Installation & Maintenance Instructions

UT5000

Intrinsically Safe Thickness Gauge

Supplied by

247able.com

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CorDEX

CONNECT

USER MANUAL

UT5000
INTRINSICALLY SAFE
THICKNESS GAUGE

RUGGED AUTHORITY

www.cord-ex.com

Congratulations – You are the owner of the next generation **ultrasonic thickness gauge** designed and certified specifically for use in **hazardous (explosive) atmospheres.**

UT5000 is certified ATEX/IECEx as follows:

- Tested for Zone 1 IIC T4 hazardous areas

Please ensure that the certification matches or exceeds the hazardous area characteristics that will be clearly displayed on site.

Whilst in a hazardous area, do not attempt to change batteries or download images, these tasks should only be undertaken after returning to a safe area.

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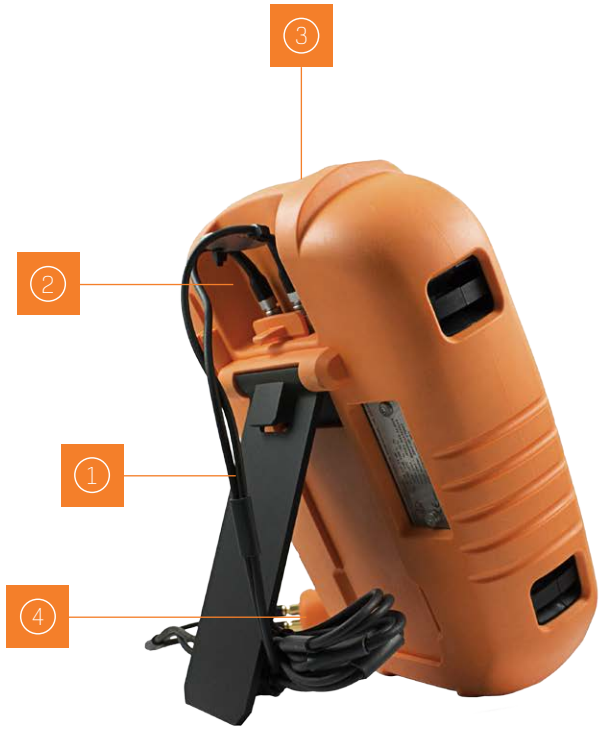
GETTING TO KNOW YOUR UT5000



1 Shock-resistant overboot

2 RFID Reader

3 Keypad buttons

4 Probe

5 Power button

6 Calibration disc

7 USB port

* Battery compartment beneath deskstand and shock resistant overboot.

1 Desk stand

2 Probe connectors

3 RFID Reader

4 Probe

1
RFID detect/ID

2
Measurement

3
Battery level meter

4
Key function

5
Key

6
Power button

7
Alarm min/max values

8
Settings: Pulse rate Material Velocity

OVERVIEW

The UT5000 measures material thickness for Non-Invasive Testing (NIT) and Predictive Maintenance (Pdm) on pipelines and fixed equipment within hazardous locations. UT5000 is a next-generation tester packed with proven technologies:

- CorDEX CONNECT uses RFID + Software to tag measurements with their location then organizes the data, giving the engineer a view of the pipeline at any specific location.
- The unique corrosion mode option helps identify spots of thinning.
- MultiECHO™ technology improves accuracy on uneven surfaces; onboard memory stores up to 1000 readings.
- Designed for rugged environments, the shock-resistant skin protects the 3.1 inch colour screen and has easy-to-feel, raised buttons. The dual-element, 4MHz transducer is adjustable up to 8Hz with accuracy of +/- 0.05mm.

PACKAGE CONTENTS

Carefully unpack your UT5000 Intrinsically Safe Thickness Gauge and ensure that you have the following items:

- UT5000 Intrinsically Safe Thickness Gauge
- Hard Carry Case
- 1 x Probe
- USB Communication Cable
- Couplant Gel
- Battery
- Wrist Strap
- RFID tags

GETTING STARTED

Inserting The Battery

The battery compartment is in the rear of the instrument under the orange shockresistant overboot.

WARNING! Use only a Tadiran 3.6V Lithium Thionyl Chloride Cell (19.0Ah, SL-2780/S, CorDEX Part No: CDX5000-327). The use of any other type of battery is strictly forbidden!

To change the battery:

1

Remove the orange shock-resistant overboot by stretching it over the lower corners of the unit at the front. It may help to remove the stand from the back and to open the USB and probe connector covers.

2

Half turn the two screws on the compartment cover and then carefully lift off the cover.

3

Make sure that the rubber sealing of the cover is not damaged or removed from the guiding notch.

4

Insert the battery.

WARNING! - Ensure correct orientation according to the sketch on the battery cover to avoid internal damage.

When exchanging the battery, the memorized parameter and calibration values are deleted. Therefore, you need to execute a new calibration and enter the relevant parameters again after exchange of the batteries.

After battery replacement, switch the instrument on/off twice to reset it to a predefined operating status. All previous settings will be restored to the tester after connecting to the CorDEX CONNECT™ software, or the UT5000 Mini app.

Always use with outer orange overboot fitted and never open the battery or USB compartments in a hazardous environment.

Connecting the Probe

WARNING! Only approved transducer (CorDEX part no: ExTC4/10) with approved cable (CorDEX part no: CDX5000-221) can be operated in ATEX zone environments.

Press the probe plugs (it does not matter which way round the connectors are fitted) into the connector sockets on the rear of the UT5000.

Turning the Power On/Off

To switch the UT5000 on or off, press the Power button and hold it down for about 5 seconds. The UT5000 has an AUTO SLEEP feature: it turns off automatically when the device has not been operated for a fixed period of time (see page 18). To resume the operation condition, press any button.

Calibration/ Zeroing

The UT5000 has a calibration disc mounted on the front of the unit. To calibrate the probe:

1. Apply a drop of the supplied couplant (see page 12) to the disk or the probe.
2. Press the probe onto the disc and hold it firmly.
3. Press the SETUP key.
4. Use the arrow keys to highlight Transducer Setup ; then press the SEL key.
5. Use the arrow keys to highlight Probe zero built in ; press the SEL key.
6. After the UT5000 has taken several measurements, press the SEL key.

The unit is now zeroed and ready for use.

REGISTERING YOUR UT5000

Connecting The UT5000

Using the supplied USB cable, connect the UT5000 to a PC with a working internet connection. Windows will detect the connection and display the Found New Hardware prompt. Allow Windows to search for the appropriate device driver.

Installing the UT5000 Mini-App

You can install the UT5000 Mini App from the supplied CD or by downloading it from the CorDEX Instruments website.

Load the CD into your PC and follow the on-screen instructions.

Alternatively, download the Mini App from:
http://miniapps.cordexinstruments.com/UT5000/
Click on the DOWNLOAD SOFTWARE button to proceed.

The Mini App requires Windows Installer 3.1 and .NET Framework 3.5 SP1. These may already be present on your PC but, if not, the installer will download and install the necessary files automatically. This is, however, a 197MB download so it may take some time, depending on your connection speed. Alternatively, you can install the files from the supplied CD.

Registration

The UT5000 Mini App starts automatically and prompts you to enter your registration details. You will need to enter the serial number for your unit. This is shown on the rating plate on the back of the unit. You can also display the serial number on screen:

1. Press the **VIEW** button on your UT5000.
2. Press the down arrow to highlight the **ABOUT** option.
3. Press the **SEL** button.

Complete the registration form and then click on the Activate button. Registration may take a few seconds to complete. Following registration, you will have full access to the application to download data, upload material and gauge settings and RFID information.

Following installation, you will be able to start the application in future from the Start menu: select **All Programs > CorDEX Instruments > UT5000.**

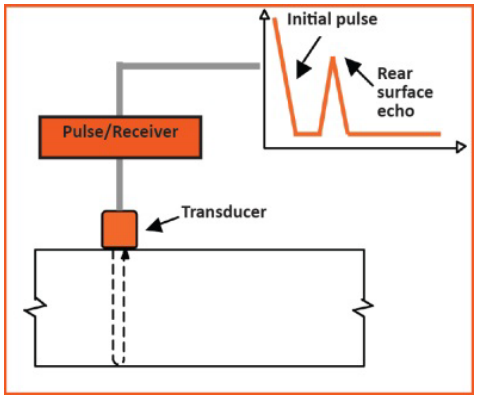
TAKING MEASUREMENTS

Using the Probe

The probe face is split into two halves: one half transmits ultrasonic sound waves and the other half, separated across the centre by a barrier, receives any reflected signals.

The probe measures the thickness of the material directly beneath the probe face. The accuracy of the measurements depend on good contact with the target material. In particular, you must ensure that there are no air gaps or pockets between the material and the probe face. To achieve a good contact, apply a droplet of the couplant gel to the target area and press the probe firmly onto it. Continue to apply gentle downward pressure to the probe during the measurements.

Sometimes it can be difficult to obtain good contact with the target material. Be aware that layers of paint or rust can interfere with the transmission of the ultrasound.



T = (V) x (t/2)

where

T = the thickness of the part

V = the velocity of sound in the test material

t = the measured round-trip transit time

Measurement Modes

The UT5000 supports two types of measurement:

Single Measurement Mode
The gauge stores a single spot thickness. This is important when inspecting pipeline thickness in a specific location. You can configure single mode measurements to include up to four consecutive Txpulse measurements using the Multi-Echo setting (see page 13). The default is one Txpulse measurement.

Continuous Measurement (Corrosion) Mode
In this mode, the gauge continues to take measurements at the specified pulse Frequency until the STOP key is pressed. The UT5000 averages all valid measurements while in this mode storing maximum, minimum and average values.

Use this mode for basic corrosion inspection: move the probe slowly over a 100mm square area and monitor the maximum and minimum thickness in the inspected area, along with the average thickness measured.

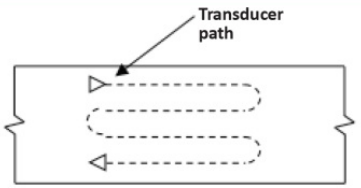
Setting the Mode

The pulse frequency determines the rate of repeated measurements. To change the pulse frequency:

Press the FREQ key, or Press the SETUP key. Use the arrow keys to highlight Pulse Frequency, then press the SEL key.

For single measurements, choose Single shot.

For continuous measurements, choose from the following options: 1, 2, 3, 4, 5, 6, 7 or 8 Hz. Measurements will be taken continuously at the selected rate and continue until the STOP key is pressed.



The snake shape transducer path enables corrosion to be detected early by using max/min and average readings taken across the path, a must for any NDT professional.

Selecting Material Velocity

To carry out an accurate measurement, it is important that you provide the UT5000 with the correct velocity of sound in the medium to be measured. The UT5000 contains a table of values for the most common materials. For more unusual materials, you may need to enter the velocity manually.

To change the current material velocity, press the **VEL** key on the main display.
Use the **UP** or **DOWN** keys to choose from the following options:

- Material User Defined
- Material From List

Having made your choice, press the **SEL** button to continue.

Material From List
This option allows you to select a velocity from the UT5000's internal table of predefined materials (see page 10). You can add materials to the velocity data table using the host system (UT5000 Mini-App).

To select a new material, use the arrow keys to highlight the required material, then press the SEL key. The new material and velocity replaces the current selection and, until the material is changed, all measurements are calculated using the user-defined velocity value.

Material User Defined
Use this option to enter material velocity data.
CAUTION! For user defined data, you are overriding any safety checks within the gauge. If you attempt to override a preloaded material velocity value, the UT5000 prompts you to confirm any changes: "Material velocity data mismatch, continue YES/NO".

To define a new material:

1. Select UD Material Text.
2. Enter the name of the material you want to define:
   - Use the arrow keys to highlight the required character, then press the SEL key.
   - Repeat this procedure until you have entered the full text.
3. Use the arrow keys to highlight ACCEPT, then press the SEL key.
4. Select UD Material Velocity.
5. Enter the velocity for the material:
   - Use the arrow keys to highlight the required digit, then press the SEL key.
   - Repeat this procedure until you have entered the full value.
6. Use the arrow keys to highlight ACCEPT, then press the SEL key.

The new material and velocity replaces the current selection and, until the material is changed, all measurements are calculated using the user-defined velocity value.

Taking a Measurement

Before you take a measurement check that you have:

- Fitted the probe (see page 9)
- Applied couplant to the target area (see page 12).
- Selected the required measurement mode (see page 13).
- Chosen the correct material velocity (see page 14).
- Zeroed/calibrated the gauge (see page 9).

To take the measurement:

If an RFID tag applies to the target area, press the **SCAN** button. The unit must be within 5cm of the tag for reliable detection. If a tag is detected, all subsequent measurements will be associated with the tag. If you have set up the tag with material and alarm settings, these are displayed by the UT5000.

1. Press the probe onto the target area, attempting to exclude all air at the contact point.
2. Holding the probe firmly, press the UT5000's **MEAS** key. If you have selected a pulse frequency, the UT5000 displays the maximum and minimum values obtained so far, and the average measurement.
3. Press the **STOP** key to stop measuring. If any of the measurements exceed the defined alarm settings for the RFID tag location, the corresponding alarm setting is displayed with red text.

If you want to store the measured values, press the **SAVE** key. To download all saved measurements to a PC, see page 19.

RIFD TAG SETUP

Detecting a Tag

To carry out an accurate measurement, it is important that you provide the UT5000 with the correct velocity of sound in the medium to be measured. The UT5000 contains a table of values for the most common materials. For more unusual materials, you may need to enter the velocity manually.

Tag Alias

Use the on-screen keyboard to define the name of the RFID Tag. Use the arrow keys to highlight the required character, then press the **SEL** key. Repeat this procedure until you have entered the full name. Use the arrow keys to highlight **ACCEPT**, then press the **SEL** key.

Material Velocity

Select a predefined material and velocity from the UT5000's internal table or define your own. The value will be assigned to the RFID Tag. This procedure has been described on page 14.

Setup Alarms

Set the low and high alarms for thickness measurements within the vicinity of this RFID Tag.

To set an alarm, highlight the Low or High alarm option, then press the **SEL** key. Use the arrow keys to highlight the required digit, then press the **SEL** key. Repeat this procedure until you have entered the full value. Use the arrow keys to highlight **ACCEPT**, then press the **SEL** key.

The **ALARM** key on the main display provides a shortcut to this menu option.

You can also set up RFID tag information through the UT5000 mini app (see page 11).

TRANSDUCER SETUP

Pulse Frequency

The pulse frequency determines the rate of repeated measurements. To change the pulse frequency:

- Press the FREQ key, or
- Press the SETUP key. Use the arrow keys to highlight Pulse Frequency, then press the SEL key

Choose from the following options:

- Single shot
- The UT5000 takes one measurement
- 1, 2, 3, 4, 5, 6, 7 or 8 Hz
- Measurements are taken continuously at the selected rate and continue until the STOP key is pressed

Transducer Select

Identify the type of transducer probe, e.g. 4MHz transducer.

Multi Echo

The Multi Echo option allows averaging of individual measurements for greater accuracy on uneven surfaces.

Choose from the following options:

- Off
- 2,3 or 4

Use the arrow keys to highlight the required option then press the SEL key.

Probe Zero Built In

Select this option to calibrate/zero the probe using the UT5000's built-in calibration disc (see page 9).

Probe Zero/Cal Double

Select this option to calibrate/zero the probe using the UT5000's built-in calibration disc (see page 9).

Measure Material Velocity

Select this option to estimate the material velocity for a sample of known thickness.

GAUGE SETUP

To display the Gauge Setup menu, press **SETUP**. Then, use the arrow keys to highlight Gauge Setup and press the **SEL** key.

Choose from the following options:

- Date Format
- Sleep Timer
- Units
- Handedness

Use the arrow keys to highlight the required option, then press the **SEL** key.

Date Format

Choose from the following formats:

- YYYY/MM/DD
- MM/DD/YYYY
- MM/DD/YYYY

The time and date are updated automatically whenever you connect to the UT5000 mini app, CorDEX CONNECT or to CorDEX CAMS. Time and Date cannot be set manually.

Sleep Timer

To save power, the UT5000 will switch off after the specified period of inactivity. Choose the time period: 1min, 2min, 3min, 4min or 5min.

Units

Choose whether the UT5000 uses and displays metric or imperial units.

Handedness

Choose whether the main functions of the UT5000 use the buttons on the left or right side. The "handedness" setting refers to the hand used by the operator to hold the device. For example, if the operator holds the device in their right hand, a 'right' handedness setting ensures that the main functions of the UT5000 are operated by buttons on the left side of the unit.

You can also set the Date Format and Sleep Timer using the UT5000 mini app.

VIEWING DATA

To view stored data, press the **VIEW** key on the main display. Select **STORED DATA**, then press the **SEL** key.

Choose from the following options:

- Stored Measurements
- Reset Basic Gauge Setup

Stored Measurements

Data is listed for each registered RFID Tag in the following format:

- RFID Tag
- Tag Alias
- Material, source and name, e.g. From List: Alumin
- Vel: Material velocity
- Min: Minimum measurement
- Max: Maximum measurement
- Mea: Average measured value
- Date: date of last measurement
- Time: time of last measurement

Use the up and down arrow keys to scroll through saved measurements.

Reset Basic Gauge Setup

Select this option to restore the factory default gauge settings, for example, Pulse Frequency. Tag and material information is not affected.

Never open the battery or USB compartments in a hazardous environment.

USING THE MINI-APP

Starting the Mini-app

Connect your PC to the gauge using the supplied cable. Run the UT5000 miniapp by choosing:

Start > All Programs > CorDEX Instruments > UT5000

The following functions are accessed in the USB mode:

- Adding/editing material velocity information
- Adding/editing RFID tag information
- Editing gauge settings (date format and sleep timer period)
- Download saved measurements

Adding/Editing/Deleting Materials

- To add a new material, type its Name, enter a Velocity (m/s) and then click on the Add/Edit button.
- To edit the information for an existing material, select it in the list and then change the name and velocity as required. Click on the Add/Edit button.
- To delete an existing material, select it in the list and click on the Delete button.

Adding/Editing/Deleting Tags

- To add a new material, type its Name, enter a Velocity (m/s) and then click on the Add/Edit button.
- To edit an existing material, select it in the list and click on the Edit button. Change the RFID Alias and Alarm Settings as required. To apply a material to the tag, select it in the Materials list and then click on the Grab button.
- To delete an existing material, select it in the list and click on the Delete button.

Gauge Setup

You can use the Mini App to change the Date Format and to set the Sleep Time. You can also edit these parameters through the Setup menu (see page 14).

Date Format
Choose from the following Date Formats:
DD/MM/YYYY
MM/DD/YYYY
YYYY/MM/DD

Sleep Timer
To save power, the UT5000 will switch off after the specified period of inactivity. Choose the time period: 1, 2, 3, 4 or 5 minutes.

Get/Clear Readings

To download all saved readings in CSV file format:

1. Click on the **Get Readings** button. Readings are stored in the

My Documents > CorDEX Instruments > UT Gauge data files folder.

2. Choose whether you want to clear the entries from the gauge.

If you have enabled the appropriate options in Windows, the data file is automatically opened in the PC's default application for viewing csv files. To view the settings on your PC:

- Open Windows Explorer and select: Tools > Folder Options > File Types.
- Scroll down to and select CSV.
- Click on the **Change** button to associate an application with CSV files and choose how the file opens.

To clear readings from the gauge without downloading, click on the **Clear Readings** button.

Specification	
Certification	Tested for Zone 1 IIC T4 hazardous areas No hot work permit necessary
Memory	Stores up to 1000 measurements
Screen	3.1" RGB TFT colour screen with backlight Right/left handed set up
Material Velocity Selection	Preloaded via Drop-Down menu, or user defined.
Transducer	Dual Element
Pulse Rate	Standard transmit pulse rate of 4Hz Adjustable from single shot up to 8Hz
Receiver Bandwidth	1MHz to 15MHz (-3dB points)
Frequency	4MHz, 3mm up to 100mm
Accuracy	+/- 0.05mm
RFID Tag Reader	• Operates with 13.54MHz passive tags • Detection range up to 5cm • Supports ISO/IEC 15693-2, ISO/IEC 18000-3 tag formats
Battery Details	• 3.6V Lithium Thionyl Chloride Cell (19.0Ah, SL-2780/S, Farnell Part No: 118-7256) • 100 hours continuous operation with back light restrictions • Low battery warning
Operating Temperature	-10 to +50°C
Interface	USB connector
Dimensions (excluding battery)	160mm (W) x 215mm (H) x 63mm (D)
Weight	930g (without probe)

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Ref. ID 5001, Rev. A

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QUICK START GUIDE

UT5000
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QUICK START GUIDE

- Check hard carrying case contents include UT5000, probe, information CD, calibration block, couplant gel, wrist straps, RFID tags, USB communication cable.
- Ensure a fresh battery is fitted with correct polarity – WARNING – incorrect polarity will damage your UT5000 requiring back to factory repair not covered by warranty.
- Connect the probe lead to UT5000 and ensure connectors are fully pushed home.
- Power on UT5000 by pressing and holding power switch for at least 5 seconds.
- Power off UT5000 by pressing and holding power switch for at least 5 seconds.

To calibrate UT5000 after attaching the probe:

1. Calibration must be performed every time the probe is detached/attached.
2. Ensure your probe lead is connected to your UT5000.
3. Power on your UT5000.
4. Press the setup key [SETUP].
5. Highlight 'transducer setup' from the list using arrow keys, then press select key [SEL].
6. Highlight 'probe zero/cal double' from the list using arrow keys, then press select key [SEL].
7. Apply couplant gel to calibration step wedge on lowest and highest steps.
8. Measure first step and then enter known step thickness.
9. Repeat the measurement process for the opposite end of the calibration step wedge.
10. Once this process is complete, your device has been two point calibrated.

To take a simple thickness measurement:

1. Press velocity key [VEL].
2. Using arrow keys select required material velocity from the pre-loaded list [SEL].
3. Press Frequency key [FREQ].
4. Highlight 'single shot' from list using arrow keys, then press select key [SEL].
5. Apply couplant gel to material surface.
6. Place probe against material surface.
7. Press measure [MEAS].
8. To save measurement for later use press save key [SAVE].

To edit an RFID tag:

NOTE: When an RFID tag is scanned for first time it will automatically prompt you to set the following:

A. Rename the RFID Tag.

B. Assign a material velocity to the RFID Tag.

C. Set minimum/maximum alarms for the RFID Tag.

D. Assign either pulse echo or echo-echo measuring type.

E. Assign up to 9 reference points.

Otherwise:

1. Place UT5000 within range of RFID Tag.
2. Press the RFID scan key [SCAN].
3. Press setup key [SETUP].
4. Highlight 'tag setup' from the list using arrow keys, then press select key [SEL].
5. Highlight 'edit tag alias' from the list using arrow keys, then press select key [SEL].
6. Highlight 'del' from the list using arrow keys, then press select key [SEL] until previous alias is removed.
7. Enter required tag alias using arrow keys, pressing select key [SEL] after each digit.
8. When required name is entered scroll to 'accept' and press select key [SEL].

To manually enter material velocity data:

1. Press the setup key [SETUP].
2. Highlight 'material velocity' from the list using arrow keys, then press select key [SEL].
3. Highlight 'material user defined' from the list using arrow keys, then press select key [SEL].
4. Highlight 'UD material text' from the list using arrow keys, then press select key [SEL].
5. Enter required material name using arrow keys, pressing select key [SEL] after each digit.
6. When required name is entered scroll to 'accept' and press select key [SEL].
7. Highlight 'UD material velocity' from the list using arrow keys, then press select key [SEL].
8. Enter required material velocity using arrow keys, pressing select key [SEL] after each digit.
9. When required velocity is entered scroll to 'accept' and press select key [SEL].
10. Press escape key [ESC] to return to front screen.

For more detailed information on using your UT5000 and other features please refer to the operating manual on the CD included.

CorDEX

CONNECT

INSTRUCTIONS FOR SAFE OPERATIONS

UT5000
INTRINSICALLY SAFE ULTRASONIC THICKNESS GAUGE

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READ THIS FIRST

The CorDEX UT5000 thickness gauge is a gauge for measuring the wall thickness of pipes or tanks.

Read and understand all Warnings and Cautions before using this product.

Safety Information

This instruction manual contains information and warnings that must be observed for safe operation under the conditions described.

Faults and Damage

If there are any grounds for believing the unit is no longer safe to use, it must be taken out of service and measures taken to prevent its further unintentional use. The safety of the unit may be impaired if, for example:

- External damage to the housing is visible
- The unit has not been stored correctly
- The unit has suffered transport damage

Safety Regulations

When using the UT5000, the appropriate regulations must be observed to avoid incorrect operation of the unit.

ATTENTION! Please make sure that the case is securely fastened when using the unit. The unit must not be opened in the hazardous area. Only probes intended for this instrument must be used.

Batteries

If you change the battery, make sure that the replacement is suitable for the purpose.

The use of different batteries is strictly forbidden.

Calibration

Calibration must be carried out by the manufacturer since the protective circuits must be checked after calibration for safety reasons.

EXCHANGING BATTERIES

Batteries are inserted into the compartment in the bottom side of the instrument.

To change the battery:

- Half turn the screws on the compartment cover and then carfully life the cover.
- Make sure that the rubber sealing of the cover will not be damaged or removed from the guiding notch.
- Insert the new battery.

WARNING! Ensure correct orientation according to the sketch on the battery cover to avoid internal damage to the tester.

When exchanging batteries, the memorized parameter and calibration values are deleted. Therefore you need to execute a new calibration and enter the relevant parameters again after exchange of the batteries.

After battery replacement, switch the instrument on/off twice to reset it to a predefined operating status. All previous settings will be restored to the tester after connecting to the CorDEX CONNECT™ software, or the UT5000 Mini app.

ATTENTION! Only use a 3.6V Lithium Thionyl Chloride Cell. The use of different batteries is strictly forbidden.

OPERATIONAL CAUTIONS

The cautions contained in this section do not relate specifically to safe use in hazardous area applications but should be followed to help prevent damage to the device or personnel.

- Keep out of reach of children
- The UT5000 is a precision instruction. Do not drop it, strike it or use excessive force when handling

Maintenance

For safety critical maintenance, please refer to EN60079:17

CERTIFICATION

Model	UT5000
ATEX Certificate No.	Baseefa 11ATEX0114
IECEx Certificate No.	IECEx BAS 11.0094
Certificate Type	II 2G Ex ib IIC T4 Gb
USB Terminal parameter	Um253V
Ambient Temperature	Tamb -10 to +50°C
Power Supply	1x CorDEX Instruments Battery Part Number: CDX5000-327

EC DECLARATION OF CONFORMITY

CorDEX

Cordex Instruments Limited
1 Owens Road
Skippers Lane Industrial Estate
Middlesbrough
TS6 6HE

Declaration No. SO/8 Rev 2

EC Declaration of Conformity
in accordance with EEC ATEX Directive 94/9/EC

We,

CorDEX Instruments Ltd.

Hereby declare that the products described below

Product: Ultrasonic Thickness Gauge
Model: UT5000

are in conformity with the essential health and safety requirements of Council Directive 94/9/EC relating to equipment intended for use in potentially explosive atmospheres (ATEX Directive) Ex II 2GD, Ex ib IIC T4 Gb Ex ibD IIIB T200°C Db Tamb (-10°C to +50°C) equipment, by the application of the following Standards:-

EN 60079-0:2009	Explosive atmospheres - Equipment: General requirements
EN 60079-11:2007	Explosive atmospheres. Equipment protection by intrinsic safety "i"
EN 61241-11:2005	Electrical apparatus for use in the presence of combustible dust. Protection by intrinsic safety "iD"

as certified by Notified Body Number 1180 Baseefa Ltd, UK by EC-Type Examination Certificate: Baseefa11ATEX0114 and are subject to the procedure set out in Annex VII of Directive 94/9/EC and these procedures are in conformity with the requirements of EN 13980:2002 under the supervision of Notified Body Number 0518, SIRA Certification Service Rake Lane, Eccleston, Chester, CH4 9JN.

It is ensured through internal measures that the products conform at all times to the requirements of the current EEC Directives and relevant standards.

Signature: M. Hall Authorised Person

Position: Director on behalf of CorDEX Instruments Ltd

Date: 07/10/2014

Product Serial number

Better:Better_Work:CorDEX:03_CorDEX_Products:CorDEX_Products_UT5000:CorDEX_Products_UT5000_ECDeclaration:EC Declaration of Conformity (UT5000) Rev 2.docx

ATEX CERTIFICATION

Certificate Number
Baseefa11ATEX0114/1

Issued 21 February 2012
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1 **SUPPLEMENTARY EC - TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3 Supplementary EC - Type Examination Certificate Number: **Baseefa11ATEX0114/1**

4 Equipment or Protective System: **Ultrasonic Thickness Gauge**

5 Manufacturer: **CorDEX Instruments Limited**

6 Address: **Middlesbrough, TS6 6HE**

7 This supplementary certificate extends EC – Type Examination Certificate No. Baseefa11ATEX0114 to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

8 Item 9 of the original Certificate is replaced by "Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0:2009 EN 60079-11:2007 EN 61241-11:2005

except in respect of those requirements listed at item 18 of the Schedule."

9 The marking of the equipment has changed from the original Certificate and shall include the following:

⟨Ex⟩ **II 2GD Ex ib IIC T4 Gb Ex ibD IIIB T200°C Db T_{amb} (-10°C to +50°C)**

This certificate shall be held with the original certificate and may only be reproduced in its entirety, without any change, schedule included.

Baseefa Customer Reference No. **6684** Project File No. **11/0942**

This certificate is granted subject to the general terms and conditions of Baseefa. It does not necessarily indicate that the equipment may be used in particular industries or circumstances.

Baseefa
Rockhead Business Park, Staden Lane,
Buxton, Derbyshire SK17 9RZ
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Baseefa is a trading name of Baseefa Ltd
Registered in England No. 4305578. Registered address as above.

R S SINCLAIR
DIRECTOR
On behalf of
Baseefa

ATEX CERTIFICATION

Certificate Number
Baseefa11ATEX0114/1

Issued 21 February 2012
Page 2 of 2

13 **Schedule**

14 **Certificate Number Baseefa11ATEX0114/1**

15 **Description of the variation to the Equipment or Protective System**

Variation 1.1

To permit the addition of the dust protection concept "protection by Intrinsic Safety iD".

16 **Report Number**

GB/BAS/ExTR12.0004/00

17 **Specific Conditions of Use**

None

18 **Essential Health and Safety Requirements**

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

19 **Drawings and Documents**

Number	Sheet	Issue	Date	Description
CDX-5000-333	1	B	16/01/12	Marking Detail

IECEx CERTIFICATION

IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres
for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx BAS 11.0094 issue No.:1

Certificate history:
Issue No. 1 (2012-2-28)
Issue No. 0 (2011-9-21)

Status: **Current**

Date of Issue: **2012-02-28** Page 1 of 4

Applicant: **CorDEX Instruments Limited**
1 Owens Road
Skippers Lane Industrial Estate
Middlesbrough
TS6 6HE
United Kingdom

Electrical Apparatus: **UT-5000 Ultrasonic Thickness Gauge**
Optional accessory:

Type of Protection: **Intrinsic Safety**

Marking: **Ex ib IIC T4 Gb (Tamb -10°C to +50°C)**
Ex ibD T200°C Db (Tamb -10°C to +50°C)

Approved for issue on behalf of the IECEx Certification Body: R S Sinclair

Position: General Manager

Signature: (for printed version)

Date: 23/2/12

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:
Baseefa
Rockhead Business Park
Staden Lane
Buxton
Derbyshire
SK17 9RZ
United Kingdom

Baseefa

IECEx CERTIFICATION

IECEx Certificate of Conformity

Certificate No.: IECEx BAS 11.0094

Date of Issue: **2012-02-28** Issue No.: **1**

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Manufacturer: **CorDEX Instruments Limited**
1 Owens Road
Skippers Lane Industrial Estate
Middlesbrough
TS6 6HE
United Kingdom

Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:
The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2004 Edition: 4.0	Electrical apparatus for explosive gas atmospheres - Part 0: General requirements
IEC 60079-0 : 2007-10 Edition: 5	Explosive atmospheres - Part 0:Equipment - General requirements
IEC 60079-11 : 2006 Edition: 5	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 61241-11 : 2005 Edition: 1	Electrical apparatus for use in the presence of combustible dusts - Part 11: Protection by intrinsic safety 'iD'

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:
GB/BAS/ExTR11.0093/00 GB/BAS/ExTR11.0094/00 GB/BAS/ExTR12.0004/00

Quality Assessment Report:
GB/SIR/QAR10.0010/02

IECEx CERTIFICATION

IECEx Certificate of Conformity

Certificate No.: IECEx BAS 11.0094

Date of Issue: **2012-02-28** Issue No.: **1**

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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The UT-5000 is battery powered hand held equipment designed to measure the thickness of materials in hazardous areas using non-destructive techniques. It comprises three printed circuit boards inside a main instrument case housed in a protective rubber over boot, a custom cable, and a dual element ultrasonic transducer.

The equipment is battery powered by a single primary cell. Only Tadiran SL-2780 Lithium Thionyl Chloride cells may be used. The battery is to be replaced only when in a safe area.

The USB connector is for use only in safe areas and has the terminal parameter U_m = 253V

CONDITIONS OF CERTIFICATION: NO

IECEx CERTIFICATION

IECEx Certificate of Conformity

Certificate No.: IECEx BAS 11.0094

Date of Issue: **2012-02-28** Issue No.: **1**

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

Variation 1.1

To permit the addition of the dust protection concept Ex ibD.

ExTR: **GB/BAS/ExTR12.0004/00** File Reference: 11/0942

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Ref. ID 2310, Rev. A