OLYMPUS®
Your Vision, Our Future

Innovation in NDT™

ULTRASONIC PRECISION THICKNESS GAGES

The Panametrics-NDT™ Series 35 ultrasonic precision thickness gages provide easy-to-use and cost-effective solutions in applications where the opposite side of the test material is difficult or impossible to reach. These rugged, pocket-sized gages make stable, repeatable thickness measurements on most materials of varied shapes and sizes. Accurate thickness measurements are displayed in large numerals on the backlit LCD or can be viewed along with the live waveform in the optional A-scan Mode.

These full-featured gages include many standard solution-oriented measurement capabilities: Application Auto-Recall to select and recall any of the stored standard or custom transducer setups in gage memory, Reduction Rate to track the percentage of wall thinning, and Velocity or Time of Flight Measurements to directly measure material sound velocity, as well as many other practical measurement features.

NEW: LIVE A-SCAN (WAVEFORM) AND ADJUST MODE

Operator can view thickness and waveform with the optional A-scan mode

35, 35DL, 35HP & 35DL-HP

Precision Thickness Gages

Four models are available: 35 and 35DL for measurements on metals, plastics, glass, and other thin materials; and 35HP and 35DL-HP for sound attenuating materials such as cast metals, thick rubber, fiberglass, and composites. The 35DL and 35DL-HP add a versatile file-based alphanumeric data logger with incremental, sequential, and 2-D grid file formats.

PANAMETRICS-NDT™
Nondestructive Testing Products

To thick materials …

Measure depth to steel / ply cords in rubber conveyor belts or tires.

Cylinder bores and many other cast metal parts or sound-attenuating materials can be measured with the 35HP gages.

The 35HP gages are excellent tools to measure fiberglass or composite parts, from aerospace structures to boat hulls and storage tanks that require thickness control.

35HP and 35DL-HP

Models 35HP and 35DL-HP are used in sound-attenuating materials

With a very low ultrasonic frequency bandwidth and a special pulser-receiver, the HP gages are specifically designed to optimize ultrasound penetration when measuring thick, highly sound attenuating or sound scattering materials. Typically these materials cannot be measured with most other ultrasonic thickness gages.

applications

- most thick or sound-attenuating materials
- thick cast metal parts
- thick rubber tires, belts
- fiberglass boat hulls, storage tanks
- composite panels
- resolution of 0.01 mm or 0.001″

Why HP gages?

For more than three decades, Panametrics-NDT thickness gage engineers have developed the HP (High Penetration) series specifically for very sound-attenuating or thick materials. Not only can these gages use transducers as low as 0.5 MHz but their electronics (pulser-receiver) are highly optimized to process signals at these low frequencies. The result is that the Panametrics-NDT gages have earned a reputation for superior performance in measuring thick rubber, fiberglass, composites, and other tough materials.

From thin materials…

The Model 35 with a delay line transducer or immersion bubbler makes accurate thickness measurements on both convex and concave surfaces of turbine blades.

Micrometers won't work in this classic application. Instead, the Model 35 with a M208 transducer makes a thickness measurement up to a calibrated accuracy of 0.001 mm (or 0.0001 inch) without breaking the glass.

Plastic or metal tubes and pipes of various diameters can easily be measured ultrasonically with contact type transducers. Small diameters may require immersion type measurements.

35 and 35DL

Models 35 and 35DL are used in the majority of applications

The 35 and 35DL can use transducers ranging from 2.25 to 30 MHz, which means that these versatile gages can solve the majority of thickness gaging applications, from very thin to very thick. In general, transducers with higher frequencies and smaller diameters allow measurements of thinner or curved parts and enhance the accuracy of the measurement.

applications

- most materials, from thin to thick
- plastic bottles, tubes, pipes, sheets as thin as 0.08 mm (or 0.003 inch)
- metal containers, steel coils, machined parts as thin as 0.10 mm (or 0.004 inch)
- cylinder bores, turbine blades
- glass bulbs, bottles
- thin fiberglass, rubber, ceramics, and composite materials
- curved areas or containers with small radii
- resolution up to 0.001 mm or 0.0001"

From simple thickness measurements…

More than 40 years of experience has made Panametrics-NDT ultrasonic thickness gages the most advanced and best known in the world. The new pocket-sized 35 gages are no exception. These practical gages offer more measurement features and application-solving capabilities than their renowned predecessors. All the more reasons for you to consider the 35 gages for your precision thickness gage application.

35 SERIES FEATURES

- Velocity and Reduction Rate measurements are standard on all models
- Wide thickness range from 0.0030" to 25.0" (0.08 mm to 635.0 mm) depending on instrument and material
- Uses contact, delay line, and immersion transducers
- Application Auto-Recall with default and custom setups
- Hand-held; weighs only 8.5 oz. (0.24 kg)
- Min/Max Mode
- Hi-Low alarm
- English and metric display (inches/mm)
- Multi-language user interface
- Long battery life

Velocity measurement mode with direct Velocity readout

MATERIAL SOUND VELOCITY MEASUREMENTS

All 35 models have the capability to make material sound velocity measurements. This standard feature is useful in applications where the speed of the sound within the material can be correlated to other properties. Typical applications include cast metals to monitor the degree of nodularity, and composites/fiberglass to monitor variations in density. Olympus NDT offers a digital caliper for automatic transfer of measurement thickness.

APPLICATION AUTO-RECALL SIMPLIFIES GAGING

Application Auto-Recall simplifies making thickness measurements. Select any of the stored transducers and the 35 gages recall all relevant internal transducer parameters.

Stored Standard Setups
Standard setups include most commonly used transducers.

Stored Custom Setups
Just in case your special application problem cannot be solved with a Standard Setup, these gages can create, store, and recall as many as 20 Custom Setups (10 with the 35 and 35HP).

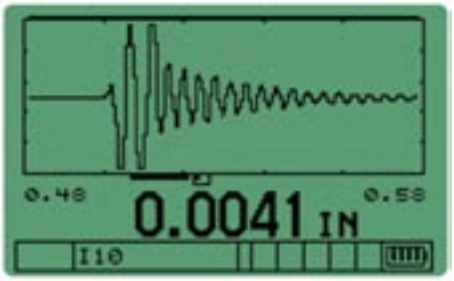
You can measure critical thickness metal thinning caused by bending.

Material thinning is displayed as a percentage.

REDUCTION RATE MEASUREMENTS

Differential Mode and Reduction Rate Mode are standard features on all models. Differential Mode shows the thickness variation from a pre-set thickness value. Reduction Rate calculates and displays the percent of thickness reduction after a material thinning process. A typical application is automotive sheet steel that is bent and formed to make car body panels.

to difficult applications…



Thickness and waveform of a very thin (0.004 inch or 0.10 mm) sheet of steel.

NOW YOU CAN SEE THE LIVE WAVEFORM AND MAKE ADJUSTMENTS

An optional Live Waveform Mode on all models permits the user to view the ultrasound waveform (or A-scan) directly on the gage's display to make sure the thickness reading is correct. The Adjust Mode feature facilitates transducer setup adjustments to maximize measurement performance for challenging applications.

- High pixel density LCD renders sharp trace of live waveform
- Permits real-time verification of thickness readings
- Helps solve many difficult applications
- A Range, Delay, or Zoom allow enlarging and centering to any section of the waveform
- Permits adjustments of transducer setup parameters
- Stores waveforms in data logger and transfers to PC

35PCSCOPE

Optional 35PCSCOPE interface software permits the instant display of live ultrasonic waveforms and thickness readings directly on your computer screen. This is helpful when setup parameters require closer examination.

An optional protective rubber boot protects the gage.

Why ultrasonics?

Ultrasonic measurements are accurate, reliable, and repeatable. Instant digital readings can be achieved by transmitting sound into just one side of a material, making it unnecessary to cut or destroy parts where the opposite side is difficult to reach and where micrometers or other inspection tools cannot do the job.

and data collection and management…

DATA COLLECTION FOR FAST AND RELIABLE DOCUMENTATION

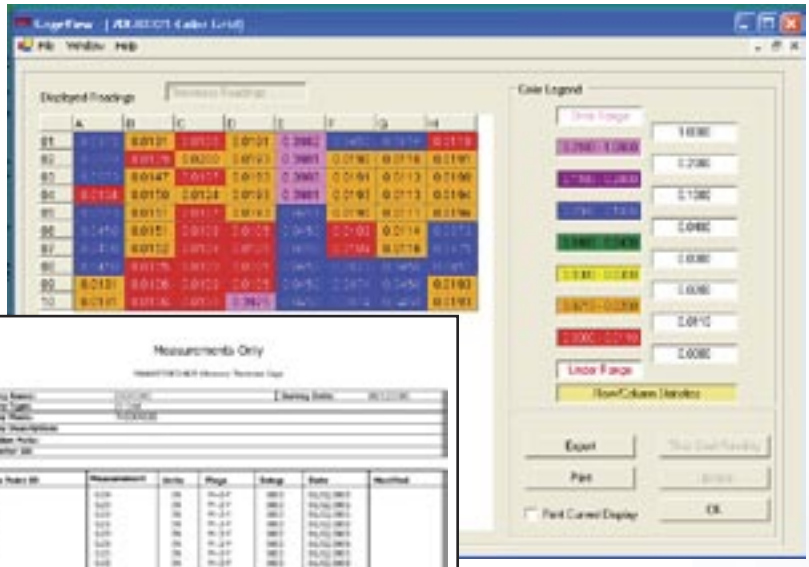
Internal Data Logger
The powerful 35DL and 35DL-HP internal data loggers allows you to store, recall, and transmit 8000 thickness readings along with their Identification Codes. With the optional live wave form mode these gages can also store 350 wave forms with thickness readings. All stored information can be transmitted from these units 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 reading is fully documented with parameter information such as material sound velocity, transducer data, and measurement mode.

Statistic report showing Minimum and Maximum values

Statistic report showing Hi/Low Alarms, Mean, Median and Standard Deviation

On-board Statistics Calculator
The Models 35DL and 35DL-HP internal data loggers feature an on-board statistical calculator to generate reports that can be transmitted directly to your printer.



A color coded grid easily flags out-of-tolerance thickness conditions.

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

GAGEVIEW

The optional GageView Interface Program, a Windows-based application, collects, creates, prints, and manages data from the 35DL and 35DL-HP.

- Datasets and Surveys creation
- Stored data editing
- Viewing Dataset and Survey file information including thickness readings, gage setup values, and transducer setup values
- Downloading and uploading thickness surveys to and from the gages
- Exporting Surveys to spreadsheets and other programs
- Collecting snapshot screens
- Printing reports such as Thickness, Setup Table, Statistics, and Color Grid
- Upgrading operating software

...we have a thickness gage for you

OTHER CHALLENGES – OTHER CHOICES

Olympus NDT offers a full range of ultrasonic thickness gages designed to meet your most demanding application requirements. The Models 25DL PLUS and 25HP PLUS are advanced precision thickness gages that feature a large 4 x 3.3 inch LCD with full waveform range and delay control. These gages also feature a more advanced alphanumeric file-based data logger and a direct access keypad for easy control over measurement parameters.

Visit the Application section of panametrics-ndt.com to to learn more about our ultrasonic solutions.

Multi-layered materials
The 25MULTI PLUS calculates and simultaneously displays as many as four separate measurements. The Summation Mode accurately displays the total thickness of selected layers.

On-line applications
The 25MX PLUS takes multipoint and single thickness measurements on a wide variety of materials. Connected to the optional MX-8 multiplexer, the 25MX PLUS can collect and display thickness measurements from as many as eight transducers.

Hall Effect thickness gage
The Magna-Mike® 8500 thickness gage makes measurements when a magnetic probe is held on one side of the test material and a small steel target ball is placed on the opposite side.

Flaw detection
Olympus NDT offers the EPOCH series of portable ultrasonic flaw detectors that are widely used to detect and characterize hidden internal defects in engineering materials such as metals, plastics and composites.

A FULL LINE OF TRANSDUCERS AND ACCESSORIES

Olympus NDT offers a complete selection of transducers, cables, couplants, calibration test blocks, and other accessories to meet the most demanding thickness measurement applications. Our high quality Panametrics-NDT Microscan transducers are available in many frequencies, element diameter sizes, and connector styles.

- Contact, delay line, and immersion thickness gage transducers
- Transducer cables
- Couplants
- Calibration test blocks

Ask for our comprehensive 8-page brochure on thickness gage transducers and accessories!

Olympus NDT is represented by well-trained, experienced applications and sales engineers located in all major industrial regions around the world. These professionals are available to assist the customer in selecting the best and most cost-effective solution for a particular application. Visit our website panametrics-ndt.com to locate the nearest representative in your area.

35, 35DL, 35HP and 35DL-HP SPECIFICATIONS*

MEASUREMENTS

Mode 1: Time interval between excitation pulse and first back wall echo, using contact transducers.

Mode 2: Time interval between the first interface echo after the excitation pulse and the first backwall echo, using delay line or immersion transducers.

Mode 3: Time interval between successive back wall echoes following the first interface echo after the excitation pulse, using delay line and immersion transducers.

Measurement Types: Thickness, Velocity, or Time of Flight

Thickness Measurement Range*:
0.003 - 25 inches (0.08 - 635 mm)

*Thickness range depends on model, material, transducer, surface condition, and setup selected.

Material Velocity Range:
0.02000 - 0.7362 inch/µs
(0.5080 - 18.699 mm/µs)

Resolution (keypad selectable):
LOW: 0.01″ (0.1 mm)
STANDARD: 0.001″ (0.01 mm)
HIGH: 0.0001″ (0.001 mm) (35 & 35DL)

Time of Flight Measurement Range:
0.0 - 109.5 µs

Time of Flight Resolution:
Fixed at 000.01 µs

Measurement Update Rate:
4, 8, 16, or Max Hz (16-20 Hz depending on application and measurement mode)

Transducer Frequency Range:
2.25 - 30 MHz (35 & 35DL)
0.5 - 5.0 MHz (35HP & 35DL-HP)

Min/Max Mode: Displays current thickness, minimum or maximum thickness depending on setting.

Display Hold/Blank: Displays blanks after last reading or holds reading.

Alarm Mode: Programmable Hi-Low alarm set points with audible and visual indicators

Differential Mode: Displays thickness difference between actual measurement and reference value.

Reduction Rate Mode: Displays thickness and percent difference between actual measurement and reference value.

Application Auto-Recall: Automatically adjusts internal parameters for various default and custom transducer setups.

	# of Default	# of Custom
35	21	10
35DL	21	20
35HP	17	10
35DL-HP	17	20

Other Standard Features: Calibration Lock Mode, Internal Diagnostic Test Mode, Metric/English Units, On-board Statistics (35DL and 35DL-HP only)

POWER SUPPLY

Battery: 3 AA alkaline or NiMH batteries

Operating Time: 150 hours typical battery life; 30 hours continuous with backlight on

Low Battery Indicator: Continuously indicates battery status.

Battery Saver: Auto Power Off/ Continuous On

AC Power Supply: Optional

GENERAL

Environmental IP-65 compliant: Splash-proof, impact-resistant case. Sealed, color-coded keypad with tactile and audible feedback.

Operating Temperature Range:
-10°C to +50°C (+14°F to 122°F)

Size: 3.31″ W x 6.0″ L x 1.50″ H (84 x 152 x 84 mm)

Weight: 8.5 oz. (0.24 kg)

Custom Language Utility: Allows translation of display text in many languages.

35DL & 35DL-HP INTERNAL DATA LOGGER

Data Logger: The 35DL & 35DL-HP identify, store, recall, clear, and transmit thickness readings and transducer setup information via the USB port or optional RS-232.

Max. # of Stored Values: Over 8,000 or 350 waveforms with thickness readings (with Waveform Option)

Stored Data Documentation: Each saved thickness reading is fully documented with measurement status flags and a setup number that identifies parameters such as velocity, transducer, etc.

File Name Length: 8 alphanumeric characters

Identification Codes: 10 character alphanumeric Identification Code system identifies or locates stored data

4 File Templates: Incremental, Sequential and 2D Grid. Manual files from PC.

STANDARD INCLUSIONS

Wrist Strap, 3 AA Batteries, Test Block, Transducer Cable, Couplant, Carrying Case, Instruction Manual, Two-Year Limited Warranty

OPTIONAL ACCESSORIES

35/WF	Live Waveform
Gageview	Interface Program
35DL/RS232	RS-232 output
35DLHP/RS232	RS-232 output
35PCScope	PCScope Program
USB/ADP-115	AC-115 Power Supply
USB/ADP-230	AC-230 Power Supply
MG2/RPC	Protective Rubber Boot
35/DLRETRO	Upgrade 35 to 35DL
35HP/DLRETRO	Upgrade 35HP to 35DL-HP

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