A thousand and one applications thanks to a large selection of probes.

When thickness measurement is needed.

The DMS 2 is suitable for numerous test tasks on components subjected to wear. These include for example:

- Tubes, receptacles, tanks in the chemical industry
- Complex tube isometries in oil refineries
- Austenitic materials, general inspection measurements in power plants
- Remaining wall thickness measurement through thick paint coatings and on glass-fiber reinforced ship's hulls in the shipbuilding industry
- Sound attenuating, casted parts in foundries
- Varied service and maintenance tasks within the aviation industry
- Test objects having large wall thicknesses within the plastics industry

Unbeatable – our probes

The great variety of applications is made possible by the large selection of probes available for the DMS 2.

One special highlight is the series of dialog probes which are automatically recognized by the instrument and ensure optimum setup and improved performance.

We are able to offer the right probe for solving even critical test problems under harsh field conditions.

For example:
Reliable measurement at high temperatures.

Thickness measurements on hot components are no problem with the DMS 2. We have different dual-element probes in our delivery program allowing to reliably measure components at high temperatures up to 600 °C, including coupling monitoring.

For example:
Thickness measurement on parts with external corrosion.

Special probes with reduced contact face enable you to measure the remaining wall thickness even at points which are normally hardly accessible: on components showing strong pitting or surface roughness due to external corrosion.

For example:
Measurement through coatings.

You can now forget the time-consuming removal of coatings. The TopCOAT function of the DMS 2TC helps to measure not only the thickness of the base metal, but at the same time also that of the coating layer. Moreover, you'll have other possibilities of measuring through coatings at your disposal under certain conditions, e.g. measurement within the echo sequence (Dual-Multi function).

For example:
Thickness measurement with unknown material velocity.

Using the Auto-V function, you can now measure components with unknown material velocity – without any previous comparison measurement by mechanical means! Other advantages: measuring errors in the case of material velocity variations due to temperature variations – e.g. with plastic materials – or due to inhomogeneous materials – e.g. grey cast iron – are eliminated; testing reliability therefore increases.

DMS 2E, DMS 2, DMS 2TC - Specifications and accessories

Standard package
DMS 2E (basic) or DMS 2 (standard) thickness gauge; or DMS 2TC thickness gauge with TopCOAT and Auto-V mode; including:
1 set (4 pieces) of Alkaline dry cells;
1 CD ROM, installation program for software update; operating manual

Operating principle
Ultrasonic pulse-echo method

Measurement modes
Dual-element mode with measurement at echo flank, MIN Capture mode, Dual Multi,
only DMS 2TC: TopCoat and Auto-V;
only DMS 2 / DMS 2TC: single-element mode with measurement at echo flank/peak in the multi-echo sequence, measurement between interface echo and the first backwall echo

Probe zero adjustment
Automatic or manually by pressing a key after coupling to zero block

V-path correction
Automatic

Measuring range
DMS 2E: .025" to 25.00" (0.6 mm to 635 mm)
DMS 2 and DMS 2TC: .008" to 25.00" (0.2 mm to 635 mm) in steel, in standard operation, depending on the probe, material and surface

Digital display resolution
.001 to .01 inches (0.01 mm or 0.1 mm) (selectable) over the entire measuring range

Units
Selectable: mm or inch

Operating frequency
32 Hz in MIN-Capture mode and B-scan display mode; 4 Hz or 8 Hz (selectable) in standard setup

Gain
Automatic or manual in 1 dB steps

Receiver bandwidth
0.5 to 15 MHz

Material velocity range
39,400 to 393,662 inches/s
1000 to 9999 m/s

Display
Type: graphic, transflective LCD,
71 mm x 95 mm, 240 x 320 pixels,
switchable backlight, adjustable contrast;
Digits: 4-digit display, digit height
12.7 / 19 mm (selectable)
Mode: A-scan with solid or hollow echo display, grid graticule selectable; or B-scan (timed); rectification: full-wave, positive half-wave, negative half-wave;
only DMS 2/DMS 2TC: RF mode;
measurement gates are adjustable;
Adjustment: A and B gate: start, width, threshold;
Status symbols: for example Freeze, probe zero, alarm and trigger display, rectification, battery charge, coupling monitor, keyboard lock

Power supply
4 standard batteries (AA 1.5 V), AlMn or NiMH batteries

Operating time
With NiMH batteries min. 40 hours (with backlight and operating frequency 4 Hz)

Operating temperature
+10 °F to +120 °F
-10 °C to +50 °C

Keypad
Dust and watertight sealed membrane keypad
Housing / battery compartment
Impact-resistant, dust- and splash-proof gasket-sealed, IP 54

Size (W x H x D)
10.1" x 5.1" x 1.2"
129 mm x 56 mm x 40 mm measured at the battery door

Weight
1.95 lbs (885 g) including batteries

Hazardous Area Operation
Safe operation as defined by MIL-STD-810E, Method 511.3, Procedure 1

Data Recorder
Capacity: 150,000 readings /
1,100 A- or B-scans,
extension possible to 318,000 / 2,400

File formats
8 file formats (3 with the DMS 2E);
can be configured later
Microgrid: subsequent insertion of 2x2 to 9x9 grid per measuring point;
1 to 16 user-definable comments for each file format with up to 16 alphanumeric characters per measuring point

Dialog languages
For example German, English, French, Italian, Spanish, up to 12 languages

Interfaces
Serial RS232 interface in combination with a TGDL cable, max. 115,200 Bauds

Application software
UltraMATE LITE: simple data management program for transferring measurement data files to a PC, including integration of the data into Windows programs
UltraMATE: extensive data management program for displaying and printing measurement data as graphics, for managing test data, for entering comments on files

Other accessories
Numerous probes and cables according to the test task; case set with waist belt; plastic/hard-shell transport case; foot/hand switch for transfer of readings; protective foil screens for LCD; stepped calibration block; memory extension; data transmission cable; Epson dot-matrix printer for mains operation; Seiko thermal printer for mains and battery operation; parallel printer cable

Krautkramer DMS 2

Ultrasonic Thickness Gauges with A-Scan and B-Scan

Documented corrosion testing – quickly and intelligently.

The DMS 2 is THE solution ...

to your test problems dealing with corrosion inspections – even, and especially, when it comes to handling demanding and critical test tasks – for example on coated components or at high temperatures.

The DMS 2's straight-forward display shows you all measurement details at a glance. The echo display (A-scan) helps you to have your measurement better under control and to avoid material-related errors in measurement – e.g. due to cracks or inhomogenities – as you are able to reliably distinguish them from the actual measured values.

The user-friendly Data Recorder provides extensive documentation capabilities that meet all test requirements in the field.

To further improve the reliability of your tests and to offer you greater ease in testing, we have equipped the DMS 2 with state-of-the-art technology and special features. You have a choice between three instrument versions: besides the standard instrument DMS 2, there's the DMS 2E with reduced function range for simpler applications, and – last but not least – there's the DMS 2TC with its TopCOAT method, a pointer for future thickness measurements through paint coatings.

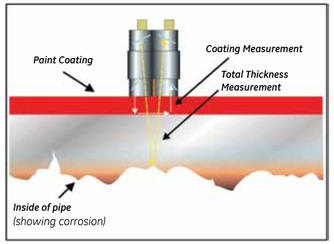
A-scan with display of coating layer and material wall thickness

Innovative: TopCOAT

With the patented "TopCOAT" method (DMS 2TC) we have been able to optimize the corrosion measurement through paint coatings: this method makes it possible to measure materials showing heavy corrosion on backwall surfaces, and even the slightest pitting can be detected thanks to a high gain. The paint coating and base metal are measured in one measurement process, and displayed simultaneously.

Innovative: Auto-V

If your components are uncoated, you have the Auto-V feature at your disposal. It is a clearly simplified version of the conventional thickness measurement and, as such, a unique method. Auto-V even allows you to measure the thickness of components with unknown material velocity. This enables you to measure different uncoated materials without any additional calibration – and without any calibration standards. It's not necessary to know the material velocity to be able to measure – this previous disadvantage no longer exists.



TopCOAT technology from Krautkramer:
A TopCOAT probe (having two transmitter and two receiver elements) determines coating layer and material wall thickness in a single measurement process; a multi-echo sequence is not required (schematic view).

Made to satisfy your needs in field applications with A-Scan, B-Scan and data management capabilities.

An especially bright spot ...

is the high-contrast, state-of-the-art LCD providing good readability even in the brightest sunlight – and at a very unfavourable viewing angle. You can adjust the contrast to match all ambient light conditions, and if you're in a dark environment, just switch on the backlight.

What would you like to see?

The DMS 2 does not only display the A-scan for you to have your measurement better under control. You can also view your measurement results as a B-scan, i.e. a timed cross-sectional view of the material thickness. With this feature, the DMS 2 offers you an additional graphic display mode ideal for checking corroded sections and for detecting the minimum reading in a certain area. Just look at the large-digit display that you can select as required – another advantage for your on-site work.

Small, lightweight, rugged.

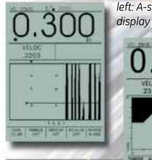
The DMS 2 is truly suitable for field use with its small size and its weight of only 1.95 lbs (including batteries). The membrane keypad and housing are of course likewise designed for industrial environments. The operating time of the rechargeable batteries is enough for a whole week's work.

The enhanced ergonomic shape ensures easy one-handed operation. The operating concept is straight-forward and easy to learn – with quick access to functions.

Wide range of practical functions.

Measurements on components showing strong corrosion, through coatings, on unknown materials – the DMS 2 offers a large number of optimized and field-proven performance features and capabilities:

- Automatic recognition of all dialog probes for optimum instrument setup and performance, as well as for the documentation.
- Enhanced single-element mode for the connection of several probes, also for precision thickness measurements.
- Automatic probe zeroing for the precise setting of the instrument to different probes and test conditions.
- Minimum-capture mode with increased pulse repetition frequency for the display and storage of the minimum reading.
- RF display mode, four automatic band-passes, selectable display update rate, and much more.



left: A-scan with large-digit display of the measured value

above: B-scan with cross-sectional profile display; timed recording of readings according to the probe movement (to the left).

The Data Recorder – flexible and powerful.

Storing, managing ...

The DMS 2's on-board Data Recorder makes all the options for up-to-date documentation and modern data management available to you:

- Memory capacity for 150,000 readings and 1,100 A- or B-scans (extendable)
- Flexible adaptation to the measurement task by eight different file structures – according to the arrangement of measuring points most often encountered.
- Subsequent insertion/deletion of readings within a file
- Storage of additional information for each measurement location: probe, material velocity, date, time, calibration, etc.
- Comment line with 64 characters accessible at any time.
- Microgrid: You can insert up to 81 readings, in 2 x 2 to 9 x 9 grids, per measurement point at any time during the test using this function. By doing this, an analysis can be made in the direct vicinity of a critical measurement point.

... it couldn't be easier.

Despite the extensive performance scope of the Data Recorder – its operation is simple. For example with the navigation: you don't only see your current reading, but also – for a better overview – the surrounding measurement locations.

For your alphanumerical data inputs we have created the "Virtual Keyboard" which is displayed on the DMS 2 screen and makes it easy for you to input data.

Quick and easy navigation within a file

"Virtual Keyboard" - easily activated using ABC key

Documenting, processing.

You will receive a test report via a connected printer at the press of a key. There's a wide selection of special application software at your disposal for further data processing.

These programs enable you, e.g. to transfer measurement data to a PC and back again, to transfer the data to other standard programs – such as Microsoft Excel – and to analyze them there, manage them in a database or integrate them into quality management systems.

Microgrid function for subsequent insertion of measurement reading grids

The DMS 2 data mangement system with application software for data transfer and management as well as for documentation