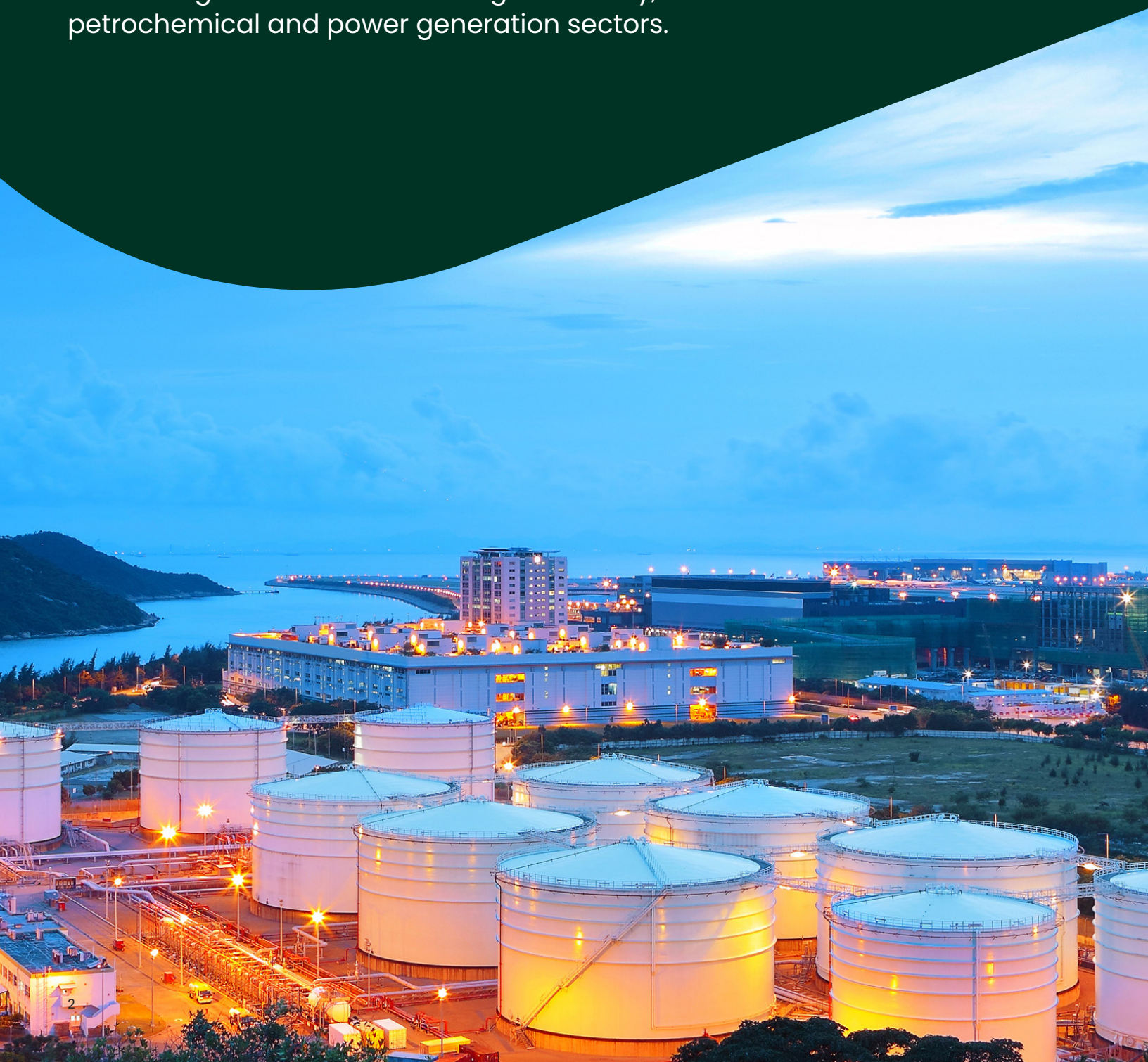
DM5E corrosion thickness gauges

A range of high-performance, reliable and easy-to-use instruments

INTECH NDE
Inspection Solutions

The DM5E family

The DM5E family represents the highest standard of portable corrosion monitoring thickness gauges from Waygate Technologies. It offers significant improvement in performance over previous corrosion thickness gauges in terms of better thickness measurement stability and repeatability at normal and elevated temperatures. It has been designed for operation in the harshest working environments, performing wall thickness measurements on pipelines, pressure vessels and storage tanks in the oil and gas industry, as well as in the petrochemical and power generation sectors.



Choose from three levels of functionality

DM5E Basic, DM5E, or DM5E DL

The DM5E Basic

The rugged housing of the DM5E Basic is common to all versions. It is ergonomically designed with a weight of just 223g, including its AA batteries, which allow up to 60 hours of operation. The basic version is specified to EN 15317 and features an LCD data display, which is backlit to be visible in all lighting conditions. Instrument operation is carried out with one hand via a user-friendly interface. This is a sealed, watertight and dust-proof membrane keypad, which features a minimum of function keys and arrow keys. Navigation through menus is simple and intuitive. The basic version incorporates a wide range of features, including Min/Max capture, B-Scan generation, alarms, and differential thickness measurement to allow instant comparison between measured and nominal thickness.

The DM5E

The DM5E incorporates all the features of the DM5E Basic but also offers the DUAL MULTI operating mode. This has been used in previous corrosion thickness gauges from Waygate Technologies and has proved invaluable in measuring thickness of metal through coatings. There is no need to remove the coating at the measuring point, saving time and money. Users can upgrade from DM5E Basic to DM5E in the field.

The DM5E DL

The DM5E DL is identical to the DM5E but features a built-in datalogger supporting grid-style data file formats. This is capable of holding up to 50,000 readings. Files can be transferred to a PC by means of a Mini USB port. Files can also be imported directly into Microsoft Excel through a macro. All alphanumeric data for filenames and notes is directly entered via the keypad. Both the basic and standard versions are field-upgradable to become DL versions.

User-friendly operator interface

All versions of the DM5E have the same user-friendly operator keypad interface. This has a central mode key, a calibration/on/off key, two function arrow keys to activate and set functional control and four arrow keys for adjusting parameter values and for navigating through the intuitive single-level menu. The keypad allows access to all calibration, set-up and measurement display modes of the instrument. With the DL version, a file display mode allows users to create and store thickness readings in files. All calibration is menu-driven and the operator is guided through every step. There is a built-in calibration reminder, which can be set to remind the user to calibrate after a specified number of measurements or after a given time period.

New range of high-performance probes

A new set of ultrasonic probes has been developed for the DM5E family to provide the instruments with optimized performance, even at very high temperatures. The DA5xx series includes a 5-MHz standard probe for general purpose applications, a 2-MHz version for high penetration and a 7.5-MHz fingertip probe. A newly developed 5-MHz high-temperature probe offers an operating range from -10°C up to +204°C. (Standard probes operate to 70°C.)

Thickness measurement under coating

Both the DM5E and the DM5E DL offer dual-multi measurement. Virtually all components and structures subjected to thickness measurement will have some kind of protective coating. Such coatings, including paint, contribute significant error to thickness measurements of underlying metal walls when using conventional methods. In addition, the removal of coatings, and their subsequent reapplication, involves considerable cost and time. With the field-proven dual-multi feature there is no need to remove any protective coating. It is only necessary to select dual-multi mode, place the probe in position and take the measurement.

Flexible data processing

The DM5E DL has a built-in datalogger, with a capacity to store up to a massive 50,000 reading in grid and linear files. This makes the measurement data available for further processing. Using our UltraMATE software, measurement data files can be transferred from the instrument to a PC, where they can be stored and, if required, printed out in different fixed-format reports. Typically, these can be color histograms, where ranges of measured values are color-coded, or color can be used to highlight the distribution of minimum/maximum limit values exceeded. Data can also be pasted into Windows Clipboard for easy transfer into spreadsheet and word processing applications.

A range of measurement displays

All versions of the DM5E offer a range of measurement displays.

These include:

Normal

The thickness value appears as large digits in the center of the display.

MIN Scan

A minimum thickness scan that allows the user to run the probe over the wall surface. After the evaluation period, the minimum material thickness measured is displayed.

MAX Scan

A maximum thickness scan that is exactly the same as a MIN Scan apart from the fact that the maximum thickness measured is displayed.

DIFF/RR%

Compares the measured thickness with a user-specified nominal thickness. The dimensional difference between the two values is displayed, as is the percentage difference.

B-Scan

Displays a graphic representation of a B-Scan showing minimum thickness values. The graph is derived by measuring and recording at 1 point per second.

Technical specifications

DM5E family

Instrument specifications		
Operating principle	Ultrasonic, pulse echo measurement method	
Measuring range	Depends on probe and material, 0.60 mm to 508 mm (0.025" to 20.00") in IP to 1st BW measurement mode, 2.00 mm to 127.0 mm (0.079" to 5.00") in dual-multi measurement mode, the coating thickness range shall be 0.3 mm to 2.50 mm (0" to 0.098").	
Measuring resolution	0.01 mm default - selectable 0.01, 0.1 mm (0.001" default - selectable 0.001", 0.01")	
Material velocity range	0.508 to 18.699 mm/msec (0.0200" to 0.7362"/msec)	
Material velocity resolution	1 m/s (0.0001"/msec)	
Units	Inch or millimeter	
Calibration	One-point cal, on-block and off-block, two-point cal	
Pulser	Excitation Pulse	Spike pulser
	Voltage	120 V into 50 ohm load, using 20 MHz oscilloscope
Receiver	Bandwidth	500 KHz to 12 MHz @ -3 dB
	Gain	Automatic gain control
Display type	High-resolution graphical LCD, 64 x 128 pixels, 53.0 mm x 27.0 mm with backlight and adjustable contrast	
Update rate	4 Hz or 8 Hz, user selectable, 24 Hz scan mode capture rate	
Thickness value display	NORMAL view mode	5 Digit, 10.6 mm (0.4") high
	B-SCAN view mode	5 Digit, 2.55 mm (0.1") high
Display of last reading	Solid filled or hollow digits indicate coupled or uncoupled condition	
Setups	9 standard setups for probes	
Alarm settings	Minimum and maximum alarms, range of 0.25 mm to 508 mm, 0. (0.010" to 20.00") reading alternates between solid and hollow when alarms are enabled and violated	
Power requirements	2 "AA" size batteries	
Battery life/operating time	Approximately 60 hours	
Instrument shut-off	Selectable ALWAYS ON or AUTO OFF after 5, 10, 15, 30 minutes of inactivity	
Language	Selectable English, German, French, Spanish, Italian, Russian, Japanese and Chinese	
I/O connectors	Transducer	Dual Lemo 00 (coax)
	Mini-USB	Mini USB to PC
Temperature	Operating	-10°C to +50°C (+10°F to +120°F)
	Storage	-20°C to +60°C (-10°F to +140°F)
Weight	223 g (0.597 lb) including batteries	
Size	138 mm x 32 mm x 75 mm	
Shock	IEC 68-2-27 Ea, as per Mil Std 810C Method 516.2 Procedure I with a 15g 11ms impulse half sinusoidal wave applied 6 times per axis	
Sealing	IEC529 / IP54, dust proof/dripping water proof as per IEC 529 specifications for IP54 classification	

Technical specifications

DM5E family

Data recorder option features	
Capacity	50,000 readings
File structures	Grid file
Number of rows	1 to 50,000
Number of columns	1 to 223
File naming	Up to 24-character alphanumeric name
Optional software	UltraMATE and UltraMATE Lite

DM5E probe/transducer specifications	Model DA501	Model DA503	Model DA512	Model DA590	Model FH2E
Frequency	5 MHz	2 MHz	7.5 MHz	5 MHz	7.5 MHz
Probe style	Standard	Standard	Fingertip	High-temperature	Fingertip
Operating temperature range (continuous)	-20 to 70°C	-20 to 70°C	-20 to 70°C	-20 to 204°C	<54°C
Contact diameter	12 mm (0.470")	16.1 mm (0.630")	7.5 mm (0.300")	12.7 mm (0.500")	9.6 mm
IP to first measurement range	1.0 to 200 mm (0.040 to 8")	5 to 300 mm (0.200 to 12")	0.6 to 60 mm (0.020 to 2.4")	1 to 125 mm @20°C (0.040 to 5" @68°F) 1.3 to 25.4 mm @204°C (0.050 to 1" @400°F)	0.75-25 mm
Minimum multi-echo measurement range	3.0 to 45 mm (0.120 to 1.5")	N/A	2.0 to 10 mm (0.080 to 0.400")	N/A	N/A

Note: Instrument specifications are subject to change without prior notice.

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