UT8000 – UT Flaw Detector

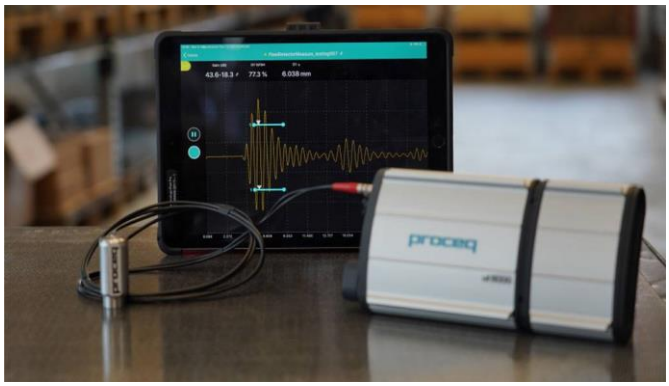

Figure 1 UT8000 Unrectified Display

The Future of Ultrasonic Testing is here!

Introducing **UT8000** from Proceq a complete reimagining of the Ultrasonic Set from the company that brought you the Equotip. Made and manufactured in Switzerland, the pulser-reciever is designed to be rugged and portable, offering the user options for connectivity and power supply. The user interface was designed from the ground up with touch controls in mind by Proceq's UI/UX specialists. The user experience is smooth and minimizes the learning curve while maximizing productivity, collaboration and traceability.

Pulser-Reciever

Figure 2 UT8000 Pulser Reciever

Rugged and portable the pulser-reciever is **IP67** rated and **Mil-STD** drop tested. Being the size of a large smartphone, the unit can be kept in your pocket, attached to your belt or an iPad itself with Proceq's dedicated accessories. Power supply is flexible, with options between Proceq's rechargeable battery pack (complete with 6 flight safe batteries) or the USB C connection allowing supply from a power bank, mains power a drone or ROV.

Screen

Choose the screen size that suits your purposes. Combine the UT8000 with any of Apple's iPad range. Go the Mini for the ultimate portability or go the iPad pro for no compromises and that amazing 120Hz refresh rate. That's right, never miss data with a refresh rate that is higher than the CRT on your analogue UT set.

Figure 3 iPad Mounted on UT8000 with Proceq Mount

User Interface

Designed from the ground up with the end user in mind the UT8000 doesn't just put touch controls on an old user interface, it completely re-imagines the user experience. Menu's are drop down and simple to navigate. Gesture controls allow you to adjust key functions like swiping up to increase gain or pinching to modify range. A DAC can be done using peak memory, scan the whole IOW block, maximising each side drilled and then tap all the peaks you want to include in your DAC. Done in no time flat! The user interface is designed to save you time by streamlining the parts that you use every day ensuring that your workflow is smooth and uninterrupted.

Always up to date

Proceq allows you to stay up to date with the latest features. Updates are included in the software license. If you have an internet connection you won't even need to think about it, they will happen over the air. Swiss durability will ensure that your still have your UT8000 for years to come. Swiss ingenuity will ensure that the UT8000 you have in future is even more useful than what you have today.

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Traceability and Collaboration

The UT8000 and its cloud functionality open Ultrasonic testing to a whole new world of collaboration and traceability. Proceq's Logbook functionality captures critical data that includes but is not limited to:

- Serial Number
- Location
- Date & Time
- Calibration Status (linearity)
- Settings with all modifications
- Photos, Voice Notes and Written notes

All this data is paired with your scan data. This offers a level of traceability that is unprecedented with UT equipment. All the tools are available and are only limited by your imagination and your procedures.

With an internet connection collaboration is also possible. Raw data can be sent to a senior technician for review and input. Supervisors can dial into the unit and provide key information to save a technician who might be stuck. UT techs need not be on their own despite being isolated, someone can always be available for added input.

Theory

Ultrasonic testing is based on time-varying deformations or vibrations in materials. Ultrasonic testing (UT) a non-destructive testing technique that pulses ultrasonic waves in a material and measures the time the pulses take to return to the transducer. In most common UT applications, very short wavelength, high frequency ultrasonic pulse-waves are transmitted into materials to detect internal flaws or to characterize materials. The information gathered is traditionally displayed on an A-Scan display that plots time taken on the x-axis and returning intensity on the y-axis.

Ultrasonic testing is often performed on steel and other metals and alloys, though it can also be used on concrete, wood and composites, albeit with less resolution. It is used in many industries including steel and aluminium construction, metallurgy, manufacturing, aerospace, automotive and other transportation sectors.

Advantages of using ultrasonic techniques for inspection include:

- Requires less preparation of test surfaces than other NDT methods.
- With the use of different techniques, high sensitivity can be achieved on surface and sub-surface flaws.
- The use of high frequencies achieves excellent sensitivity for detection of flaws perpendicular to the axis of wave propagation.
- The use of lower frequencies allows for penetration that is superior to any other NDT method.
- Multiple applications and techniques can be achieved by simply swapping transducers. Ultrasonics is one of the most versatile techniques available.
- Access to only one face of the material required when using a Pulse-Echo method for flaw detection.
- Determining the reflector's (flaw) position, shape and size in the object tested is highly accurate with a skilled operator.
- High resolution images provide instant results making report generation simple and effective.
- Testing can be automated, and reports generated continuously for production type environments.

Applications

Users can perform many applications Including:

- Ultrasonic Thickness Surveys
- Corrosion detection and measurement
- Flaw detection in welds, castings and forgings
- Pipeline weld inspection projects
- Complex geometries
- Forgings and castings
- Aircraft composites delamination

Standards

- AS 2207 - 2007: Non-Destructive testing - Ultrasonic testing of fusion welded joints in carbon and low alloy steel.
- EN 10160:1999 – Ultrasonic testing of steel flat products of thickness equal or greater than 6mm (reflection method)
- EN ISO 17640:2017 – Non-destructive testing of welds - ultrasonic testing – techniques, testing levels, and assessment.

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- AS 1065 - 1988: Non-destructive testing - Ultrasonic testing of carbon and low alloy steel forgings
- ASME BPVC Section V -2017, Article 4: Ultrasonic Examination methods for welds
- ASME BPVC Section V -2017, Article 5: Ultrasonic Examination methods for materials
- AWS D1.1/D1.1M:2015 - Clause 6, 6.13 UT.
- BS EN 12668-1:2010: Non-destructive testing. Characterization and verification of ultrasonic examination equipment. Instruments.
- BS EN 15317:2013: Non-Destructive Testing. Ultrasonic testing. Characterization and Verification of ultrasonic thickness measuring equipment.

Specifications and Features

Configuration	1 UT channel
Transducer Socket	Lemo 00
Pulse Voltage	400V
PRF	2000Hz
Gain Range	0-110dB
Bandwidth	0.5 - 20MHz
Charging and Data	USB Type C

Software

- Proceq supplies a free iOS application which can be downloaded any time to connect to the UT8000
- Proceq's model allows you to always have the newest software and features, updated over the air.
- Logbook functionality for complete traceability from calibration to reporting.
- "Time rewind" to capture echo dynamic for added confidence and traceability.
- Adaptable corrosion grid function that pairs each reading with the corresponding raw signal.
- Customizable user readout as well as right or left-handed options.
- A user interface fit for the internet age.

Benefits

- Fully compatible with your existing manual UT probes.
- Swiss made and manufactured from the company that brought you the Equotip.
- The ability to capture every aspect of the test and issue it in one neat data package for completely traceable reporting.
- Gentle learning curve and smooth user experience.
- Menu's are accessible and logical.
- Every function you need and use daily has been streamlined.
- A live platform that will be supported and constantly updated.

Industries

- Oil & Gas
- Aerospace
- Railways
- Machine Parts
- Training & Research

Figure 4 Proceq's iPad mount accessory.

About PCTE

PCTE have over 30 years' experience in the measurement and testing of construction materials. PCTE can provide more than just the equipment, they can provide expert training. PCTE have a service centre in Sydney in which they can provide calibration, repairs and warranty repairs.