Cygnus 4+ General Purpose
Multi-Mode Ultrasonic Thickness Gauge

New generation of ultrasonic thickness gauges incorporating Multiple-Echo, Echo-Echo and Single-Echo measuring modes

"Simplicity through technology"

CYGNUS
INSTRUMENTS

NEW GENERATION OF CYGNUS MULTI-MODE THICKNESS GAUGES

The NEW Cygnus 4+ ultrasonic thickness gauge is small, tough and accurate.

Designed for the harshest of environments, with a simple to use keypad and intuitive menus and a color LCD display which can be viewed in all lighting conditions.

The twin shot injection molded enclosure has a soft but durable TPE outer skin which is both comfortable and extremely durable while the inner shell is strong, keeping the electronics totally sealed from the outside world.

The unit still relies on Multiple-Echo to provide simple and accurate measurements, with the added benefit of Echo-Echo and Single-Echo using twin crystal probes. Echo-Echo can be used for measurements on painted metals with potentially heavy back wall corrosion / pitting and Single-Echo for measurements on uncoated surfaces with heavy front face and/or back-wall corrosion and attenuative materials such as cast metals or plastics / composites.

KEY FEATURES

- Multiple-Echo for reliable, accurate through coating measurements
- Single-Echo and Echo-Echo measuring modes
- Large bright color LCD screen with automatic LCD back light
- Min / max measurement limit functions with visual and vibrate alert
- Extremely rugged enclosure - shock and impact to MIL STD 810G
- Environment sealing to IP67 - MIL STD810G
- Deep-coat mode, measures through coatings up to 20 mm (¾") thick
- Cygnus echo-strength bars assist thickness measurements in Multiple-Echo mode
- TPE over molded enclosure
- Buttons designed for minimum of 100,000 depressions
- Fully sealed battery compartment (contains any leaking battery fluids)
- A-scan display
- MSI™ (Measurement Stability Indicator) for Single-Echo and Echo-Echo modes
- Sequential data logging
- Automatic probe recognition for S2C and twin crystal probes.

MULTI-MEASURING MODE

Multiple-Echo uses three back wall echoes and measures remaining metal thickness while ignoring coatings. All measurements are error checked using 3 return echoes to give repeatable, reliable results. Accepted by all major classification societies. Uses single crystal probes for linear accuracy (and no probe zero required).

Echo-Echo uses two back wall echoes and measures remaining metal thickness while ignoring coatings up to 1 mm (0.04") thick using twin crystal probes for improved detection of back wall corrosion and pitting.

Single-Echo uses one back wall echo, measures remaining metal thickness on uncoated surfaces and is possibly helpful for areas with extreme front face or back wall corrosion and pitting. Effective on highly attenuative materials such as cast metals, plastics and composites.

CYGLINK SOFTWARE

CygLink is a Windows® application which is used to transfer information from the Cygnus 4+ thickness gauge to a computer. The information can then be used to create reports which can be analyzed, stored and exported.

MSI™ (MEASUREMENT STABILITY INDICATOR)

This clever technique helps ensure only stable measurements are displayed in Echo-Echo and Single-Echo modes. Displayed measurements change color from red to green and vibrate alert to indicate a stable reading.

DATA LOGGING

- Data logging record format using linear based measurements
- 5,000 measurement points (including A-scan) per record (*records quantity dependent on SD card capacity*)
- The user can log 'obstructed' and 'no reading' if no thickness measurement can be obtained
- There are menu functions to: step back; retake-last; stop and resume logging; review measurements; protect records; delete records
- Data logging screen shows average, highest and lowest thickness measurement values from the record
- Records can have optional minimum and reference thickness values set which are used to highlight logged measurements, i.e. red if under min, green if between min and ref.
- Records are saved to removable micro-SD card
- Records are easily transferred to a computer via USB and CygLink software where they can be examined, saved, turned into a PDF report or exported to a CSV file.

CYGNUS PROBES AND CABLES

Stainless Steel INOX <u>Twin Crystal</u> Probes: Used in Echo-Echo and Single-Echo modes and focused ultrasound beam with improved measurability on extreme back wall corrosion and pitting.

Stainless Steel INOX <u>Single Crystal</u> Probes: The INOX probes have an updated ergonomic design and an easier to read frequency, identification and serial numbering. All frequencies of INOX probes have a black face and a color coding system to identify probe frequencies. Used in Multiple-Echo mode, these probes require no zeroing, have a high linear accuracy, are ideal for general thickness gauging and on pipes and have replaceable wear membrane for long life.

Cygnus Cables: Using standard industry connectors the probe lead uses a custom made over molded cable that offers superior flexibility and resistance to oils and ultraviolet light. The cable will not stiffen after exposure to ultraviolet light.

STANDARD KIT CONTENTS

Cygnus ultrasonic thickness gauge; padded carry case; operating manual; adjustable neck strap and loops; wrist strap; accessory pouch; spare membranes; surface and membrane couplant; test block; 3 x AA batteries; data transfer cable; SD card; optional Krusell® belt clip and attachments accessory.

SPECIFICATION

Materials	Sound velocities between 2000 - 9000 m/s (0.079 - 0.35 in/ms) - covers virtually all common engineering materials
Accuracy	±0.1 mm (±0.004") or 0.1% of thickness measurement, whichever is greatest, when calibrated in accordance with Cygnus Instruments calibration procedure
Resolution	Multiple-Echo mode - 0.1 or 0.05 mm (0.005" or 0.002") / Single-Echo and Echo-Echo modes - 0.01 mm (0.0004")
Probes	Single crystal probes: • 6 mm (¼") - 5.0 MHz (S5A) • 13 mm (½") - 2.25 MHz (S2C (standard)), 3.5 MHz (S3C) or 5.0 MHz (S5C) • 19 mm (¾") - 2.25 MHz (S2D) Twin crystal probes: • 5 mm (0.2") - 7.5 MHz (T7A) • 8 mm (0.3") - 5.0 MHz (T5B (standard)) • 13 mm (½") - 2.0 MHz (T2C (for attenuative materials such as cast metals, plastics and composites))
Measurement Range in Steel	Single crystal probes: • 3 - 250 mm (0.120" - 10.00") with 2.25 MHz probe (S2C/D) • 2 - 150 mm (0.080" - 6.000") with 3.5 MHz probe (S3C) • 1 - 50 mm (0.040" - 2.000") with 5.0 MHz probe (S5C/A) Twin crystal probes in Single-Echo: • 3 - 250 mm (0.120" - 10.00") with 2.0 MHz probe (T2C) • 2 - 200 mm (0.080" - 7.900") with 5.0 MHz probe (T5B) • 1 - 60 mm (0.040" - 2.400") with 7.5 MHz probe (T7A) Twin crystal probes in Echo-Echo: • 5 - 100 mm (0.200" - 4.000") with 2.0 MHz probe (T2C) • 4 - 100 mm (0.160" - 4.000") with 5.0 MHz probe (T5B) • 3 - 50 mm (0.120" - 2.000") with 7.5 MHz probe (T7A)
Connector	Twin Lemo 00
Power	3 x AA batteries
Battery Life	10 hours minimum
Electronics	Dual channel pulser
Display	2.4" quarter VGA LCD
Size	132 mm x 82 mm x 34 mm (5.20" x 3.23" x 1.34")
Weight	300 grams (10.58 oz) inc. batteries
Operating Temp.	-10°C to 50°C (14°F to 122°F)
Data Logging	Capacity for up to 5000 points including A-scans
Computer Software	CygLink allows remote logging and viewing of A-scan graphs. Survey and report generation to PDF file. Graphic analysis of data and statistical calculations. Designed for Windows 7 and Windows 8.
Environmental Rating	IP67 MIL STD 810G Method 501.6 (high temp +55°C) MIL STD 810G Method 502.6 (low temp -20°C) MIL STD 810G Method 507.6 (humidity 95%) MIL STD 810G Method 512.6 (immersion - 1 metre for 30 mins)
Shock and Impact	MIL STD 810G Method 514.7 (vibration - 1 hour each axis) MIL STD 810G Method 516.7 (shock 20g - 11ms half sine shock pulse, 40g 11ms in each axis) MIL STD 810G Method 516.7 (26 drops - transit drop 1.22 m)
Compliance	CE, British Standard BS EN 15317:2013 (specification for the characterization and verification of ultrasonic thickness measuring equipment)
Environmental	RoHS, WEEE compliant
Warranty	3 years on gauge and 6 months on probe

**Specifications are subject to change*

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CYGNUS INSTRUMENTS

LLOYD'S REGISTER QUALITY ASSURANCE ISO9001

UKAS MANAGEMENT SYSTEMS 001

WARRANTY 3 YEARS CYGNUS GAUGE WARRANTY

Manufactured in the UK