

## MG2 Series



## MG2, MG2-XT, and MG2-DL

These small, affordable ultrasonic thickness gages are primarily designed for inspectors and maintenance engineers responsible for measuring the remaining thickness of internally corroded pipes, tanks, and other metal structures. Lightweight and ergonomically designed for easy one-hand operation, these gages are cost-effective measurement solutions for many applications requiring quick inspection of materials suspected of metal wall thinning.

Olympus NDT is known worldwide as a manufacturer of innovative, state-of-the-art ultrasonic testing products. We also believe that our customers deserve thickness gages that truly combine quality, accuracy, and ease of operation at affordable prices. We have accomplished this with three rugged models — the MG2, MG2-XT, and MG2-DL. Each model offers a range of practical measurement features to solve a wide variety of thickness gaging problems. Even better, they all share being manufactured by a company taking pride in having the best customer support network in the industry.

### Features

- **Measurements from one side —**  
Ultrasonic thickness gages make instant digital measurements by transmitting sound into a material from one side, making it unnecessary to cut the corroded part.
- **Lightweight and pocket-size —**  
These handheld gages are small enough to fit in a toolbox or inside your pocket. They are ideal for quick inspections in hard-to-reach areas.
- **Intuitive, color-coded keypad —**  
Allows you to directly access many important measurement features, saving you time. Strategically located keys are grouped by color for easy recognition.
- **Large, backlit LCD —**  
The display's large numerals make it easy to read thickness measurements. You can also easily view the electroluminescent backlit display in total darkness or bright sunshine.
- **The MG2-XT and MG2-DL are available with THRU-COAT®, B-scan, and optional Live A-scan with Waveform Adjust**

# Choose From Three Units

## MG2

The MG2 offers many basic features such as the Min/Max mode to measure and recall the minimum thickness at a fast 20 measurements per second, the Freeze mode to instantly capture critical thicknesses, and the Zero Compensation mode to ensure optimal transducer performance. Several other features make this handheld gage affordable for quick spot measurements.

## MG2-XT

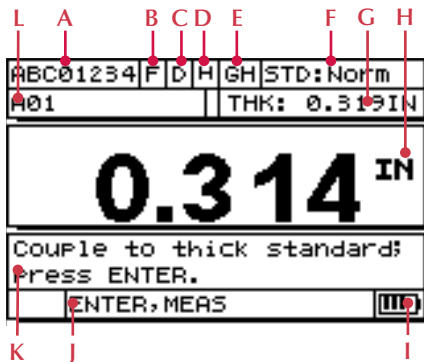
The MG2-XT is equipped with the same features as the MG2, but enhanced with B-scan, Gain Adjust, auto sensitivity optimizations, Echo-to-Echo, THRU-COAT®, Differential mode, Hi/Low alarms, and the optional Live A-scan to provide you with more measurement capabilities in tough applications. This gage is ideal when making thickness measurements on coated or painted surfaces.

## MG2-DL

The MG2-DL is the most advanced model of the MG2 series gages. It packages all the features of the MG2-XT and comes with a versatile file-based alphanumeric data logger that uses incremental, sequential, 2D Grid, and Boiler format files. Using the optional GageView interface program, you can also transfer gage data to and from your computer.

COMPARISON CHART	MG2-DL	MG2-XT	MG2
Thickness range 0.5 mm to 635.0 mm (0.02 in. to 25.00 in.)	√	√	√
Thickness display resolution up to 0.01 mm (0.001 in.)	√	√	√
Automatic probe recognition	√	√	√
High temperature capabilities	√	√	√
Fast measurement rate of 20 per second	√	√	√
Min/Max mode	√	√	√
Freeze mode	√	√	√
Zero Compensation mode	√	√	√
Display Hold/Blank	√	√	√
Inches/Millimeters mode	√	√	√
Live A-scan with Waveform Adjust (optional)	√	√	—
Gain Adjust	√	√	—
B-scan	√	√	—
Auto Sensitivity Gain Optimization	√	√	—
Differential mode	√	√	—
Hi/Low alarm	√	√	—
THRU-COAT	√	√	—
Echo-to-Echo	√	√	—
Internal data logger	√	—	—
2D Grid	√	—	—
GridView	√	—	—
GageView interface program (optional)	√	—	—
Plastic carrying case	√	√	—

## DISPLAY



- A. File name<sup>2</sup>
- B. Freeze mode
- C. Differential mode<sup>1</sup>
- D. Hi/Low alarm<sup>1</sup>
- E. Gain adjust<sup>1</sup>
- F. Measurement rates
- G. Previous thickness<sup>2</sup>
- H. Current measurement
- I. Battery life
- J. Available keys
- K. User Help
- L. ID#<sup>2</sup>

<sup>1</sup> Features of the MG2-XT and MG2-DL

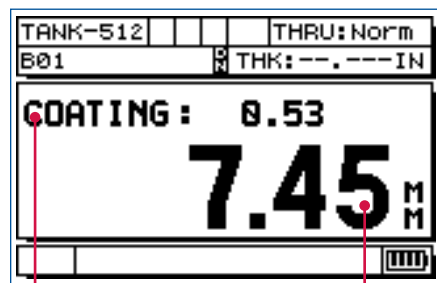
<sup>2</sup> Features of the MG2-DL



# Practical Measurement Features (MG2-XT and MG2-DL Only)

## THRU-COAT®

Through this patented technology, the gage can simultaneously display the thickness of the coating and the true metal thickness, using a single backwall echo. Each measurement is adjusted for their calibrated material sound velocity. THRU-COAT® measurements are made with D7906-SM and D7908 transducers.



THRU-COAT Thickness

Metal Thickness

## Live A-scan with Waveform Adjust

This optional Live A-scan mode allows users to view the ultrasound waveform (or A-scan) directly on the gage's display, verify the thickness measurement, and make manual adjustments to gain and blanking settings to maximize measurement performance in challenging applications. This helpful option features Manual Gain Adjust, Extended Blanking, Echo Blank Range, and Delay.

## Gain Adjust

This feature is very helpful when making measurements on sound-attenuating materials such as cast metals.

- Preset Gain Adjust to High, Low, or Standard
- Manual Gain Adjust can be configured in 1-dB increments (Live A-scan mode only)

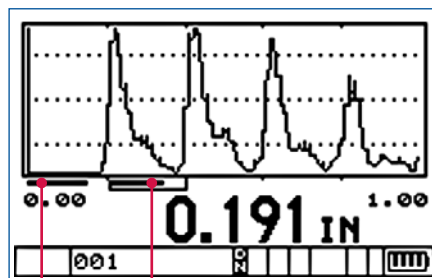
## Extended Blanking

Allows blanking unwanted echoes due to material surface noise caused by rough or irregular surfaces (Live A-scan mode only).

## Echo-to-Echo

The gage displays the true metal thickness and ignores the thickness of the coating layer, using multiple backwall echoes:

- Auto Echo-to-Echo
- Manual Echo-to-Echo (Live A-scan mode only) that allows:
  - Gain Adjust
  - Extended Blanking
  - Echo Blanking

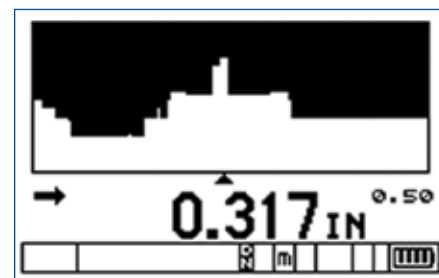


Extended Blank

Echo Blank

## B-scan Corrosion Mapping

The MG2-XT and MG2-DL offer the B-scan feature that converts live thickness measurements into cross-sectional images on the display. This standard feature is a very helpful in applications where reviewing how the thickness changes over distance is necessary. When a user activates the B-scan feature, a cross-sectional thickness representation appears as soon as the transducer makes contact with the material. The Freeze Min function can be used to display the minimum thickness of a scanned area. Up to 1,300 B-scan images can be stored in the MG2-DL's data logger.



## High-Temperature Surfaces

The MG2-XT and MG2-DL are ideally suited for making stable thickness measurements on hot material surfaces (up to 500 °C (932 °F) with the D790 series transducers (D790, D790-SM, D790-RL, and D790-SL). The Zero Compensation feature of the MG2 series enhances the accuracy of measurements on hot surfaces by compensating for temperature changes in the transducer delay line due to thermal drift.



D790 Transducer



# Data Collection for Fast and Reliable Documentation

## Internal Data Logger

The powerful MG2-DL internal data logger allows you to store, recall, and transmit 31,000 thickness measurements with their identification codes. With the optional live waveform mode the gages can also store 1,300 waveforms with thickness measurements. All stored information can easily be transferred to your computer for statistical analysis.

## Alphanumeric Identification Codes

You can assign an eight-character file name and up to ten alphanumeric ID numbers to each stored thickness measurement. Each thickness measurement is fully documented with parameter information such as material sound velocity, transducer data, and measurement mode.

## Onboard Statistics Calculator

The MG2-DL internal data logger features an onboard statistical calculator to generate reports that can be directly transmitted to your printer.

DELETED STATS

#IDS	29	#LOS	1
#MINS	3	MIN VAL	0.0111
#MAXS	1	MAX VAL	0.1657

NEXT EXIT REPEAT

↔ to select button.  
Then Press ENTER or ↵.

↵, ↔, ENTER

Statistic report showing minimum and maximum values.

DELETED STATS

#L. ALARMS	7	%LO	24.1
#H. ALARMS	4	%HI	13.8
MEAN	MEDIAN	ST DEV	
0.0735	0.0666	0.0451	

PREV EXIT REPEAT

↔ to select button.  
Then Press ENTER or ↵.

↵, ↔, ENTER

Statistic report showing Hi/Low alarms, mean, median, and standard deviation.

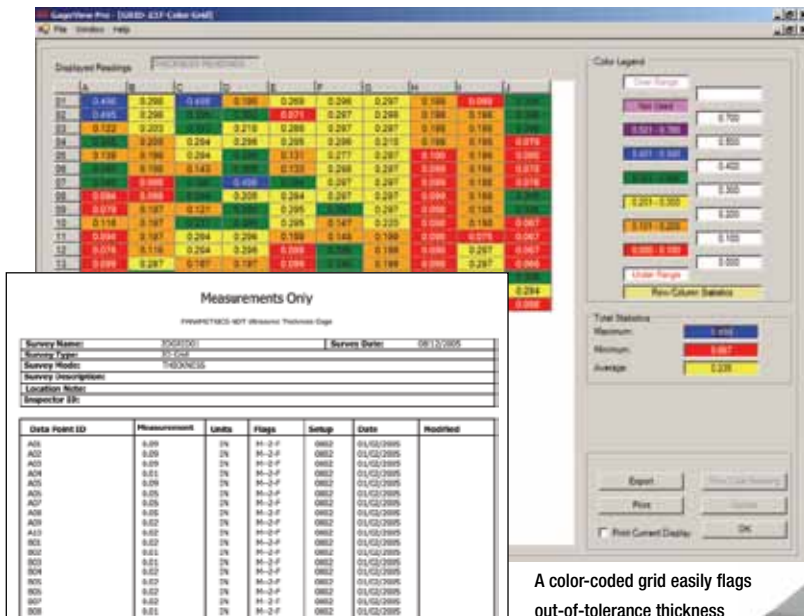
## GridView

The GridView feature (only available with the MG2-DL) allows viewing stored thickness data in a Grid or Expanded Liner format. It also allows users to easily review and navigate saved thickness data in a row-and-column grid by simultaneously displaying the grid positions with the current thickness measurement.

	A	B	C
01	0.282	0.376	---
02	0.378	0.376	---
03	0.278	0.323	---
04	0.358	---	---
05	0.377	---	---
06	0.377	---	---

0.319 IN

B04



This printed measurement report contains measurement, ID, and other parameters.

## GageView

The optional GageView interface program is a Microsoft® Windows®-based application that collects, creates, prints, and manages data from the MG2-DL.

- Create datasets and surveys
- Download and upload thickness surveys to and from the gages

- Edit stored data
- View dataset and survey file information, including thickness readings, gage configuration values, and transducer configuration values
- Export surveys to spreadsheets or other programs

- Collect screen captures
- Printing reports such as the Thickness, Setup Table, Statistics, and Color Grid
- Upgrade the operating software
- Drag to Microsoft Excel® spreadsheets





# Transducers with Automatic Probe Recognition

Each MG2 series gage is compatible with our complete line of easy interchangeable dual element transducers that vary in frequencies, diameters, and temperature capabilities to deal with virtually every application.

Transducer	Item Number	Freq. (MHz)	Connector	Tip Dia. mm (in.)	Range (Steel)* mm (in.)	Temp. Range** °C (°F)	Cable	Item Number
D790	U8450002	5.0	Straight	11.00 (0.434)	1.00 to 500.00 (0.040 to 20.000)	-20 to 500 (-5 to 932)	Potted	—
D790-SM	U8450009		Straight				LCMD-316-5B†	U8800353
D790-RL	U8450007		90°				LCLD-316-5G†	U8800330
D790-SL	U8450008		Straight				LCLD-316-5H	U8800331
D791	U8450010	5.0	90°	11.00 (0.434)	1.00 to 500.00 (0.040 to 20.000)	-20 to 500 (-5 to 932)	Potted	—
D791-RM	U8450011	5.0	90°	11.00 (0.434)	1.00 to 500.00 (0.040 to 20.000)	-20 to 400 (-5 to 752)	LCMD-316-5C	U8800354
D792	U8450012	10	Straight	7.20 (0.283)	0.50 to 25.00 (0.020 to 1.000)	0 to 50 (32 to 122)	Potted	—
D793	U8450013		90°				Potted	—
D794	U8450014	5.0	Straight	7.20 (0.283)	0.75 to 50.00 (0.030 to 2.000)	0 to 50 (32 to 122)	Potted	—
D797	U8450016	2.0	90°	22.90 (0.900)	3.80 to 635.00 (0.150 to 25.000)	-20 to 400 (-5 to 752)	Potted	—
D797-SM	U8450017		Straight				LCMD-316-5D	U8800355
D7226	U8454013	7.5	90°	8.90 (0.350)	0.71 to 100.00 (0.028 to 4.000)	-20 to 150 (-5 to 300)	Potted	—
D798-LF	U8450019							
D798	U8450018	7.5	90°	7.20 (0.283)	0.71 to 100.00 (0.028 to 4.000)	-20 to 150 (-5 to 300)	Potted	—
D798-SM	U8450020		Straight				LCMD-316-5J	U8800357
D799	U8450021	5.0	90°	11.00 (0.434)	1.00 to 500.00 (0.040 to 20.000)	-20 to 150 (-5 to 300)	Potted	—
MTD705	U8620225	5.0	90°	5.10 (0.200)	1.00 to 19.00 (0.040 to 0.750)	0 to 50 (32 to 122)	LCLPD-78-5	U8800332
D7906-SM††	U8450005	5.0	Straight	11.00 (0.434)	1.00 to 50.00 (0.040 to 2.000)	0 to 50 (32 to 122)	LCMD-316-5L	U8800358
D7906-RM††	U8450025		90°				LCMD-316-5N	U8800647
D7908††	U8450006	7.5	90°	7.20 (0.283)	1.00 to 37.00 (0.040 to 1.500)	0 to 50 (32 to 122)	Potted	—

\* Dependent on material, transducer type, surface conditions, and temperature. Full range may require Gain Adjust.

† Stainless steel cable available; consult Olympus NDT for details.

\*\* Maximum temperature with intermittent contact only

†† Transducers used with THRU-COAT® technology



# MG2 Specifications\*

Measurements	
Measurement mode	Pulse echo with dual element transducers
Thickness range	0.50 mm to 635.00 mm (0.020 in. to 25.000 in.) Thickness range depends on material, transducer, surface condition, temperature
Material velocity range	0.508 mm/μs to 18.699 mm/μs (0.0200 in./μs to 0.7362 in./μs)
Display modes	<ul style="list-style-type: none"> <li>Digital thickness readout</li> <li>A-scan or Waveform (optional)</li> <li>Cross-sectional B-scan</li> <li>DB grid (MG2-DL only)</li> </ul>
Resolution	<b>LOW:</b> 0.1 mm, 0.01 in. <b>STANDARD:</b> 0.01 mm, 0.001 in.
Measurement rates	<b>Standard rate:</b> 4 measurements per second <b>Fast rate:</b> 20 measurements per second
Min/Max mode	Measures and recalls the minimum or maximum thickness at 20 measurements per second
Freeze mode	Freezes the display to instantly capture critical thickness. Minimizes transducer couplant liftoff error and facilitates high-temperature measurements
Automatic probe recognition	Automatically recognizes the listed types of Panametrics® transducers. Adjusts internal parameters and corrects V-path errors
Zero compensation	Compensates for transducer temperature and zero offset
Display	
Display Hold/Blank mode	Holds or blanks the display after measurements
Backlight	Electroluminescent display, Selectable as On or Auto On
Receiver bandwidth	1 MHz to 18 MHz (-3 dB)
Metric/English mode	Metric or English units
Display languages	English, French, German, Spanish, Italian, and other custom languages
Power Supply	
Battery	Three (3) AA alkaline batteries
Operating time	150 h of typical battery life, 30 h continuous use with backlight
Low battery indicator	Continuously indicates battery status
Battery saver	Auto power off/Continuous on
General	
IP65 rated	Splash-proof, impact-resistant case. Sealed, color-coded keypad with tactile and audible feedback
Hazardous area operation	As prescribed by MIL-STD-810E, 511.3, procedure 1.
Operating temperature range	-10 °C to 50 °C (+14 °F to 122 °F)
Dimensions (W x H x D)	84.0 mm x 152.4 mm x 39.6 mm (3.31 in. x 6.0 in. x 1.56 in.)
Weight	340 g (12 oz)
MG2-XT and MG2-DL Additional Features	
Measurement features	THRU-COAT®, Echo-to-Echo, Gain Adjust, Extended Blanking, Differential
Auto-sensitivity gain optimization	Allows the normal measurement sensitivity to be automatically increased or decreased depending on the thickness and material noise level
Alarm mode	Programmable Hi/Low set points with audible and visual indicators
Live A-scan with Waveform Adjust	Optional Live A-scan mode allows viewing of ultrasound waveforms (or A-scan) directly on the display. Features Manual Gain Adjust, Extended Blanking, Echo Blank Range, and Delay.
MG2-DL Internal Data logger	
Data logger	Identifies, stores, recalls, clears, and transmits thickness measurements and gage configuration information through the USB port
Capacity	Over 31,000 thickness measurements or 1,300 waveforms with thickness measurements (with waveform option)
Stored data documentation	Each saved thickness reading is fully documented with measurement status flags and a configuration number identifying parameters such as the velocity, transducer, etc.
File names and ID codes	Eight-character file name and 10-character alphanumeric identification code
File templates	Incremental, Sequential, 2-D Grid, Boiler and Manual from PC

## Standard Packages

Model MG2 digital ultrasonic thickness gage, wrist strap, test bar, couplant, user's manual, plastic carrying case (with MG2-XT and MG2-DL models) and a two-year limited warranty. Standard packages include a dual-element transducer.

## Optional Accessories

**2214E (U8880014):** 5-step test block, English units

**2214M (U8880016):** 5-step test block, metric units

**MG2/EW (U8902946):** Extended warranty

**MG2/RPC (U8764047):** Protective rubber boot

**GageView-USB (U8140074):** PC interface program for the MG2-DL

**MG2/XTRETRO (U8147008):** Convert an MG2 into an MG2-XT

**MG2XT/DLRETRO (U8147009):** Convert an MG2-XT into an MG2-DL

**MG2/DLRETRO (U88780206):** Convert an MG2 into an MG2-DL

**MG2/WF (U8147004):** Live A-scan with Waveform Adjust for the MG2-XT and MG2-DL only (not available for the MG2).

For additional accessories such as holders, wands, and couplants, please consult Olympus NDT.

OLYMPUS NDT INC. is ISO 9001, 14001 certified.

**OLYMPUS®**

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