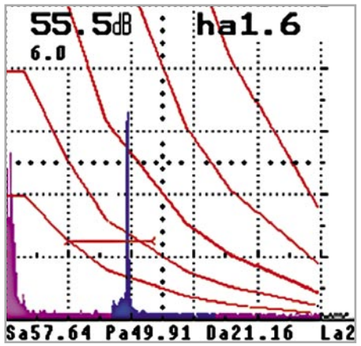
Examples for the various applications of the high performance and light Krautkramer USM 35X.

Weld inspection in the power generation and petrochemical industries

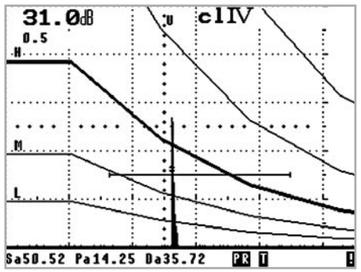
- Flaw location with display of **all coordinates**, sound path, (reduced) surface distance, depth position and leg number



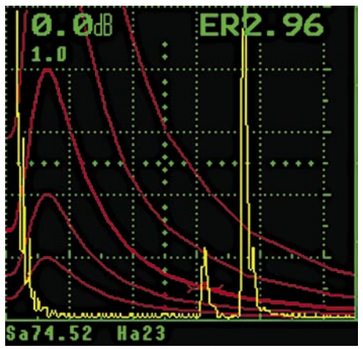
- Display of every sound beam reflection (number of half skip distances or legs) and identification of **leg color** on the "live" A-scan



- New powerful DAC/TCG with JIS DAC module according to JIS Z 3060-2002



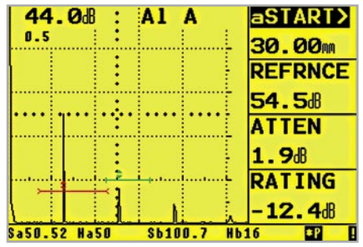
- DGS evaluation with direct digital ERS readout (USM 35X)





Inspection of a weld

- Amplitude evaluation in dB refering to a previously recorded reference echo or according to **AWS D1.1**



Precise thickness measurement for the automobile industry

You can measure the sound path difference precisely at the peaks of an echo sequence with a resolution of 0.01 mm / 0.001 inch. In doing this, trigger the gates at the 1st backwall echo: this automatically positions gates correctly for the measurement.

Corrosion wall thickness in the power generation and petrochemical sectors

During wall thickness measurement on corroded parts using dual element probes, you simultaneously check the reading together with the A-scan, thus receiving the maximum reliability for the measurement. On hot surfaces you use the auto-freeze function, minimizing the probe's contact time. The minimum capture mode gives you the thinnest measured reading at the end of a continuous scan.

Inspection of forgings in the power generation and aerospace sectors

The manual setting of the pulse repetition frequency down to 4 Hz eliminates phantom echoes while inspecting fine grain and large work pieces. Defects from an equivalent reflector size 0.3 mm onwards will be detected.

Inspection of special materials in the aerospace and automobile industry

Use probes down to 250 kHz in order to penetrate highly attenuative or composite materials. Our composite probes on the USM 35X will drastically improve the signal-to-noise ratio on sound scattering materials (glass or carbon reinforced plastics, composites or alloys).

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Ultrasonics

Krautkramer USM 35X

Universal Ultrasonic Flaw Detector with Bright Color Display and protected according to IP 66



Digital | Eddy Current | Film | Testing Machines | Ultrasonics | X-ray

A new design provides an improved environmental protection for everyday outdoor use.

Protection according to IP 66

A very sturdy housing has been designed for the USM 35X. We achieve a higher environmental protection and have improved the durability of this flaw detector for harsh use. The IP level corresponds to the degree of protection provided by the housing according to the IEC 529:1989.

IP 66 means that the instrument is totally protected, i.e. dust and water cannot penetrate into the instrument, even with heavy rain, sea spray and powerful jets of water coming from any direction.



Harsh field and industrial environments

- Extended temperature range from 0° C/32° F to 60° C/140° F (-10° C/14° F to 60° C/140° F after individual climatic testing)
- Weighs only 2.2 kg
- Extended battery life to 14 hours under real test conditions

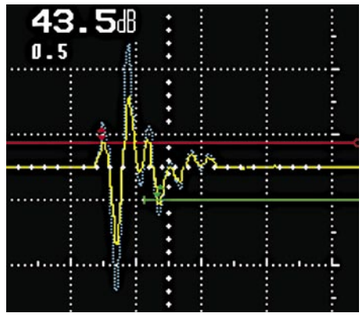
Intuitive tools to help analysis

- The Color-Leg function displays coded information on the leg in color about angle beam inspection.
- 2 new carats (colorized triangles pointing at the echo for each gate).
- One carat ∇ pointing to the gate bar indicates the sound path measurement point at the echo
- The other carat Δ pointing up indicates the amplitude measurement point at the echo in the gate.

Fast and bright color screen

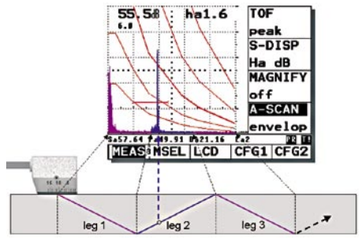
Color brings you many additional benefits in your daily inspection job:

- Color display of monitor gates and curves (DAC, TCG, DGS) for direct recognition
- Messages and alarms in red characters for increased attention
- Use of color to display references (A-scan) to make comparisions easy



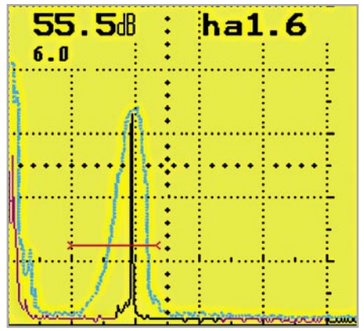
A-scan comparision

- Patented color coded display of legs for angle beam inspection of welds



Color-coded display of legs in tests using angle-beam probes

- Colorized envelope curve display for echo dynamic analysis
- Multicolor screen combinations for operator preferences and to select best suitable color scheme according to the working environment.
- VGA output to connect the instrument to an external monitor or video projector



Envelope curve

New readings

Three new additional readings can be displayed for measurements taken with gates:

- dB-difference to reference gain with DAC / TCG (in the USM 35X DAC and USM 35X S)
- DGS reference gain (in the USM 35X S)
- Flaw classification according to JIS Z3060 (in the USM 35X DAC and USM 35X S)

Other benefits

We have also implemented innovations from the computer industry in the battery concept to make your daily work easier: the rechargeable lithium-ion battery pack enables you to carry out your inspections for at least 14 hours. Charging is easily carried out internally within the instrument over night just by connecting the power pack/battery charger to the USM 35X. You can also insert 6 normal C-cells should the battery pack be drained and if no A/C power connection is available.

The optimum combination of innovation and proven performance

It's a tradition

Every worthwhile feature that has been of advantage to industry has been kept. For example the popular intuitive spin'n'set operating concept working on the basis of the two rotary knobs that give an „analog feeling". The instrument gain and the required functions are always directly accessible. A lot of attention was paid to clarity when arranging functions and menues:

- Simple to use, quick to operate, from basic to challenging inspection requirements.
- From high frequency inspections for thin materials up to low frequency for attenuative materials
- From automotive, power generation, oil and gas to aerospace applications

Additional DAC functions

Recording reference echoes in DAC mode will be simplified by automatic gain adjustment. The echo to be recorded will be set automatically at 80 % and stored The dB-difference to the first reference echo can be displayed, if needed. The new JIS-DAC meets the latest JIS Z3060-2002 specifications.

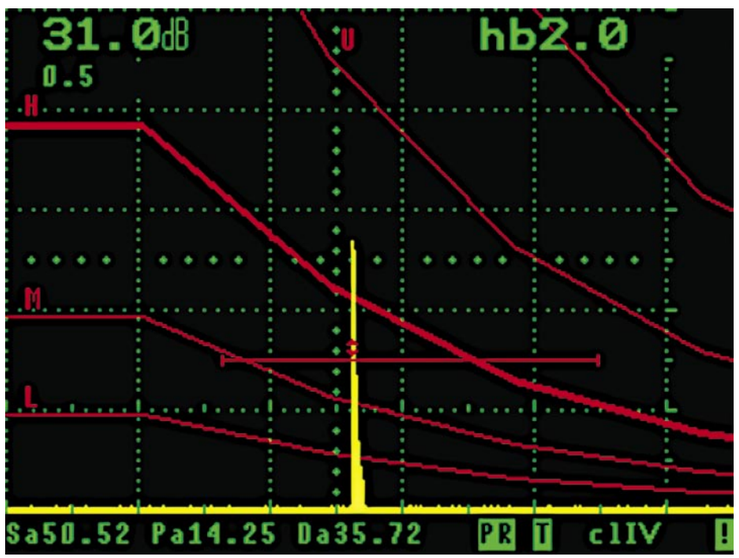
Data reporting

800 datasets enable a great number of calibration settings and test results to be stored. Each report can be documented with a memo field containing 6 dedicated areas with up the 24 characters and 3 numerical fields (flaw coordinates) for inspection reports and settings. The report or setting can be printed directly via a RS-232 or up/downloaded to a computer using an RS-232 or USB (with USB-RS accessory).

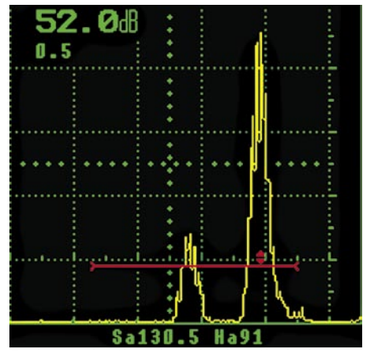
All three versions may be additionally extended by the Data Logger option: this enables you to use the USM 35X for recording and documentation of 5,000 readings (sound path, amplitude, etc.) and 500 A-scans at the same time. Moreover, you have a third gate, a tolerance monitor and a minimum reading capture at your disposal.

Three different time of flight measurements

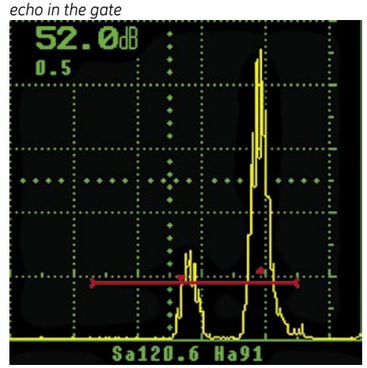
Depending an the time of flight mode selected, the distances (measurement carat ∇ red triangle) and amplitudes (carat Δ) will be measured and displayed for the echo in each gate. The measurement points are indicated by the color coded carats for each gate.



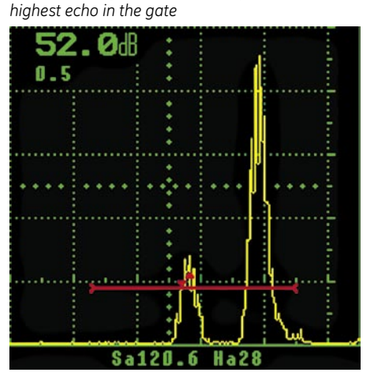
New DAC function according to the latest JIS Z3060-2002 specifications



Peak: sound path and amplitude at the highest echo in the gate



Flank: sound path at the intersection of the first echo with the gate threshold; amplitude at the highest echo in the gate



JFlank: sound path at the intersection of the first echo with the gate threshold;amplitude at the first echo in the gate