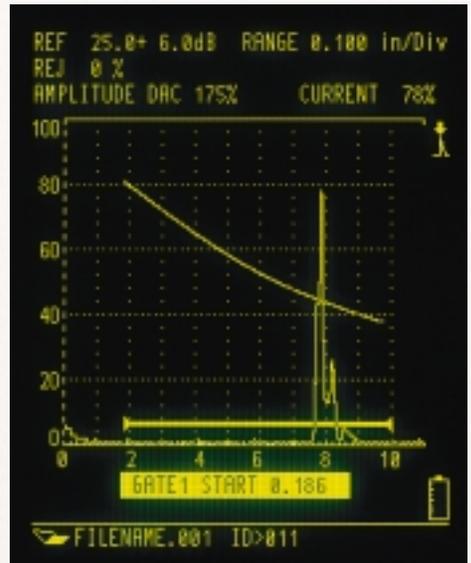
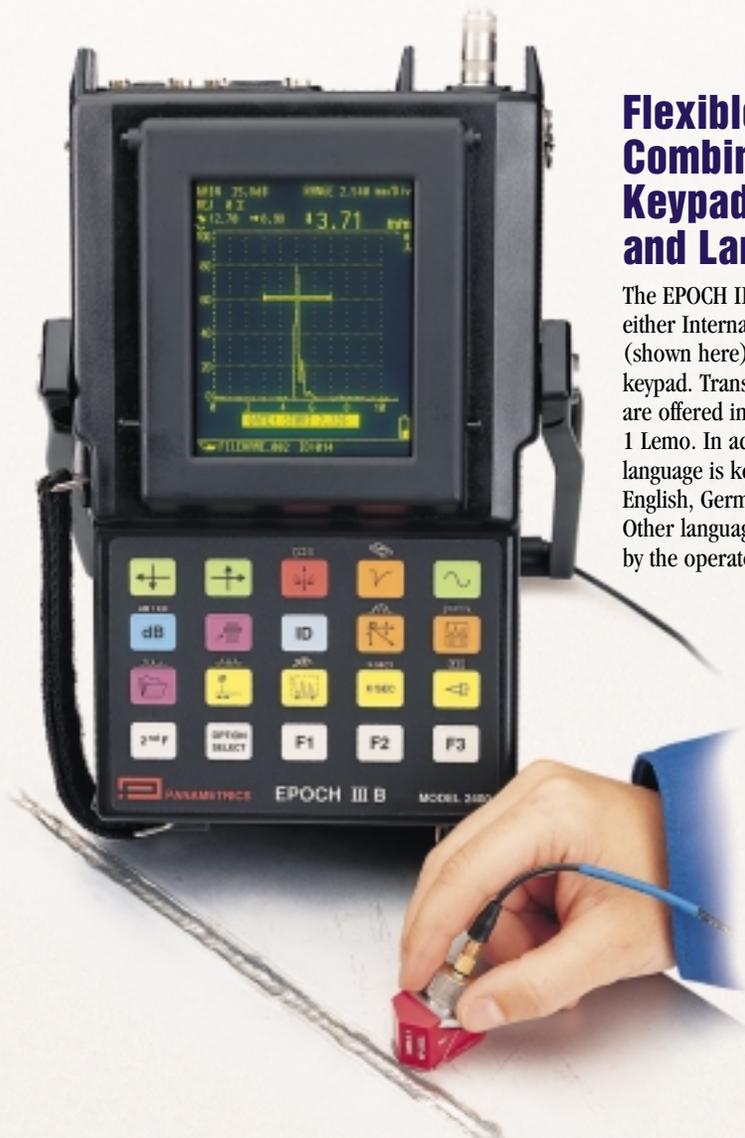
The "filled in" waveform trace improves visibility and contrast in bright light conditions.

### Soundpath

The Soundpath Calculator displays the Soundpath Leg and its value, as well as the Surface Distance and Depth to Flaw for angle beam inspections. This feature is extremely useful for verifying the exact location of the gated signal.

### Flexible Combinations of Keypad, Connector, and Language

The EPOCH IIIB is available in either International Symbol keypad (shown here) or English Text keypad. Transducer cable connectors are offered in either BNC or Number 1 Lemo. In addition, the display language is keypad selectable in English, German, and French. Other languages can be installed by the operator.



### DAC Curve Option with Alarm

The Distance Amplitude Correction Curve option (in keypad selectable ASME and JIS formats) calculates signal amplitude as a percentage of the DAC curve level. Same-size reflectors peak along the curve independent of their location. The selectable alarm level will be activated when a gated signal breaks the curve. In addition, a handy Reference Gain function allows you to add scanning gain. Adding 6dB of scanning gain will cause the DAC reference curve to become the -6dB curve as shown above.

# Specifications\*

## EPOCH IIIB MODEL 2400

General purpose, compact, digital ultrasonic flaw detector.

### Display

256 column by 320 row flat panel electroluminescent display with large thickness/soundpath display. "Split-screen" allows simultaneous viewing of waveform and set-up data. Selectable "filled" or "outlined" waveform trace.

### Graticule

Electronically generated 2.625" x 2.375" (67 x 60mm). No parallax error. No changes in brightness due to repetition rate changes.

### Display Update Rate

Minimum 60Hz under standard test ranges.

### Sensitivity

100.OdB max. and reference level sensitivity feature with 6dB or 0.1dB selectable resolution.

### Self-Calibration

Continuous, automatic self-calibration compensates pulse amplitude and receiver sensitivity for temperature and aging effects.

### Reject

Absolutely linear from 0% to 80% full scale in 1% increments.

### Units

English or Metric.

### Material Velocity

0.025 to 0.6000 in/ $\mu$ Sec (635 to 15240 m/S). Switchable between two stored velocity settings.

### Zero Offset

0 to 350  $\mu$ Sec.

### Range

0.16 - 200 inch (4 - 5000mm) standard range at the velocity of longitudinal waves in steel.

### Distance Readout

Provides single echo thickness readings (in large numerals) or soundpath, surface, and depth display for angle beam testing. Measures to either peak or leading edge of gated signal.

### Refracted Angle

Fixed settings of 0°, 30°, 45°, 60°, 70°, or variable from 10° to 85° in 0.1° resolution.

### Gate Start

Variable over entire displayed range.

### Gate Width

Variable from Gate Start position to the maximum displayed range.

### Gate Level

Adjustable from 2% to 95% of full screen (in increments of 1%) in both rectified and RF display modes.

### Alarms

Selectable threshold positive/negative or minimum depth modes.

### Zoom

Expands gated portion of display to full graticule width, but not less than minimum range.

### Peak Memory

Simultaneously displays live waveform and peak envelope of A-Scan display.

### Pulsar Type

Shock excitation type. Amplitude of 100V, 200V, and 400V ( $\pm 5\%$  Max).

### Pulse Energy

Selectable: Low, Medium or High.

### Pulse Repetition Frequency

PRF Selectable: Low or Auto.

### Damping

Selectable settings of 50, 150, or 400 ohms.

### Rectification

Full wave, half wave positive or negative, and unrectified RF settings.

### Analog Bandwidth

Broadband, 0.4-16.5MHz at -6dB.

### Test Modes

Pulse Echo, Dual, or Through Transmission.

### Standard Memory

Storage of up to 50 waveforms with calibration data or 1,000 thickness readings with numeric identifiers.

### Optional Expanded Memory

Stores up to 130 waveforms with calibration data or 3,000 thickness readings with numeric identifiers.

### Identifiers

8 character preassigned file names and 16 character numeric (alphanumeric in conjunction with Interface Program) location codes.

### Operating Temperature

-13°F to 158°F (-25°C to 70°C).

### Storage Temperature

With Battery -4°F to 122°F (-20°C to 50°C).

Without Battery -85°F to 185°F (-65°C to 85°C).

### Power Requirements

AC Mains; 85-264 VAC, 47-66Hz, 30W max.

### Battery

Fast-charge, lead-lead dioxide. C-size Alkaline Option. Camcorder Battery Option.

### Battery Operating Time

8 hours with 12V tray or 12V belt-mount pack,

4 hours with 6V tray typical @ 77°F (25°C).

8 hours nominal with Camcorder Battery Tray.

### Battery Status

Continuously displayed, Low battery warning display when battery life falls below half hour.

### Transducer Cable Connectors

BNC or Number 1 Lemo.

### Keypad

English, Japanese or International Symbols.

### Languages

English, French, and German, selectable by keypad. Other languages can be installed by the operator.

### RS-232C Communications Port

Serial communications port allows interfacing with IBM compatible computers and most printers.

### Dimensions

Length: 11.4" (289mm),

Width: 6.1" (156mm) at keypad,

7" (177mm) at display,

Depth: Min 1.9" (48mm) at keypad with belt-mount battery, Max 3.75" (95mm) at display and 12V battery tray.

### Weight

With 12V belt-mount battery: 2.6 lbs. (1.2 Kg).

With 6V battery tray: 4.9 lbs. (2.2 Kg).

With 12V battery tray: 6.3 lbs. (2.9 Kg).

With camcorder battery tray: 6.6 lbs. (3.0 Kg).

### Warranty

One year warranty, battery not included.

Optional second year warranty available.

## Ordering Information

General Purpose, compact digital ultrasonic flaw detector: EPOCH IIIB, Model 2400 Includes:

- 23SS Sunshade
- 23PS Adjustable Pipe Stand
- Chest Harness and Hand Strap
- Internal Numeric Datalogger
- RF Display Mode
- Pulse Repetition Frequency Control
- RS-232 and High Speed Data Output Ports
- 23CAM Charger and Power Cord
- 23TC Plastic Transport Case
- 8 Hour Lead-Lead Dioxide Battery, 23BAT-12 (other battery options available)
- 23CAL-NIST Calibration Certificate, NIST-traceable
- Instruction Manual

## Optional Accessories

23BAT-CAM	8 Hour Replaceable Camcorder Battery Tray
23BAT-6	4 Hour Battery Tray
23BAT-12E	8 Hour Belt-Mount Battery Pack
23BAT-12C	C-size Alkaline Belt-Mount Battery Pack
23SC	Hard Shell Shipping Case
23PCC	Soft Protective Carrying Case
21 PR	Portable Printer (AC and battery operated)
23IP	Windows-based Computer Interface Program, available for use with Windows 95, NT, and 3.1

## Software Options

24K8000	DAC Curve With DAC Alarm
24K100	Expanded Memory



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