Dakota NDT

an Elcometer company

Dakota CMX10-DL

FULL WAVE CAPTURE THICKNESS GAUGE

Powerful A- Scan gauge with:

- Full wave recording
- B- Scan
- Time Corrected Gain
- 2nd Layer
- Corrosion Thickness
- Precision Thickness

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FULL WAVE CAPTURE THICKNESS GAUGE

This is not just another A- Scan gauge, this is an A- Scan gauge with full wave recording, B- Scan, TCG and 2nd layer, corrosion & precision thickness in one easy to use, affordable gauge.

Incredibly user friendly

Easy to navigate, simple to set up, all functions and features can be selected from the Menu icon. Create up to 50 custom set ups for routine thickness inspections.

Confident probability of detection

The Dakota CMX10-DL boosts confidence in probability of detection (POD) through visual waveform analysis, signal optimization tools, and stability indicators that help inspectors verify and reduce false negatives on defects like pits or corrosion.

Full traceability for reassurance of inspection quality

Useful variables such as transducer information, calibration methods, dates and calibration times can all be recorded, ensuring a high degree of consistency and repeatability.

Do more with one gauge...

- Touchscreen and button keypad supports operation in the harshest environments
- Heavy duty, rubberised, impact resistant, dust and waterproof case up to IP65
- Up to 20,000 A- Scans on 128MB internal storage or approximately 5 million on a 32GB external memory card
- Compatible with a wide range of LEMO and intelligent ODU transducers, including dual element, single element delay line and single element contact

- High resolution, high contrast display to work in light or dark environments
- User customisable screen - with multiple display layouts
- Integrated wrist and neck straps keep the gauge secure and easy to handle
- Up to 15 hours battery life with LI-Ion Rechargeable Smart Battery or Mains Power Supply
- Kickstand with integrated zero plate
- Ergonomic, lightweight - 1.92lbs (872g) and fully portable, ideal for production lines or out on site

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Key Features

- Complex corrosion and thickness measurement with dual and single element transducers
- High precision with delay line probes for accurate measurement of very thin components
- A- and B- Scan recording for easy scan review and depth sizing
- Enhanced TCG & BEA, improving detection of porosity, inclusions, and cracks
- Waveform recording up to 10 seconds in duration at a rate of 20 A- Scans per second
- Advanced corrosion tools to highlight complex corrosion types such as pits and cracks
- 2nd Layer feature to assess and predict remaining inner liner thickness - Cladding
- Full traceability, and reassurance of inspection quality
- Compatible with DakMaster™ for instant report generation and firmware updates

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FULL WAVE CAPTURE THICKNESS GAUGE

Easy to Use

On site or on a production line

The Dakota CMX10-DL features simple, intuitive navigation that guides you effortlessly through every function - no instruction manual required.

Unmatched Versatility

Measures uncoated & coated surfaces

Multiple measurement modes enable accurate results on challenging surfaces; Pulse-Echo, Echo-Echo and Echo-Echo Verify.

Fully Customisable

Up to four screens in one

The Dakota CMX10-DL has a choice of display modes allowing the user to select the most appropriate for their needs; A- Scan, B- Scan, Digits, Statistics and Reading Grid.

Powerful

Store up to 20,000 A- Scans

The Dakota CMX10-DL packs serious power, storing up to 20,000 A- Scans on its 128MB internal memory - or an impressive ~5 million on a 32GB external memory card for uninterrupted data logging on even the longest inspection jobs.

Accurate

Real time and accurate readings

By capturing recordings up to 10 seconds long at a rate of 20 A- Scans per second, the Dakota CMX10-DL enables users to detect material anomalies in real time and obtain the most accurate reading across a greater surface area.

Fast Set Up

Get to work quickly

The Dakota CMX10-DL enables lightning-fast setup with its pre-loaded calibration libraries, auto-recognition of common transducers, limit libraries and intuitive software wizards that get you measuring accurately in seconds.

Long Battery Life

Works all day, every day

With up to 15 hours of battery life, thanks to its' rechargeable smart battery or choice of mains power supply, the Dakota CMX10-DL supports a full shift of inspecting without recharging, so crews are not forced to stop mid survey.

Remote Control

Share anywhere in the world

Screen share / remote view means a senior engineer can see exactly what the inspector sees and advise in real time, instead of waiting for screenshots by email. This is especially useful for tricky calls on high value assets or new technicians.

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Key Features

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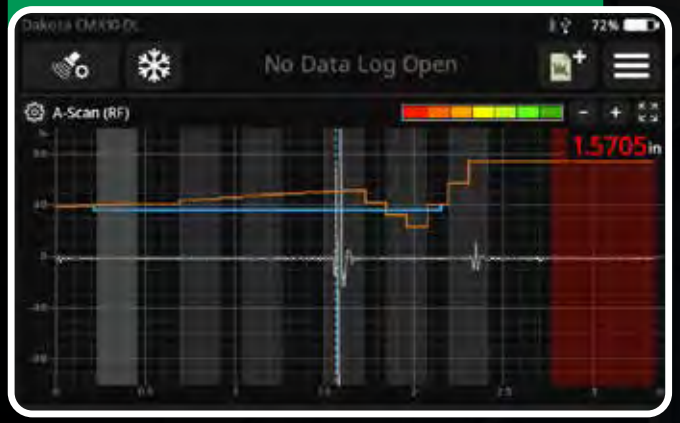
FULL WAVE CAPTURE THICKNESS GAUGE

The **Dakota CMX10-DL** is a powerful ultrasonic full wave thickness gauge designed for both corrosion surveys and high-precision measurements, in a rugged, field-ready package inspectors can rely on every day.

Time Corrected Gain (TCG)

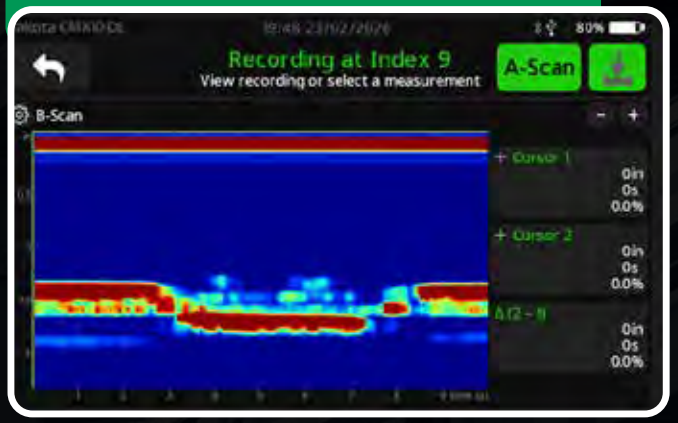


Improve Possibility of Detection

Time Corrected Gain (TCG) and filtering let you lift later echoes without saturating the near surface. That's useful on rough or heavily corroded back walls where the important echoes are weak and buried in noise.

Backwall Echo Attenuation (BEA) – enables onscreen monitoring of back wall signal amplitude. A drop in back wall amplitude indicates an issue, useful in composite inspections and many other materials.

Second Layer Inspection

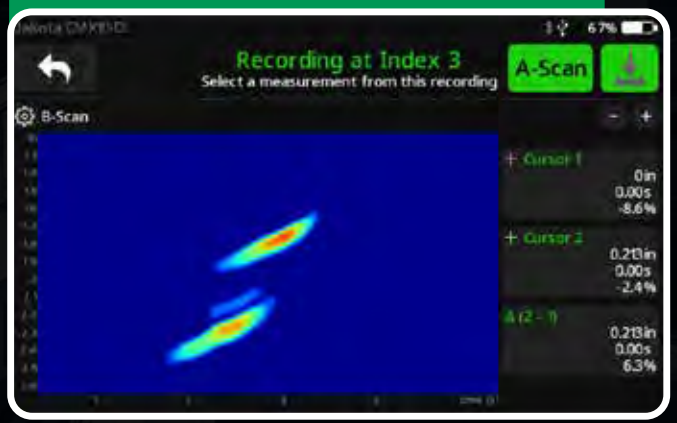


Less intrusive inspection - better remaining life assessment

The second layer / cladding measurement feature is about seeing the true condition of the base metal and liner separately, without stripping coatings or guessing.

The gauge interprets multiple echoes so it can distinguish the outer wall plus coating from the inner liner or cladding layer beneath. In practice, that means you can get one reading for total wall and another that represents the remaining thickness of the inner liner, even when it is behind a coating or outer shell.

Crack Prove Up Capability

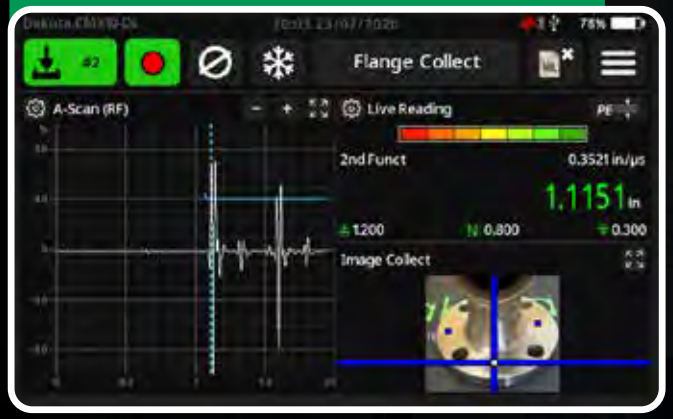


Fast confirmation of critical flaw

High-resolution, accurate crack prove-up capability for fast confirmation of critical flaws, even in complex geometries.

The Dakota CMX10-DL increases the probability of detection of hard to detect pits and cracks using traditional angle transducer inspection methods, to supporting confident fitness-for-service decisions.

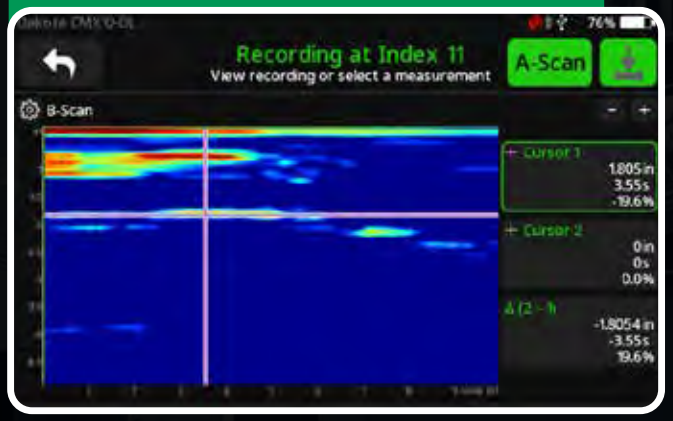
Image Collect



For guided inspection locations

Upload a custom photo or CAD image of the part via DakMaster™ and then tap on that image to drive the next measurement location directly on the gauge itself.

Internal Defect



With point to point measurement

B- Scan supports additional identification of defects in a composite layer beyond that of a traditional A- Scan gauge.

Cursors for point to point measurement provide accurate depth measurement.

Overlay Comparison

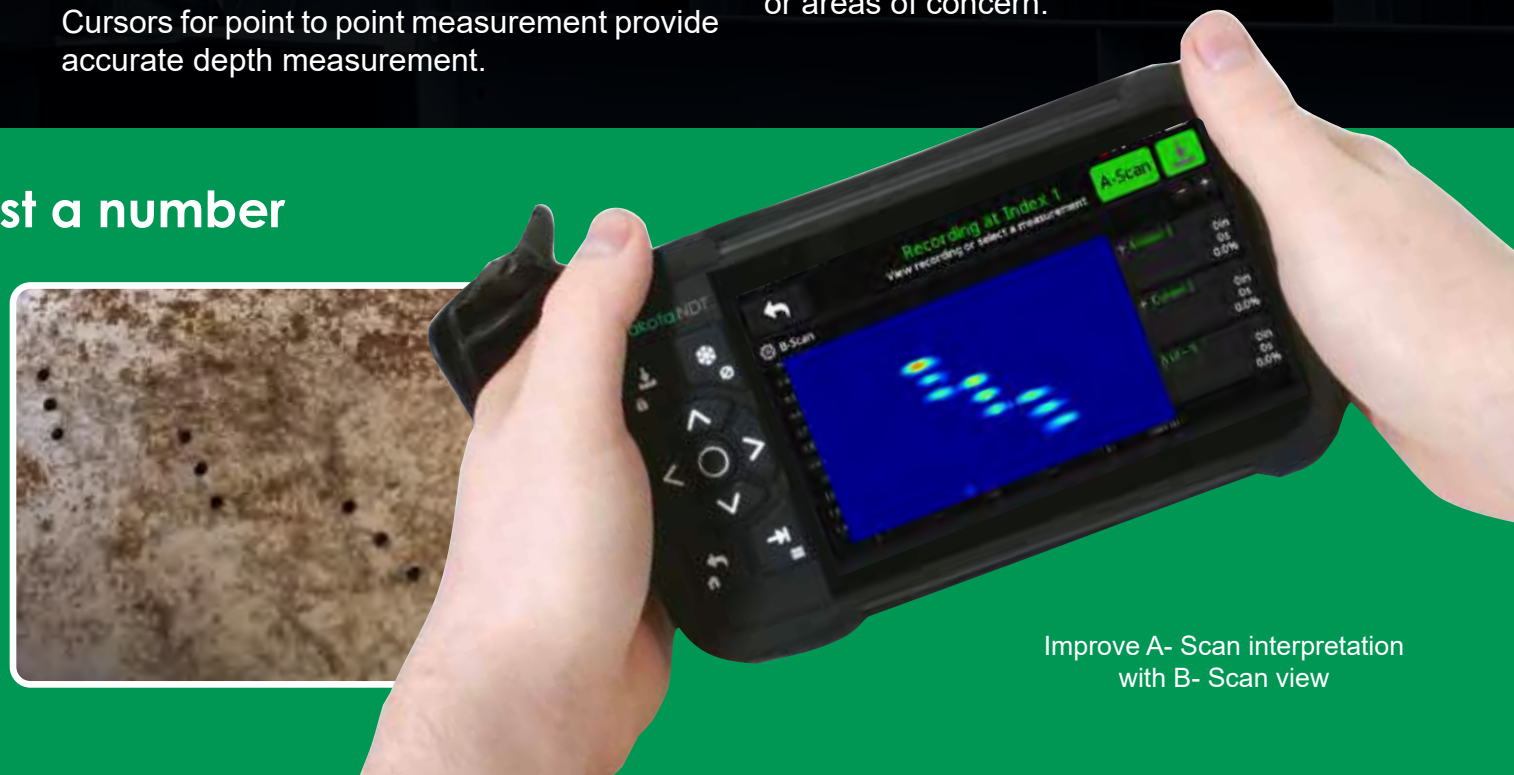
Identify differences in waveforms

The Dakota CMX10-DL ultrasonic thickness gauge can help identify differences in waveform signal patterns to indicate changes in structure or areas of concern.

See the full picture, not just a number

A- Scan and B- Scan recording let inspectors visualise the material profile, review scans and accurately locate corrosion, pits and other defects.

Enhanced Time Corrected Gain (TCG) and Backwall Echo Attenuation (BEA), plus flexible filtering and averaging, help bring out critical signals in noisy or attenuative materials.



Improve A- Scan interpretation with B- Scan view

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FULL WAVE CAPTURE THICKNESS GAUGE

Multiple Modes

Do more with one gauge

Measure remaining wall thickness, through paint and linings, and even inner liners or cladding with multiple modes including Pulse-Echo, Echo-Echo ThruPaint™ and dedicated 2nd layer functions. Inspect complex assets without swapping instruments or compromising on accuracy.

Precision

High precision on thin & thick materials

With resolution down to 0.0001” (0.001mm) and a very low minimum thickness capability, the Dakota CMX10-DL is ideal for both very thin components and heavy wall sections.

Recording

Evidence at your fingertips

The Recording settings allow the user to change the maximum length of any A- Scan recordings (up to 10 seconds) and to configure a timed countdown for recordings, giving you time to press the button and then position the transducer correctly before the recording begins.

Gate Modes

Flank, Peak, Zero Cross

Gate Mode determines where the gate places the measurement point after being triggered by a signal. Each gate mode will change the measured value on the same waveform.

Complete Control

Even with gloved hands

Choice of keypad, touchscreen or both lets you work with gloves, in rain or with oily hands, without fighting the interface. That reduces handling errors and speeds up scanning.

Ergonomic & Lightweight

Portable for the production line or out on site

The Dakota CMX10-DL delivers powerful ultrasonic gauging in a light 1.92lbs (872g) portable, ergonomic package, ideal for all-day inspections on the production line or out on site.

Bluetooth® & USB Built In

Keeping you connected

Using our free DakMaster™ Mobile App you can review data immediately on your mobile device, using the Bluetooth® built into the Dakota CMX10-DL.

Transducer Library

Easy to set up

The Transducer Library stores all the previously setup Lemo transducers in a convenient library to make it easier to switch between transducers while using the gauge.

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From inspection to professional reports *at the click of a button*

DakMaster™

It's not all about inspection, it's what you do next that counts. Save up to 30% of your working week by producing professional inspection reports in seconds using **DakMaster™** software.

1

Take Readings

It's not all about taking measurements but what you do with the collected data that matters. DakMaster™ is a fast easy to use, licence-free and multiple user software and mobile app for all your data management reporting and quality assurance needs.

2

Send to DakMaster™

Free DakMaster™ software transfers inspection data direct from Dakota NDT's Bluetooth® or USB enabled gauges direct to your PC, mobile or tablet.

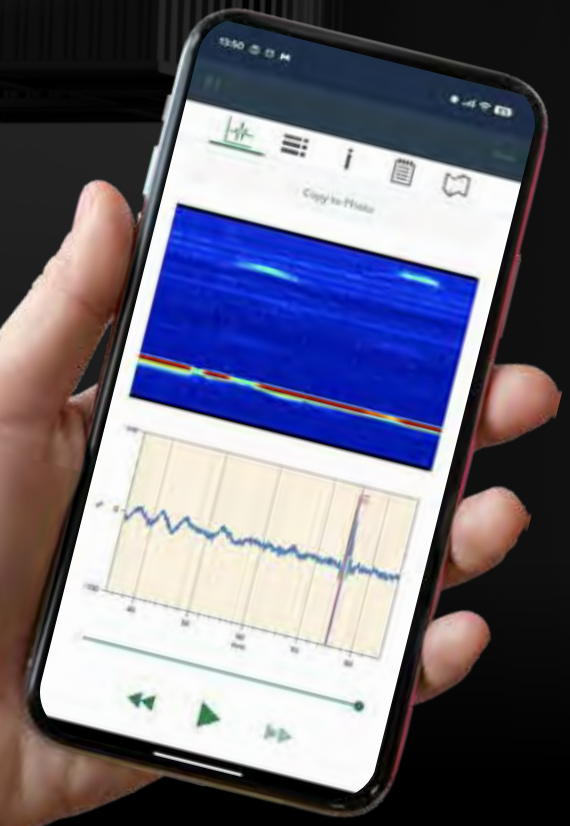
3

Create Professional Inspection Reports in Seconds

Inspectors can spend up to 30% of their working week producing reports. DakMaster™ saves time and money by producing professional bespoke reports - even when out on site.

Professional reports in seconds even when out on site, the DakMaster™ Software App *puts the office in your pocket*.

When on site, you can review data, using our free **DakMaster**™ Mobile App, press 'Generate PDF' to produce a professional report instantly. Email the report to your client seconds after you have finished inspecting or upload it via cloud technology so it can be accessed anywhere in the world.



Email, print or send
Export, print, .pdf or email directly from DakMaster™ Software at the click of a button.

Easy to connect
Connect using Bluetooth® to download data from a gauge's memory or record live readings.

Analyse
Analyse data and statistics, complete with measurement parameters such as A- Scan with RF, +RECT, -RECT, Full Wave Rectification.

Easy to use
Store all project data, documents and reports in easy to manage folders.

Collection Templates
Using measurement location points on images or photos to indicate the position for the next reading.

Live Readings & Statistics
Record each individual reading as it is taken and save it into batches within project folders.

Review
Review and store waveform recordings up to 10 seconds in duration at a rate of 20 A- Scans per second.

Add Photos & Notes
Take photos, add notes and comments.

GPS
Store GPS locations in batches and view location on Google Maps.

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Technical Specifications

Dakota CMX10-DL

FULL WAVE CAPTURE THICKNESS GAUGE

ULTRASONIC SPECIFICATIONS	
Screen Displayed Range	23.3” (592mm) (steel)
Measurement Modes / Range:	Pulse-Echo (P-E): 0.007” to 58.3” (0.18mm to 1480mm) (probe dependant)
	ThruPaint™: Echo-Echo (E-E): 0.007” to 23.3” (0.18mm to 592mm) (probe dependant)
	ThruPaint™ Verify: Echo-Echo Verify (E-EV): 0.007” to 11.7” (0.18mm to 296mm) (probe dependant)
	2nd Layer Thickness (PE2): 0.007” to 58.3” (0.18mm to 1480mm) (probe dependant)
	2nd Layer Thickness ThruPaint™ (EE2): 0.007” to 23.3” (0.18mm to 592mm) (probe dependant)
Velocity Range	0.0079 to 0.7874 in/µs / (200 to 20000 m/sec)
Transmitter Pulse	Square
Transmitter Pulse Voltage (peak-to-peak)	50 - 200V (User Adjustable in 1Volt steps)
Pulse Rise Time	<10 ns
Pulse Duration	25 to 250nS (Dependent on probe frequency)
Gain Control	0-74dB in 0.1dB steps features: Time Controlled Gain, Auto80
Frequency Range	1MHz - 20MHz

MEMORY	
Data Output and Storage	USB and Bluetooth® LE Data Output. 128MB Internal Storage, up to 32GB with External Memory Card
Log Formats	Sequential, Grid, Recording, Amplitude/Depth Colour Options
Screen Capture	On Gauge and Screen view function in DakMaster™
Note Ability	OBSTRUCT to indicate inaccessible, with notes
Full Traceability Feature	Set Up Library, Transducer Library, Calibration Library
Data Log File Format Options	Projects, Folders, Individual Files

PRODUCT FEATURES	
Accuracy and Resolution	Resolution: ±0.0001” (±0.001mm) Accuracy: 0.001” (±0.01mm) or ±1% of Reading (whichever is largest) *@ 5MHz ¼” on Steel.
Min & Max Measurement	(Steel @ 5920m/s) Minimum: 0.007” (0.18mm) Maximum: 23.3” (592mm) (Delay: 0.1” - 35” (-3mm - 888mm))
Calibration Options	Zero, 1 Point, 2 Point, Custom Velocity & Preset Material
Gate Modes	Flank, Zero-Cross, Peak
Number Gates	1-3 Depending on Mode Selected
Filter Settings	Low Pass (10Mhz, 20Mhz, 30Mhz), High Pass (0.5Mhz, 2.5Mhz, 5Mhz) and Broadband
Signal Averaging	1-32 samples - Adjustable
Time Corrected Gain (TCG)	Ramp, Curve (up to 16 points)
Pulse Repetition Frequencies (PRFs)	2KHz
Back Wall Echoe Suppression (BEA)	Yes
V-Path Correction	Automatically corrects for V-path (Dakota NDT transducers only)
DakMaster™ Software	PC Software for Reports, Configurations and Back ups Gauge Updates Via DakMaster™
DakMaster™ Mobile App	Record and Report Instantly via Mobile Device

TRANSDUCER	
Transducer Types	Dual Contact, Single Contact, Single Delay, Angular (Prove Up)
Auto Detect and Transducer Set Up	Feature compatible with ODU style Transducers

Technical Specifications

DISPLAY	
Display	800 x 480 pixels, Colour, Touchscreen, Graphical, TFT Display
Display Refresh Rate	60Hz (16ms)
Waveform Refresh Rate	20Hz (50ms)
Display and Recall Facilities	Numerical Reading, A- Scan, B- Scan and Video Recordings can be stored and retrieved in Data logs
A- Scan	Rectified +/-, RF, Full Wave
B- Scan	Timed Includes Recording and Analysis with 2 Curser Measurement
Differential Mode	Automatically calculates difference from nominal
Display Freeze	Freeze Screen and Overlay Signal on Screen
Expanded Gate	Expand signal displayed under gate
Transducer Stability Indicator	Speed 20Hz (50ms)
Display Colour Inversion	A- Scan Sunlight Assist
Brightness Adjust	Manual and automatic screen brightness level adjustment
5 Selectable Display Configurations	A- Scan, Statistics, Live Reading, Grid, Image Collect
Image Collect Library	Part Display Images (Multiple Formats)
Screen Share and Control	Remote Viewing Feature with Control

GAUGE SPECIFICATION	
Part Number	**CMX10-DL**
Operation of Gauge Controls	Keypad Only, Touchscreen Only or Keypad & Touchscreen Combined Control
Gauge Dimensions	7.1 x 4.1 x 2.0” (180 x 105 x 50mm)
Gauge Weight	1.92lbs (872g)
Operating Temperature	14°F to 122°F (-10 to 50°C)
Probe Sockets Type(s)	1/2x Lemo-00 1x ODU Smart Port
Power Supply	LI-Ion - Rechargeable Smart Battery or Mains Power Supply
Battery Life	9 to 15 hrs (Dependent on usage)
Ingress Protection (IP)	Dust tight and protected against low power water jets in any direction; equivalent to IP65
Certification	Designed for EN 15317
Warranty	1 year limited
Manufacture	Made in the United Kingdom
Packing List	Dakota CMX10-DL Gauge, Ultrasonic Couplant; 120ml (4fl oz), Power Supply (UK, EU and US) Adapters, Rechargeable Battery, Hand Strap (x1), Extension straps (x2), Screen Protector x 1, USB Cable, Calibration Certificate, User Guide, DakMaster™ download card, Transit Case

Built For Harsh Environments

Heavy duty, rubberised, impact resistant, dust and waterproof case up to IP65. Takes reliable measurements in a wide range of operating temperatures 14°F to 122°F (-10 to 50°C).

Long Battery Life

Work all day, everyday with up to 9 to 15 hrs, from a single full charge of the LI-Ion - Rechargeable Smart Battery or Mains Power Supply.

Ergonomic & Lightweight

Comfortably fitting in your hand and only 1.92lbs (872g), the Dakota CMX-10DL is fully portable for the production line or out on site.

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Ordering Information

Part Numbers	Description
CMX10-DL	Dakota NDT Full Wave Capture Corrosion & Precision Thickness Gauge

Part Numbers	Description
T92033669	Screen Protector, Pack of 5
T92033670	Hand Strap (including extension pieces)
T92033673	Transit Case
T92033668	USB Cable
T92033672	Rechargeable Smart Battery Pack Li-Ion 10.8V, 3.35Ah, 36.2Wh
T92033671	Power Supply with UK, EU and US Adapters

ULTRASONIC COUPLANT

Part Number International	Part Number USA	Description
T92015701	V-000-0001	Ultrasonic Couplant, 120ml/4fl oz
T92015701-5	-	Ultrasonic Couplant, 120ml/4fl oz, Pack of 5 Bottles
T92024034-7	-	Ultrasonic Couplant, 300ml (10fl oz)
-	V-000-0003	Ultrasonic Couplant, 354ml (12fl oz)
T92024034-8	T92024034-8	Ultrasonic Couplant; 500ml (17fl oz)
-	V-000-0004	Ultrasonic Couplant; 3.78Ll (1 US Gallon)

CALIBRATION BLOCKS

Part Number	Description
X-000-0001	4340 Steel: 5 Step - 0.100” to 0.500”
X-000-0002	4340 Steel: 4 Step - 0.250” to 1.0”
X-000-0022	1018 Steel: 5 Step -2.5 to 12.5mm

DUAL ELEMENT THICKNESS TRANSDUCERS - ‘INTELLIGENT’

Part Number International	Part Number USA	Type	Frequency	Diameter	Connector	Connection
TXC1M00EP-2	T-1049-0000	Dual Element - Standard	1MHz	1/2"	ODU	n/a
TXC5M00CP-10	T-1029-2700	Dual Element - Hi-Damped	5MHz	1/4"	ODU	n/a
TXC5M00CP-4	T-1029-2000	Dual Element - Standard	5MHz	1/4"	ODU	n/a
TXC5M00EP-10	T-1049-2700	Dual Element - Hi-Damped	5MHz	1/2"	ODU	n/a
TXC7M50BP-3	T-1019-3000	Dual Element - Hi-Damped	7.5MHz	3/16"	ODU	n/a
TXC7M50CP-4	T-1029-3300	Dual Element - Extra Resolution	7.5MHz	1/4"	ODU	n/a

DUAL ELEMENT THICKNESS TRANSDUCERS

Part Number	Type	Frequency	Diameter	Connector	Connection
T-104-0000	Dual Element - Standard	1MHz	1/2"	Potted	Side
T-102-1000		2.25MHz	1/4"	Potted	Side
T-104-1000		2.25MHz	1/2"	Potted	Side
T-101-2700	Dual Element - Hi-Damped	5MHz	3/16"	Potted	Side
T-102-2700		5MHz	1/4"	Potted	Side
T-104-2700		5MHz	1/2"	Potted	Side
T-101-3700		7.5MHz	3/16"	Potted	Side
T-102-3700		7.5MHz	1/4"	Potted	Side

SINGLE ELEMENT CONTACT TRANSDUCERS
- FINGER TIP 2nd Layer Function

Part Number	Type	Frequency	Diameter	Connector	Connection
T-4033-1855	Single Element - Finger Tip Contact	2.25MHz	3/8"	Microdot	Side
T-4023-2855		5MHz	1/4"	Microdot	Side
T-4033-2855		5MHz	3/8"	Microdot	Side
T-4023-4855		10MHz	1/4"	Microdot	Side
T-4033-4855		10MHz	3/8"	Microdot	Side

ANGULAR PROVE UP TRANSDUCERS - Corrosion Crack & Pit Detection

Part Number	Type	Frequency	Diameter	Connector	Connection
TF4M0045	Standard Shear Wave - 45 Deg	4MHz	10mm	Lemo OO	Side

SINGLE ELEMENT DELAY LINE TRANSDUCERS - 'INTELLIGENT'

Part Number	Type	Frequency	Diameter	Connector	Connection
TXC15M0CM	Single Element - Standard	15MHz	1/4"	ODU	n/a
TXC20M0CM		20MHz	1/4"	ODU	n/a

SINGLE ELEMENT DELAY LINE TRANSDUCERS

Part Number	Type	Frequency	Diameter	Connector	Connection
T-404-1507	Single Element - Standard	2.25MHz	1/2"	Microdot	Top
T-402-2507		5MHz	1/4"	Microdot	Top
T-404-2507		5MHz	1/2"	Microdot	Top
T-402-5507		15MHz	1/4"	Microdot	Side
T-402-6507		20MHz	1/4"	Microdot	Side

SINGLE ELEMENT DELAY LINE PENCIL TRANSDUCERS

Part Number	Type	Frequency	Diameter	Connector	Connection
T-481-4507	Single Element - Pencil 1/16" Tip	10MHz	3/16"	Microdot	Top
T-581-5507		15MHz	3/16"	Microdot	Top
T-681-4507	Single Element - Pencil 1/16" Tip	10MHz	3/16"	Microdot	Side

DELAY TIPS FOR SINGLE ELEMENT DELAY LINE TRANSDUCERS

Part Number	Type	Diameter	Material
F-000-7102	Delay Tip - Standard	1/4" x 3/8" L	Acrylic
F-000-7103		1/4" x 1/2" l	Acrylic
X-132-0000	Delay Tip - Cone	1/8"	Acrylic
X-532-0000		3/16"	Acrylic
X-633-0000	Delay Tip - Standard	1/4"	Graphite
X-533-0000	Delay Tip - Cone	3/16"	Graphite
X-152-0000	Delay Tip - Pencil	1/16" x 0.45 L	Acrylic
X-752-0000	Delay Tip - Pencil	1/8" x 0.45 L	Acrylic

TRANSDUCER CABLES

Part Number	Description
N-104-0020	4ft Single Lemo to Microdot
N-104-0000	4ft Cable LEMO 00 - LEMO 00 - Prove up transducer

MISCELLANEOUS TRANSDUCER ACCESSORIES

Part Number	Description
F-000-7000	Bell shaped Spring Loaded Probe Holder (V-Block) – Pencil Probes - Top Cable Entry Models Only
A-129-6003	6" Extension Wand for Single Element Microdot Transducers
F-000-7001	Bell shaped Spring Loaded Probe Holder (V-Block) – Dual Transducer - Tube Inspection

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Performance
Corrosion & Precision Thickness

New Generation
Corrosion & Precision Thickness

Flaw
Detection

Bolt
Tension

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