

The USN 60...analog performance, digital advantages, systems horsepower and color display

The **USN60** combines the powerful advantages of digital design with the detailed dynamic echo information that was previously only possible with an analog display. Unique signal processing displays additional A-scan information as "intensity variations" along the waveform to bring back the "analog look & performance" that has been missing from digital instruments. The high resolution (640 x 480 pixels) color LCD display, 60 Hz update rate, and "single shot" measurement technique produce a fast, smooth response for immersion and critical weld testing. Two independent flaw gates, an interface gate option, backwall echo attenuator option, 6K (PRF) pulse repetition frequency, and real-time analog and TTL outputs make it ideal for a wide range of systems testing applications. The exclusive SmartView feature displays the most important information (relevant shot) for critical scanning and rotating part inspections.

The quality, durability, dependability and ease of use that you have come to expect of Krautkramer's popular USN Series of instruments remains. From rugged field inspections to high resolution thin measurements, long acoustically clean materials, and immersion systems work, the **USN 60** extends the range of applications that a portable instrument can perform.



High resolution thickness measurement on thin materials with complex geometries like turbine blades for aerospace and industrial gas turbine applications.

Analog performance and systems horsepower

- **Hi-resolution (640 x 480 pixels) Color LCD Display** with unique signal processing produces "Analog Look and Performance" echo dynamics
- **15 Hz to 6K Hz PRF** (pulse repetition frequency) with AutoLOW and AutoHIGH settings, Manual adjustment, and External trigger capability
- **SmartView** function along with variable persistence freeze modes displays the most important information (relevant shot) for a test
- **New "Sparkle"** feature displays intensity variations along the waveform like an analog instrument
- **Baseline Break** feature resolves dynamic echo information to the baseline for enhanced performance beyond analog displays
- **2 independent gates** monitor amplitude and soundpath distance for both flaw detection and thickness measurement applications
- **Real time (single shot) analog and TTL outputs** handle a wide range of systems applications
- **RF display mode** enhances signal evaluation and bond inspection of dissimilar materials
- **IF (Interface) Gate Option** for automatic start of the display, Gates A or B, and/or DAC/TCG for immersion testing applications
- **BEA (Backwall Echo Attenuator) Option** allows independent gain control of the region under Gate B for backwall echo monitoring
- **250 KHz to 25 MHz capability** with 10 selectable frequency ranges to match probe for optimum performance
- **19" Rack Mount Model** for immersion and systems applications



High resolution color display and digital advantages

Vibrant Color...

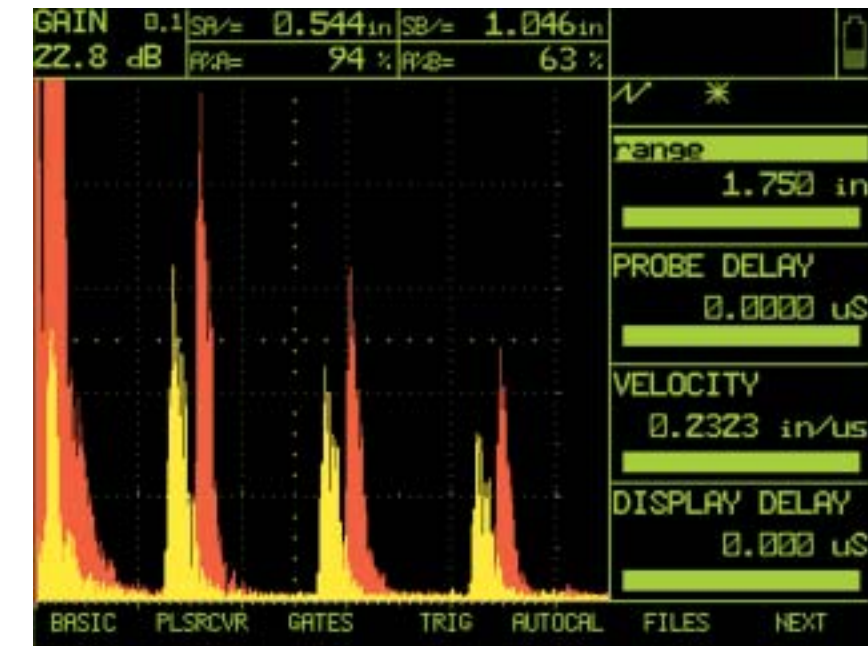
- **Select from four vibrant display color schemes** to match lighting conditions and personal preference
- **Choose from eight A-scan colors** to relieve boredom & eye fatigue
- **Adjust brightness** for easy viewing under all lighting conditions
- **Gates and gate functions are color coded** for easy identification and fast adjustment
- **Trigonometric Flaw Location Function** with curvature correction automatically calculates depth, surface distance, and sound path to flaw along with the leg of the inspection when using shear-wave (angle beam) probes



Four digital reading boxes at top display trigonometric calculations for weld inspection (SA soundpath to flaw in gate A, PA projection distance to flaw in gate A, DA depth to flaw in Gate A & LA leg of inspection that flaw occurs in gate A)

Digital Advantages...

- **Choose from Four Freeze Modes:** ALL, Peak Std, Compare or Envelope for optimum waveform evaluation and comparison
- **Three Variable Persistence Modes** are selectable in Freeze Envelope to visually assist flaw detection & evaluation for scanning and moving part inspections
- **Behind-the-Freeze mode** allows dynamic time base adjustments on frozen echoes. It also stores additional information both before and after the specified range to enable movement of the frozen image.
- **Four digital display boxes** along with a large display box simultaneously display the most important test information along with the A-scan waveform as selected by the user. Contents of the large display box can be sent out the RS232 port or to the on-board thickness data logger.
- **On-screen Help** Text readily accessed by pressing a dedicated key on front panel
- **Upgrade CD** is provided with each instrument to easily upgrade the Operating Software via Krautkramer's website in approximately 30 minutes. Downtime of returning the instrument for upgrade or to add capabilities is eliminated.
- **Compare frozen reference waveforms** to live A-Scans in different colors to easily interpret test results

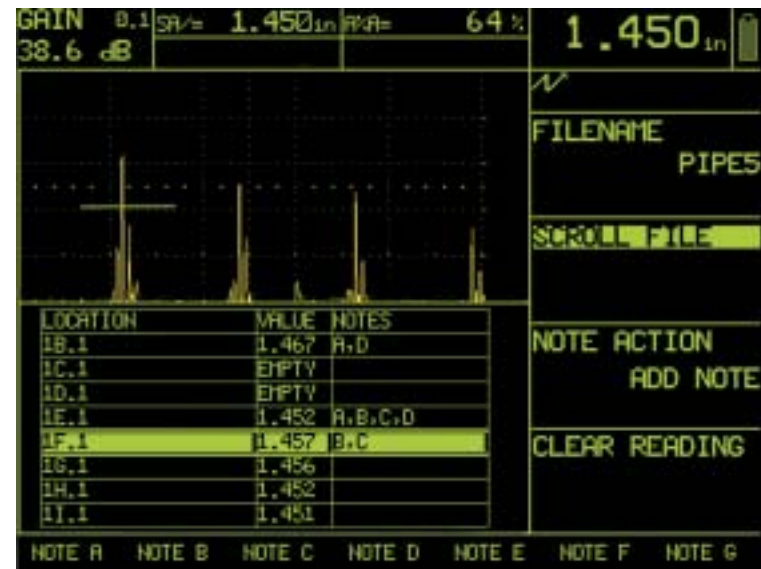


Inspection data management and preferred features

Documentation and recording.....

- **Store & preview** a minimum of 200 user-named data sets with A-Scans for quick recall and instrument setup
- **UltraDOC 4** software program for bi-directional communication with a PC for easy storage of data sets with A-scan and documentation of test results
- **UltraMATE™** software program simplifies the transfer, storage, analysis, and documentation of thickness data. (Future compatibility with UltraPIPE™)
- **Reports with A-Scans** are output directly to a variety of printers including HP DeskJet & LaserJet series

- **Grid Multi-Store** records two, three or four thickness readings into the equivalent # of columns in a grid file upon a single press of the copy key
- **Alphanumeric Thickness Datalogger** for flexible, convenient storage of thickness readings in Linear, Grid, or Custom-Linear file structures with user-input filenames, location I.D.'s, notes, memo, & header fields



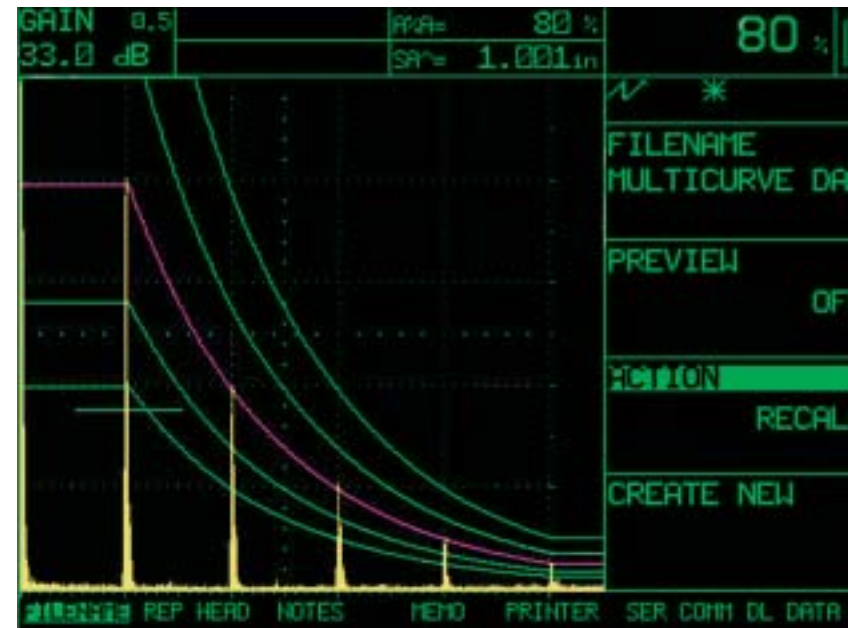
Grid file with thickness readings & attached notes

User preferred features...

- **Simple operation with fast rotary knob adjustments;** gain is always directly accessible with the left-hand rotary knob and lockable
- **Auto CAL** makes calibration fast & easy
- **4 selectable damping settings** (50, 75, 150, & 1000 ohms) for optimum probe performance
- **.040" to 1100" (1 to 27,940 mm) range** (in steel) covers thin to lengthy acoustically clean materials
- **dB step function** with 6 settings including a user specified gain setting for fast, easy gain adjustments
- **65 selectable material velocities** at the user's fingertips
- **Lock** in the dB step menu locks both rotary knobs to prevent inadvertent changes; **Master Lock** in the options menu locks all keys and operating parameters except the gain function
- **Interface-to-1st or multi-echo thickness measurements** with selectable flank or peak detection
- **Gate Magnify** expands the portion of the A-Scan under the selected gate to full screen width for enhanced A-Scan resolution
- **Test Key** steps through the test menu, coarse range markers, and display delay & range values upon successive presses
- **dB REF** evaluates subsequent echoes gain value and amplitude against the highest echo in gate A (reference echo) when activated
- **Versatile, flexible carry bag** with padded adjustable neck strap, accessories bag, and lid that doubles as a light shield for easy transport and use in limited access areas
- **Weighs only 6.6 lbs. (3.0 kg)** including D-size batteries for convenient use anywhere
- **Six hours of use** on D-size NiMH batteries. NiCad or alkaline batteries can also be used (AC adapter for benchtop use)

More measurement capability options

- **40 dB dynamic multiple curve DAC/TCG Option** corrects for distance/amplitude variations from material loss and beam spread with ability to edit recorded echoes individually. Four DAC curves can be drawn on the screen at one time to show +/- dB curves in addition to the originally recorded DAC curve. Up to 16 data points can be recorded with a maximum curve slope of 12 dB per microsecond. Meets or exceeds industry requirements for TCG.



Multiple curve DAC shows recorded DAC curve in magenta with 4 additional curves based upon dB Offset feature for added flaw sizing assistance. TCG Attenuation and Transfer Correction features make it very versatile for use on other materials and surface conditions.

- **DGS (Distance Gain Size) Option** displays a curve for a particular gain of an equivalent reflector size as a function of the distance between the probe and the reflector for 25 selectable narrow-banded probes

- **IF (Interface) Gate Option** for automatic start of the display, Gates A or B, and/or DAC/TCG for immersion testing applications - **IF Advanced** allows an advanced user to make interface offset adjustments and display the actual water path distance for immersion applications

- **VGA Output Option** provides an easy way to connect to a PC monitor or PC projector for viewing by large audiences or training purposes

- **BEA (Backwall Echo Attenuator) Option** allows independent gain control of the region under Gate B for backwall echo monitoring

- **RF Output Option** outputs the raw RF waveform via a standard Lemo #00 connector for further analysis
- **HI SPD Digital Output Option** outputs amplitude or thickness values at 20x the speed of the standard RS232 port

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Visit the NDT Super Site, AgfaNDT.com, for more information on Krautkramer's USN 60 and to learn more about Agfa NDT's complete line of ultrasonic, x-ray, digital and film systems

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Krautkramer
Ultrasonic Systems

USN 60

Portable Ultrasonic
Flaw Detector



A WORLDWIDE RESPONSE

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