

Encoded One-line B-scan Thickness Profiles



B-scan Display on 38DL PLUS

The 38DL PLUS thickness gage and the EPOCH XT and EPOCH 1000 Series ultrasonic flaw detectors feature a fully encoded B-scan option that displays scanned thickness measurements of internally corroded parts as easy-to-read cross-sectional images. This time-saving B-scan option is compatible with multiple encoders and scanners, and supplies important cross-sectional depth and distance traveled information for points along the scan. By covering a larger scan area than a traditional A-scan, the portable B-scan system allows for more rapid scanning to obtain a side profile and thickness data from the test piece.

Key Features

- Bi-directional, uni-directional, and manual scan modes
- Simultaneous view of A-scan and B-scan
- Fast data collection for identification of areas of interest
- Compatible with multiple encoders and scanners
- Minimum thickness continuously captured and updated on screen
- Review of B-scan data and statistics in standard GageView Thickness or optional GageView Pro PC interface program

Applications

- Analysis of corroded or pitted areas
- In-service tank floors and walls
- Piping inspections
- Marine hull inspection
- Composite disbond testing*
- Zero degree void sizing*

*EPOCH 1000 Series only.

Portable B-scan Solutions

The encoded B-scan option is available on multiple Olympus instruments, providing a complete single-axis encoded B-scan solution to meet a variety of application and scanning needs. Instrument selection is based on specific inspection requirements such as scanning speed, scan resolution, and A-scan storage capability.

	38DL PLUS Thickness Gage	EPOCH XT Flaw Detector	EPOCH 1000 Flaw Detector
Minimum Scan Resolution	0.04 in (1.016 mm)	0.02 in (0.51 mm)	0.005 in (0.13 mm)
Maximum Scan Rate	20 Hz	1000 Hz	1200 Hz
		500 Hz (with Floating Gate)	
		60 Hz (with A-scan storage)	800 Hz (with A-scan storage)
Maximum Scanning Speed (at minimum scan resolution with A-scan storage)	0.80 in./sec (20 mm/sec)	1.2 in./sec (30.48 mm/sec)	4 in./sec (101.6 mm/sec)
Maximum A-scan Storage	1 (min, max, or current)	200 (min depth, alarm, or both)	60,000 (all A-scans)
Maximum Points per B-scan	10,000	150,000	More than 1 million
			60,000 (with A-scan storage)

Equipment Required

The following items are required to perform an encoded B-scan using the 38DL PLUS, EPOCH XT, or EPOCH 1000 Series instruments.

- B-scan encoder scanner
(other encoders can also be used)
- Encoder cable
- Transducer
- Transducer cable



Part Number	Item Number	Description	Compatible Instrument
BSCAN-ENC	U8779522	B-scan Encoder Buggy	38DL PLUS, EPOCH Series
D790-SM	U8450009	D790-SM Dual Element Transducer	38DL PLUS, EPOCH Series
LCMD-316-10B	U8801120	Cable for D790-SM, Dual Lemo 00 to Microdot, 10 ft	38DL PLUS
LCMD-316-25B	U8800795	Cable for D790-SM, Dual Lemo 00 to Microdot, 25 ft	38DL PLUS
LCMD-316-50B	U8800957	Cable for D790-SM, Dual Lemo 00 to Microdot, 50 ft	38DL PLUS
LCMD-316-100B	U8801000	Cable for D790-SM, Dual Lemo 00 to Microdot, 100 ft	38DL PLUS
BCMD-316-10B	U8800194	Cable for D790-SM, Dual BNC to Microdot, 10 ft	EPOCH Series
BCMD-316-25B	U8800195	Cable for D790-SM, Dual BNC to Microdot, 25 ft	EPOCH Series
BCMD-316-50B	U8800196	Cable for D790-SM, Dual BNC to Microdot, 50 ft	EPOCH Series
BCMD-316-100B	U8800193	Cable for D790-SM, Dual BNC to Microdot, 100 ft	EPOCH Series
L1CMD-316-10B	U8800301	Cable for D790-SM, Dual Lemo 01 to Microdot, 10 ft	EPOCH Series
L1CMD-316-25B	U8800302	Cable for D790-SM, Dual Lemo 01 to Microdot, 25 ft	EPOCH Series
L1CMD-316-50B	U8800303	Cable for D790-SM, Dual Lemo 01 to Microdot, 50 ft	EPOCH Series
L1CMD-316-100B	U8800300	Cable for D790-SM, Dual Lemo 01 to Microdot, 100 ft	EPOCH Series

B-scan with 38DL PLUS

This powerful option for the 38DL PLUS provides encoded B-scan capability combined with the ease and simplicity of thickness gage inspection. The 38DL PLUS encoded B-scan will capture and store part thickness readings along with corresponding distance traveled information. The A-scan waveform at the minimum thickness location is also saved with the scan, which can be reviewed on the instrument.

Key Features

- Bi-directional or uni-directional encoded modes
- User selectable scan resolution down to 0.04 in. (1.016mm)
- Scan rate of up to 0.80 in./sec at minimum resolution
- Up to 10,000 thickness readings per B-scan

Scan Resolution		Maximum Scan Rate	
in.	mm	in./sec	mm/sec
0.04	1.016	0.8	20
0.1	2.54	2	50
0.2	5.08	4	100
4	12.7	10	254



38DL PLUS

Ordering Information

An encoder buggy, transducer cable are required in addition to the B-scan software and encoder cable listed below.

Part Number	Item Number	Description
38DLP-EBSCAN	U8147018	BSCAN Software Option for the 38DL PLUS
38DLP-ENC-CBL-10	U8840168	38DLP B-scan Encoder Cable, 10 feet
38DLP-ENC-CBL-25	U8840169	38DLP B-scan Encoder Cable, 25 feet
38DLP-ENC-CBL-50	U8840170	38DLP B-scan Encoder Cable, 50 feet
38DLP-ENC-CBL-100	U8840171	38DLP B-scan Encoder Cable, 100 feet

B-scan with the EPOCH XT

The B-scan option on the EPOCH XT features increased A-scan storage capacity and faster scanning speed for general flaw detector corrosion inspections. Complete with thickness markers, the B-scan option provides readings at specific scan locations and the ability to automatically save A-scans for minimum thickness data or when triggered by alarm conditions.

Key Features

- Scanning resolution down to 0.020 in. (0.51 mm)
- Fast scanning speed of up to 20 in./sec (508 mm/sec) at minimum resolution
- Up to 150,000 thickness readings per B-scan
- Automatic audible alarm if scan speed exceeds limit
- Floating Gate software improves precision and consistency of thickness readings
- Ability to scroll and review internally stored B-scan data
- Operates in all test modes including Time Varied Gain (TVG) and floating gate

Floating Gate

Included with the B-scan software is Olympus' Floating Gate software option. This option allows the operator to "float" Gate 1 and/or Gate 2 at a selected height compared to a gated echo (-1 dB to -14 dB). This feature is intended to allow more consistent, precise readings, and is especially useful while acquiring B-scan data in Edge Detect mode.



Ordering Information

An encoder buggy, transducer cable are required in addition to the B-scan software and encoder cable listed below. This software option can be remotely activated on existing EPOCH XT units if they are equipped with the hardware I/O port option.

Part Number	Item Number	Description
EPXT-BSCAN	U8140025	BSCAN Software Option for the EPOCH XT
EPXT-ENC-CBL-10	U8840087	EPXT B-scan Encoder Cable, 10 feet
EPXT-ENC-CBL-100	U8840088	EPXT B-scan Encoder Cable, 25 feet
EPXT-ENC-CBL-25	U8840089	EPXT B-scan Encoder Cable, 50 feet
EPXT-ENC-CBL-50	U8840090	EPXT B-scan Encoder Cable, 100 feet
EPXT-BSCAN-KIT-10	U8140021	BSCAN Kit for EPXT (B-scan software, encoder buggy, 10 ft encoder cable)
EPXT-BSCAN-KIT-25	U8140022	BSCAN Kit for EPXT (B-scan software, encoder buggy, 25 ft encoder cable)
EPXT-BSCAN-KIT-50	U8140023	BSCAN Kit for EPXT (B-scan software, encoder buggy, 50 ft encoder cable)
EPXT-BSCAN-KIT-100	U8140024	BSCAN Kit for EPXT (B-scan software, encoder buggy, 100 ft encoder cable)

B-scan with the EPOCH 1000 Series

The EPOCH 1000 Series, as part of its high-level conventional UT performance, offers an encoded B-scan option that includes both single value and cross-sectional B-scan modes. This B-scan option features fast scanning speeds combined with fine scan resolution allowing for detailed scans while reducing overall scan time. EPOCH 1000 Series B-scan also allows storage of A-scans for all collected B-scan points for re-reporting or data validation at specific locations along the scan. Once a scan is stored, basic on-board analysis can be performed using sizing cursors on the scan image and calculated statistics from the thickness data.

Single Value B-scan

Single value B-scans, typically used in corrosion inspections, display a side profile of a test material using collected thickness readings and transducer position. These images illustrate and help users depict the internal structure of test materials. The single value B-scan on the EPOCH 1000 Series includes:

- Scanning resolution down to 0.005 in. (0.13 mm)
- Rapid scanning speed of up to 6 in./sec (152.4 mm/sec) at minimum resolution
- Over 1 million thickness readings per B-scan without A-scan storage
- A-scan storage available for all B-scan points
- Sizing cursors and statistics available for basic on-board analysis
- Included Floating Gate software improves precision and consistency of thickness readings Ability to scroll and review internally stored B-scan data
- Operates in all test modes including Time Varied Gain



Cross Sectional B-scan

Cross sectional B-scans display an amplitude based image of thickness data over a scanned distance, rather than a single thickness reading at each transducer location. These scans, similar to phased array zero degree linear scans, allow visualization of flaws across the entire screen range, and are ideal for laminar flaw inspections in materials such as composites as well as base metal inspections.

- Amplitude data is displayed for entire screen range regardless of gate position
- A-scan images are stored at each transducer location and can be reviewed for further evaluation or verification
- Standard case immersion probes are often used in place of a dual element probe
- Multiple scan palettes available for various color scales



Ordering Information

An encoder buggy, transducer cable are required in addition to the B-scan software and encoder cable listed below.

Part Number	Item Number	Description
EP1000-BSCAN	U8140154	BSCAN Software Option for the EPOCH 1000
EP1000-ENC-CBL-10	U8140156	EP1000 B-scan Encoder Cable, 10 feet
EP1000-ENC-CBL-25	U8140157	EP1000 B-scan Encoder Cable, 25 feet
EP1000-ENC-CBL-50	U8140158	EP1000 B-scan Encoder Cable, 50 feet
EP1000-ENC-CBL-100	U8140159	EP1000 B-scan Encoder Cable, 100 feet
EP1000-BSCAN-KIT-10	U8140160	BSCAN Kit for EP1000 (B-scan software, encoder buggy, 10 ft encoder cable)
EP1000-BSCAN-KIT-25	U8140161	BSCAN Kit for EP1000 (B-scan software, encoder buggy, 25 ft encoder cable)
EP1000-BSCAN-KIT-50	U8140162	BSCAN Kit for EP1000 (B-scan software, encoder buggy, 50 ft encoder cable)
EP1000-BSCAN-KIT-100	U8140163	BSCAN Kit for EP1000 (B-scan software, encoder buggy, 100 ft encoder cable)

B-scan Buggy

Olympus offers a handheld B-scan buggy for use with the B-scan option, BSCAN-ENC (U8779522). This positional encoder is constructed from sealed cast aluminum and is designed to fit both the D790-SM (U8450009) dual element transducer as well as the standard case immersion transducers, making it well suited for a variety of applications.

Encoder Specifications

Resolution Optimal	200 pulses/in. (8 pulses/mm)
Resolution (38DLP and EPXT)	50 pulses/in. (2 pulses/mm)
Outputs	Standard quadrature position outputs, TTL/CMOS compatible
Power	Single +5 V supply provided by instrument
Connector	LEMO, four conductor
Water fitting	Bronze barbed fitting requires 5/32 in. (4.0 mm) ID tubing
Pipe diameter	Minimum 3.0 in. (76.2 mm)
Dimensions (L x W x H)	111 mm x 69 mm x 68 mm (4.41 in. x 2.75 in. x 2.70 in.)
Weight	0.93 lb (425 g)
Construction	Rugged, sealed cast aluminum



B-scan Buggy

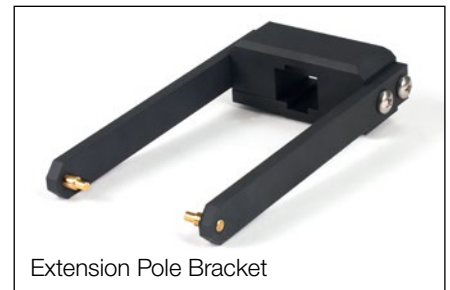


D790-SM

Accessories

These accessories are available for use with the B-scan encoder buggy.

Part Number	Item Number	Description
BSCAN-ENC-EPB	U8779525	Extension pole bracket (pole not included)
BSCAN-ENC-EWC	U8779526	Extended length wear cap
BSCAN-ENC-MW	U8779527	Magnetic wheels kit (2 magnetic wheels, set screws and Allen wrench)



Extension Pole Bracket

Replacement Parts

The following parts are offered for users to allow for the simple replacement of parts for the B-scan encoder buggy. Please contact your local service center for additional repair information.

Part Number	Item Number	Description
BSCAN-ENC-4RT	U8779523	Kit of 4 rubber tires for standard wheels
BSCAN-ENC-ENC	U8779524	Internal components kit (optical encoder, cable and Lemo assembly, encoder gear, internal mounting bracket and required mounting screws)
BSCAN-ENC-GASKET	U8779528	Internal gasket
BSCAN-ENC-PH	U8779529	Probe holder assembly and immersion sleeve
BSCAN-ENC-WC	U8779530	Standard length wear cap
BSCAN-ENC-WHEELS	U8779531	Wheel kit (4 standard wheels, 4 rubber tires, set screws, and 2 axles)



Magnetic Wheels



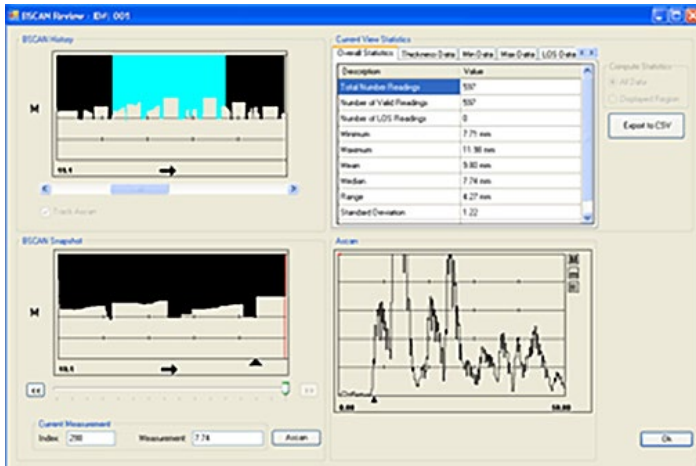
Probe Holder Assembly

GageView PC Interface Software

The GageView Thickness and GageView Pro PC interface programs can be used for additional analysis of stored B-scans as well as image capture and data transfer for report generation. Two versions of this software are available; GageView Thickness for use with the 38DL PLUS and GageView Pro for the EPOCH XT and EPOCH 1000 Series. These programs provide a detailed B-scan review window that allows the user to review: full compressed B-scan, uncompressed B-scan segments, stored associated A-scans, minimum and maximum thickness values, averages, and other important scan statistics.

GageView Thickness

GageView Thickness is included with the purchase of all 38DL PLUS instruments. This software provides statistical information for the scan thickness data, as well as compressed and uncompressed image views of the B-scan, and the stored A-scan image. Thickness and distance traveled information can be exported to a spreadsheet program for additional analysis.

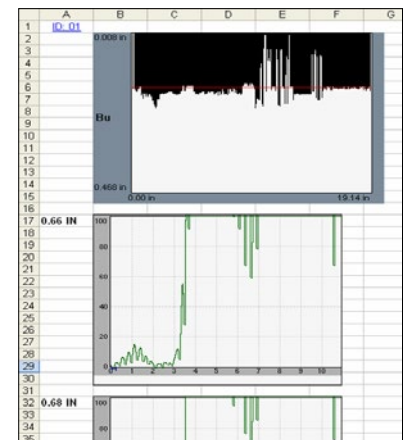


GageView Pro

GageView Pro is an optional software that allows the operator to download and review saved B-scan data from the EPOCH XT and EPOCH 1000 Series flaw detectors. Users can print a B-scan report, including images, statistics, and calibration data, or export B-scan data to a spreadsheet program for further review and integration in other reports or databases. If multiple B-scans are saved in a single file, GageView Pro can stitch thickness information together into a single exported scan based on distance traveled data.



	A	B	C	D
1				
2	ID:	1	ID:	2
3	DT (IN)	Meas (IN)	DT (IN)	Meas (IN)
4	0	0.172	0	0.205
5	0.02	0.172	0.02	0.205
6	0.04	0.172	0.04	0.205
7	0.06	0.173	0.06	0.205
8	0.08	0.172	0.08	0.205
9	0.1	0.172	0.1	0.205
10	0.12	0.173	0.12	0.205
11	0.14	0.173	0.14	0.205
12	0.16	0	0.16	0.205
13	0.18	0	0.18	0.205
14	0.2	0	0.2	0.205
15	0.22	0	0.22	0.205
16	0.24	0.173	0.24	0.205
17	0.26	0.173	0.26	0.205
18	0.28	0.173	0.28	0.204
19	0.3	0.174	0.3	0.189
20	0.32	0.18	0.32	0.189
21	0.34	0.18	0.34	0.19
22	0.36	0.18	0.36	0.19
23	0.4	0.19	0.4	0.179
24	0.42	0.18	0.42	0.19
25	0.44	0.174	0.44	0.19
26	0.46	0.173	0.46	0.191
27	0.48	0.172	0.48	0.19
28	0.5	0.171	0.5	0.179



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