

# FLAW DETECTION REDEFINED



Smarter decisions, faster.  
**Krautkrämer USM 100**

 **Waygate  
Technologies**  
a Baker Hughes business

# The new standard in flaw detection

Sleek but rugged, the Krautkrämer USM 100 is a portable, highly versatile flaw detector with smartphone-like capabilities.

Designed ergonomically for unrivaled ease of use, it features a large touch screen and buttons that allow seamless ambidextrous operation. Digital features include a best-in-class user interface that streamlines setup, training time and updates.

It's the only flaw detector on the market built for an interconnected world, offering the luxury of greater efficiency through remote access, data management and storage.

**So your team can make more informed decisions, faster.**



**An industry first:**  
The only **digital native** flaw detector.  
Store and access every detail in the cloud.

## Unmatched comfort

Light and ergonomic, the Krautkrämer USM 100 puts your well-being first. It's also robust, versatile, and built to reliably withstand the toughest conditions (drop/vibration tested with an IP 67 rating). The glove-compatible 7" LCD touch screen — viewable under any lighting conditions — means no more strained eyes. And left- or right-hand operation ensures comfortable handling for any operator in any circumstance. All of this improves ease of use and operator confidence, which ultimately improves inspection reliability and **lets operators comfortably complete more inspections.**

## Uncomplicate your inspections

Reduce downtime and increase productivity with a smart and intuitive user interface that's easy to learn and customize. This optimizes and accelerates your inspections and decision-making with digital simplicity, without compromising reliability or performance. Download and modify Waygate Technologies apps from our store, ensuring fast, consistent and compliant inspections by any inspector, in concert with your existing and future technology thanks to USB-C compatibility. The powerful Mentor App software increases your control through tailor-made workflows distributed to your fleet through the Private Store.

## Get the most out of your fleet

The next-generation flaw detector boasts additional digital features such as:

### Data availability

Secure, cloud-based data management for immediate transfer, sharing and reporting of data.

### Remote calibration

Sending a device in for annual factory calibration means it won't be available to you for up to 2 weeks. But with remote calibration it can be calibrated at your premises in an hour.

### Public store

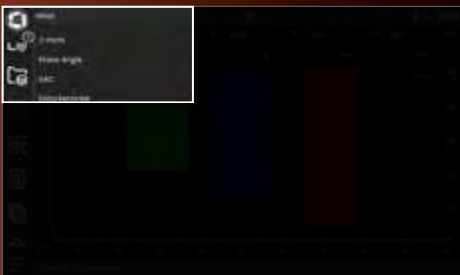
Download apps or customize your own, and update your fleet anytime, anywhere.



# Modern, intuitive user interface



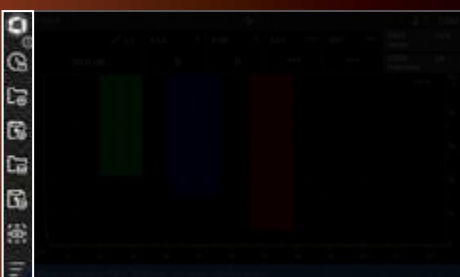
## Smartphone-like functionality



**Panels** guide users through the workflow in logical order.



Interactive and **dynamic readouts** for quick configuration.



**Scrollable control bar** allows quick access to the most critical functions.



For the most important parameters, swipe right for the **sidebar**.

# Next-level excellence for true experts

The Krautkrämer USM 100 amplifies the trusted ultrasonic features already offered by the USM series, taking accurate and repeatable inspections into a new era of flaw detection. The data sets from legacy USM Go+ and USM 36 are compatible with this new model, making for a seamless transition into the future.

## Standard features

- DAC/TCG
- DGS
- CNDAC
- AWS D1.1/1.5
- JISDAC



## Guided calibration:

Prompted calibrations ensure a logical sequence of operations for quick and consistent results.



## Advanced data recorder:

The color-coded grid view, with its adaptable palette enables easy identification of critical thickness readings. A-Scan storage for every measurement allows data verification and post-processing.

## Premium features

The Krautkrämer USM 100's premium features elevate your inspections and flaw detection capabilities, so you can scale up to more demanding tasks and realize more revenue.



### Averaging

Eliminates noise signals by real-time averaging of A-Scan.



### Customizable filter

Enables user configurable filter settings.



### iOS app

Enrich your existing ultrasound data with pictures and geolocation information of test specimens.



### IF Gate/3rd gate

IF gate enables tracking of the interface echo and maintains a consistent TOF measurement.

# Data acquisition and management tools



## Mentor PC

With the data analysis software Mentor PC, you can utilize all the tools available on the Krautkrämer USM 100 right on your PC. Conveniently upload, analyze and report inspection data without having to purchase or learn another specialized software package.



## Mentor PC Live

Harness the processing power of your tablet or PC to use the USM 100 remotely with the Mentor PC Live software. This way data is stored directly on the device and can be forwarded to third-party applications.



## Mentor Create

This desktop software allows you to customize or create inspection “apps” for your unique testing procedures, industry applications, and experience levels. These can be as detailed or generic as you see fit.

## InspectionWorks:

The smart new way to acquire, analyze and act on inspection data



Collect, connect, integrate and share NDT data in a single, secure and scalable platform.

Streamline workflows and inspection processes and easily collaborate across teams – even remotely.

Enrich your data and gain actionable insights with AI and DL engines that help you make better decisions, faster.

Improve the performance and uptime of your NDT fleet with remote monitoring and diagnostics.



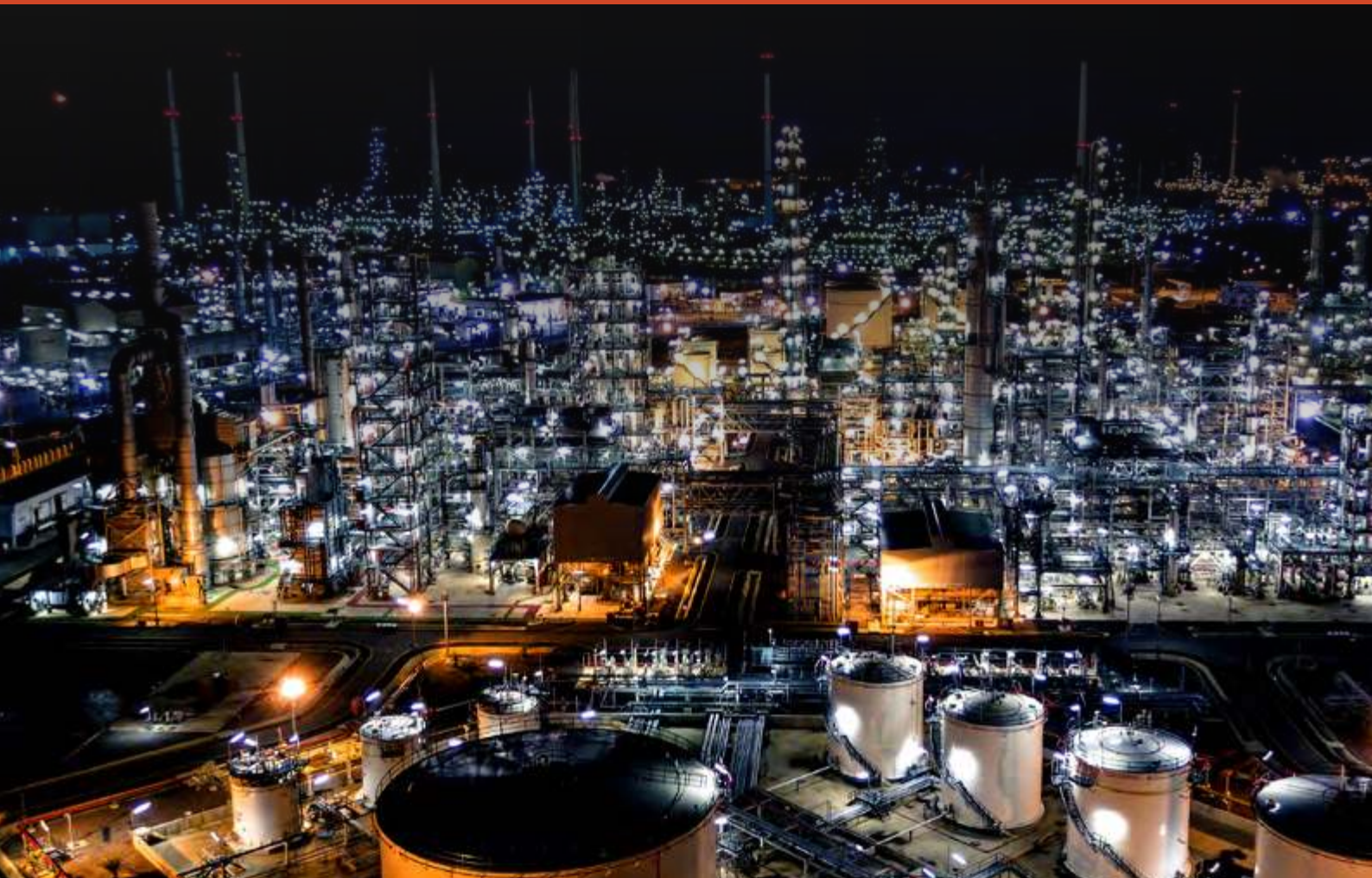
# Raising the bar for industrial inspection applications

Few inspection tools are more versatile than the portable Krautkrämer USM 100, built to tackle a wide range of inspection challenges. Perform comprehensive, accurate inspections on industrial assets, then enrich your inspection data with images and geolocation for improved traceability and reporting.

## Weld

Varied cross-segment requirements and myriad materials and inspection codes make weld inspection one of the most diverse and complex inspection fields. The Krautkrämer USM 100 not only has excellent software and hardware capabilities for every type of weld inspection, it also features a guided inspection workflow for simple, quick and consistent inspections and calibrations.

- DAC/TCG, AWS, DGS, JISDAC, CDNAC: provide extensive flaw sizing capability
- 400% Amplitude range: avoids saturated signal while working with scan gain levels
- ASME/AWS apps: provide an optimized inspection workflow to achieve code compliant inspections
- Color Leg: for easy visualization of beam skips





## Composite

Complex wave propagation, random scattering and high attenuation can reduce the probability of detection when inspecting composite structures. The Krautkrämer USM 100 offers dedicated features to meet these challenges:

- IF Gate: for inspections with a water column or a flexible wedge
- Customizable filter: enables tuning filters for optimized near surface resolution and S/N ratio

- Up to 0.2 MHz bandwidth and 2500 ns pulse width for wind blade spar bond line inspection
- High slope TCG curve (90 dB/40 ns): for inspection of highly attenuative materials like rubber and for near surface resolution optimization during immersion testing

## Corrosion

Traditional access methods such as scaffolding, crane baskets, and man lifts increase risk exposure, crowd work areas, and add significant expense to projects. While rope access is an efficient method for corrosion inspection, you need a lightweight and ergonomic flaw detector that can be operated solely with one hand.

The Krautkrämer USM 100 weighs just 1.2 kg (2.65 lbs.) and can be ergonomically operated with one hand, leaving the other to manage probe manipulation.

- Advanced Data Recorder: for fast and efficient recording of CML
- IF Gate: for inspections with a water column or a flexible wedge
- 400 MHz digitization frequency: enables high-resolution thickness measurement
- 400% Amplitude range: avoids saturated signal while working with scan gain levels for higher sensitivity

## Railway

When you're always in motion, you need a flaw detector that moves with you. Our customizable UI makes adding and removing feature sets simple, which is ideal for tailoring the inspection workflow to railways.

- Square Wave pulser enables excellent acoustic penetration and signal to noise
- Touch + button operation enables reliable operation under all weather conditions
- App for geolocation



# Specifications

General	
Size	width 216 mm, height 138 mm, depth 60 mm
Weight	1,2 kg (including two batteries)
Input supply voltage	+15VDC
Battery operational time	5h
Number and type of batteries	2 Lilon battery packs, 1 for hot swap
Maximum power consumption	45 W
Compliance to UT standard	ISO 22232-1
Languages	English, German, French, Chinese, Japanese, ...
Operation	Touch screen or keys (left or right hand operation)

Display	
Screen size and resolution	7 inch wide, 1024 x 600 Pixel, touch screen
Range of sound velocities	250 m/s to 16000 m/s
Available views	A, B, C
Time base:	
Delay	-10 $\mu$ s to 3500 $\mu$ s
Depth	3 mm to 15000 mm (steel)
Digitization frequency	100 MHz
Digitization frequency with processing	400 MHz

Data acquisition	
Maximum number of samples per A-scan	1024 points
Data storage, internal	32GB
Data Logger size	3000 x 3000 (points including A-scan)

Receiver	
Maximum input voltage	40V <sub>pp</sub>
Frequency response	0,2 MHz to 30 MHz (- 3 dB)
Filters	12 bandpass and high pass filters
Dynamic range	110 dB (0,2 dB increments)
Time-corrected gain (TCG)	16 points, 100 dB dynamic, 90 dB/40 ns slope
Cross-talk between transmitter and receiver	>80 dB
Signal averaging	2, 4, 8, 16, 32
Linearity of vertical display	+/-2 %

Gates	
Number of gates	3 (one can be used as interface gate)
Measurement modes	flank, peak, zero crossing before, - after, J-flank, first peak
Characteristics of all gates:	
Threshold	5 % - 100 % (1% increments)
Start	0 to 15000 mm (steel)
Width	0 to 15000 mm (steel)
Resolution of TOF	2,5 ns
Measurement modes	flank, peak, zero crossing before, - after, J-flank, first peak
Measurement units	mm, inches, $\mu$ s, %, dB
Measurement procedures	TCG, DAC, DGS, AWS, API
Calibration procedures	for straight and angle beam probes

Transmitter	
Modes	dual, pulse echo, thru transmission
Pulse repetition frequencies	10 to 2000 Hz
Shape of transmitter pulse	negative unipolar pulse
Transmitter voltage	50 V - 350 V (10 V increments)
Pulse width	40 ns - 2500 ns (5 ns increments)
Damping	50 $\Omega$ and 400 $\Omega$

Inputs/outputs	
Power input	Lemo 0S
Probe connectors	Lemo 00
Interface connector	Lemo 1B, 14 pin (Outputs: 1 alarm (horn), 1 analogue, trigger, Inputs: 2 encoder, 1 start/stop)
USB 2.0	Type A (also for Wifi dongle)
USB 3.0	Type C (also for video output)

Environmental	
Protection grade	IP 67
Storage temperature	-20 °C to 70 °C
Operating temperature	-10 °C to 50 °C
Shock	IEC 60068-2-27
Vibration	IEC 60068-2-6
Humidity	EN 60068-2-30:2005 Abs. 5a and 7.3 Variante 2
EMC	EN 61326-1, EN 55011
Low Voltage Directive	IEC 61010

# Configurations

Part numbers	USM 100 Standard	USM 100 Pro*
Instruments	150M5734	150M5735
With ISO 22232-1 Certificate	150M5734C	150M5735C
InspectionWorks Subscription (1 year)	148M5840	148M5840
Instrument + InspectionWorks Package		150M5736
Instrument + InspectionWorks Package & ISO 22232-1 Certificate		150M5736C
Features		
Third Gate / IF Gate		X
Encoded B-Scan		X
Encoded C-Scan		X
Customizable Filter		X
USM Client - iOS App		X
M.PC Live		X
Waveform Averaging		X
A-Scan Saturation	200%	400%
Apps on device	max 3 apps	unlimited
<b>InspectionWorks Package</b>	3 months trial	3 months trial
<b>Data Availability</b>	3 months	3 months
<b>Fleet Management</b>	3 months	3 months
<b>Private Store</b>	3 months	3 months
<b>Remote Collaboration*</b>	3 months	3 months
DAC/TCG	X	X
JISDAC	X	X
CNDAC	X	X
Color leg	X	X
Square Wave Pulser	X	X
AWS D1.1/D1.5	X	X
DGS	X	X
Phantom PRF	X	X
Advanced Data Recorder	X	X
BEA - Back Echo Attenuator*	X	X
Analog Out*	X	X
API 5UE*	X	X
Guided Calibrations	X	X
Remote desktop	X	X
Touch Screen Interface	X	X
Timed B/C-Scan*	X	X
WiFi	O	O
Remote Calibration (Non EN)*	O	O

Individual product configurations subject to change

**Note:**

\* Coming soon

O Optional features

<sup>(1)</sup> Not available for all countries

## Optional accessories

- **USB C Hub (148M5843)** Multiport adapter<sup>(1)</sup>
- **WiFi Dongle (148M5844)** External WiFi dongle<sup>(1)</sup>
- **WiFi Router (151M4752)** WiFi router for remote inspection (only available for EU)
- **Magnet Holder (148M5852)** Detachable magnetic pipe stand
- **Belt Holster (148M5854)** Optional belt holster

# A legacy built on reliability

We have pioneered industrial ultrasound technology for more than 70 years. The Krautkrämer brand was built on a reputation for excellence – a testament to the confidence you can expect when using our products, knowing that every component is dependable and built to last.

The Krautkrämer USM 100 carries this same DNA into the future, combining our best-in-class detection with unmatched connectivity.



Contact your local sales representative to learn more

Waygate Technologies, formerly GE Inspection Technologies, is a global leader in NDT solutions with more than 125 years of experience in ensuring quality, safety and productivity.

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